



# **VyOS Documentation**

*Release 1.5.x (circinus)*

**VyOS maintainers and contributors**

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Get / Build VyOS Quickly *Build* your own Image or take a look at how to *download* a free or supported version.

Install VyOS Read about how to install VyOS on *Bare Metal* or in a *Virtual Environment* and how to use an image with the usual *cloud* providers

Configuration and Operation Use the *Quickstart Guide*, to have a fast overview. Or go deeper and set up *advanced routing*, *VRFs*, or *VPNs* for example.

Automate Integrate VyOS in your automation Workflow with *Ansible*, have your own *local scripts*, or configure VyOS with the *HTTPS-API*.

Examples Get some inspiration from the *Configuration Blueprints* to build your infrastructure.

Contribute and Community

There are many ways to contribute to the project.

Add missing parts or improve the *Documentation*.

Discuss in *Slack* or the *Forum*.

Or you can pick up a *Task* and fix the *code*.

## ABOUT

VyOS is an open source network operating system based on Debian GNU/Linux.

VyOS provides a free routing platform that competes directly with other commercially available solutions from well known network providers. Because VyOS runs on standard amd64, i586 and ARM systems, it is able to be used as a router and firewall platform for cloud deployments.

We use multiple live versions of our manual, hosted thankfully by <https://readthedocs.org>. We will provide one version of the manual for every VyOS major version starting with VyOS 1.2 which will receive Long-term support (LTS).

The manual version is selected/specified by it's Git branch name. You can switch between versions of the documentation by selecting the appropriate branch on the bottom left corner.

VyOS CLI syntax may change between major (and sometimes minor) versions. Please always refer to the documentation matching your current, running installation. If a change in the CLI is required, VyOS will ship a so called migration script which will take care of adjusting the syntax. No action needs to be taken by you.

## 2.1 In the beginning...

There once was a network operating system based on Debian GNU/Linux, called Vyatta.\*<sup>0</sup> 2006 onwards, it was a great free software alternative to Cisco IOS and Juniper JUNOS. It came in two editions: Vyatta Core (previously Vyatta Community Edition) that was completely free software, and Vyatta Subscription Edition that had proprietary features and was only available to paying customers.†<sup>0</sup>

Vyatta was acquired by Brocade Communication Systems in 2012. Shortly after, Brocade renamed Vyatta Subscription Edition to Brocade vRouter, discontinued Vyatta Core and shut down the community forum without a notice. The bug tracker and Git repositories followed next year.

It's worth noting that by the time Brocade acquired Vyatta, development of Vyatta Core was already stagnated. Vyatta Subscription Edition (and thus, Vyatta development as a whole) had been replacing core components with proprietary software, meaning few features made it to Vyatta Core, and those that did were bug-ridden and hamstrung.

In 2013, soon after Vyatta Core was abandoned, the community forked the last Vyatta Core version (6.6R1) and VyOS Project came into being. [Sentrion SL](#) was established by VyOS maintainers in 2014 to fund VyOS development by selling support, consulting services and prebuilt long-term support images.

Brocade was acquired by Broadcom in 2016 and sold what remains of erstwhile Vyatta to AT&T in 2017, who in turn sold it to Ciena in 2021.

## 2.2 Major releases

VyOS major versions used to be named after elements in order of atomic numbers. With 1.2, this naming scheme was replaced with the much cooler scheme of Latin names of [IAU](#) designated constellations by solid angle area, starting from the smallest.

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<sup>0</sup> From the Sanskrit adjective “Vyāṭṭa” ( ), meaning opened.

<sup>0</sup> A business model comparable to that of Redis, rather than that of VyOS today.

### 2.2.1 Hydrogen (1.0)

Released just in time for holidays on 22 December 2013, Hydrogen was the first major VyOS release. It fixed features that were broken in Vyatta Core 6.6 (such as IPv4 BGP peer groups and DHCPv6 relay) and introduced command scripting, a task scheduler and web proxy LDAP authentication.

### 2.2.2 Helium (1.1)

Helium was released on 9 October 2014, exactly on the day VyOS Project first came into being in the previous year. Helium came with a lot of new features, including an event handler and support for L2TPv3, 802.1ad QinQ and IGMP proxy, as well as experimental support for VXLAN and DMVPN (the latter of which was also broken in Vyatta Core due to its reliance on a proprietary NHRP implementation).

### 2.2.3 Crux (1.2)

Crux (the Southern Cross) came out on 28 January 2019 and was the first major release of VyOS as we know it today. The underlying Debian base was upgraded from Squeeze (6) to Jessie (8).

Although Crux came with too many new features to mention here, some noteworthy ones are: an mDNS repeater, a broadcast relay, a high-performance PPPoE server, an HFSC scheduler, as well as support for Wireguard, unicast VRRP, RPKI for BGP and fully 802.1ad-compliant QinQ ethertype. The telnet server and support for P2P filtering were removed.

Crux is the first version to feature the modular image build system. CLI definitions began to be written in the modern, verifiable XML templates. Python APIs were introduced for command scripting and configuration migration. Introduction of new Perl and shell code was proscribed and the rewriting of legacy Perl code in pure Python began with Crux.

As of 2022, Crux is still supported and maintained.

### 2.2.4 Equuleus (1.3)

The current long-term support version of VyOS, Equuleus (the Pony) came out on 21 December 2021, once again in time for the winter holidays.

Equuleus brought many long-desired features with it, most notably an SSTP VPN server, an IPoE server, an Open-Connect VPN server and a serial console server, in addition to reworked support for WWAN interfaces, support for GENEVE and MACSec interfaces, VRF, IS-IS routing, preliminary support for MPLS and LDP, and many other initialisms.

As of 2022, Equuleus is in the stable.

### 2.2.5 Sagitta (1.4)

Sagitta (the Arrow) is the codename of the current development branch, so there's no VyOS 1.4 yet.

## 2.2.6 Circinus (1.5)

Circinus (the Compass) is the codename of the upcoming development branch, so there's no VyOS 1.5 yet.

## 2.3 A note on copyright

Unlike Vyatta, VyOS never had (nor will ever have) proprietary code. The only proprietary material in VyOS is non-code assets, such as graphics and the trademark “VyOS”.<sup>0</sup> This means you can build your own long-term support images (as the entire toolchain we use is free software) and even distribute them, given you rename it and remove such assets before building. Although note that we do not provide support for images distributed by a third-party. See the [artwork license](#) and the end-user license agreement at `/usr/share/vyos/EULA` in any pre-built image for more precise information.

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<sup>0</sup> This is not unlike how Linus Torvalds owns the trademark “Linux”.

## CHANGELOG

### 3.1 1.5 Circinus

#### 3.1.1 2024-04-26

- T6259 (feature): PKI: Support RFC822 (email) names in SAN

#### 3.1.2 2024-04-25

- T6263 (bug): Multicast: Could not commit multicast config with multicast join group using source-address
- T5833 (bug): Not all AFIs compatible with VRF

#### 3.1.3 2024-04-24

- T6255 (bug): Static table description should not contain white-space
- T6226 (feature): add HAPROXY `tcp-request content accept` related block to load-balancing reverse proxy config
- T6109 (bug): remote syslog do not get all the logs
- T6262 (default): Update the boot splash for VyOS 1.5 ISO
- T6217 (feature): VRRP contrack-sync script change name of the logger
- T6244 (feature): Spacing of "Show System Uptime" hard to parse

#### 3.1.4 2024-04-23

- T6260 (bug): image-tools: remove failed image directory if 'No space left on device' error
- T6261 (default): Typo in op\_mode connect\_disconnect print statement for check\_ppp\_running
- T6237 (feature): IPSec remote access VPN: ability to set EAP ID of clients

### 3.1.5 2024-04-22

- T5996 (bug): unescape backslashes for config save, compare commands

### 3.1.6 2024-04-21

- T6191 (bug): Policy Route TCP-MSS Behavior Different from 1.3.x
- T5535 (feature): disable-directed-broadcast should be moved to firewall global-options

### 3.1.7 2024-04-20

- T6252 (bug): gre tunnel - doesn't allow configure jumbo frame more than 8024

### 3.1.8 2024-04-19

- T6221 (bug): Enabling VRF breaks connectivity
- T6035 (bug): QoS policy shaper queue-type random-detect requires limit avpkt
- T6246 (feature): Enable basic haproxy http-check configuration options
- T6242 (feature): Loadbalancer reverse-proxy: SSL backend skip CA certificate verification

### 3.1.9 2024-04-17

- T6168 (bug): add system image does not set default boot to current console type in compatibility mode
- T6243 (bug): Update vyos-http-api-tools for package idna security advisory
- T6154 (enhancement): Installer should ask for password twice
- T5966 (default): Adjust dynamic dns configuration address subpath to be more intuitive and other op-mode adjustments
- T5723 (default): mdns repeater: Always reload systemd daemon before applying changes
- T5722 (bug): Failing to add route in failover if gateway not in the same interface network
- T5612 (default): Miscellaneous improvements and fixes for dynamic DNS configuration
- T5574 (default): Support per-service cache management for dynamic dns providers

### 3.1.10 2024-04-16

- T6099 (bug): Suppress unsupported interfaces from appearing in messages log by Telegraf

### 3.1.11 2024-04-15

- T6163 (bug): kea-dhcp4-server crashes due to incorrect lease file permissions after 1.5-rolling-202403120022 -> 1.5-rolling-202403230018 upgrade
- T6100 (bug): NAT config migration error in 1.4.0-epal if invalid address/network defined in 1.3.6 version
- T6174 (bug): can't view dhcp server leases if logged in as a tacacs account
- T5734 (bug): OpenVPN server dh-params that are not in PKI error

### 3.1.12 2024-04-14

- T6210 (feature): Add container ability to configure capability sys-nice

### 3.1.13 2024-04-13

- T6173 (bug): Build Causes Errors When "--version" Contains Slashes ("/")
- T2518 (feature): Support NAT for ipv6(NPT)

### 3.1.14 2024-04-12

- T6214 (bug): Error when using some constraints
- T6213 (bug): Firewall group constraints
- T6222 (bug): VRRP rfc3768-compatibility not working correctly when resulting interface name is over 15 characters
- T6218 (bug): Container network interface in VRF fails to generate IPv6 link-local address
- T5044 (feature): High Availability in DHCPv6 -ISC DHCP Failover/Kea
- T6166 (bug): Tech support generation error for custom output location
- T344 (feature): Software based FastPath

### 3.1.15 2024-04-11

- T4516 (feature): Rewrite system image manipulation tools in Python
- T4548 (feature): GRUB loader configuration rework
- T6228 (bug): Cleanup of not existing units

### 3.1.16 2024-04-10

- T6207 (bug): image-tools: restore ability to copy config.boot.default on image install
- T6106 (bug): Valid commit error for route-reflector-client option defined in peer-group
- T5750 (bug): Upgrade from 1.3.4 to 1.4 Rolling fails QoS
- T5740 (bug): Generate wireguard keys via HTTP-API fails
- T5858 (bug): Show contrack statistics formatting is all over the place

### 3.1.17 2024-04-09

- T6121 (feature): Extend service config-sync for sections vpn, policy, vrf

### 3.1.18 2024-04-08

- T6197 (bug): IPoE-server interface client-subnet looks broken or works with the wrong logic
- T6196 (bug): Route-map and summary-only do not work in BGP aggregation at the same time
- T6068 (feature): dhcp server: allow switching between load-balanced and hotspare mode

### 3.1.19 2024-04-07

- T6205 (bug): ipoe: error in migration script logic while renaming mac-address to mac node
- T5862 (bug): Default MTU is not acceptable in some environments
- T6208 (feature): container: rename "cap-add" CLI node to "capability"
- T6188 (feature): Add Firewall Rule Description to "show firewall" commands
- T1244 (default): Support for StartupResync in contrackd

### 3.1.20 2024-04-06

- T6203 (enhancement): Remove obsoleted xml lib
- T6202 (bug): Multi-Protocol BGP is broken by 6PE patch in upstream FRR 9.1

### 3.1.21 2024-04-05

- T6089 (bug): [1.3.6->1.4.0-epa1 Migration] "ospf passive-interface default" incorrectly added
- T2590 (bug): DHCPv6 not updating nameservers and search domains since replacing isc-dhcp-client with WIDE dhcp6c
- T6199 (feature): spring cleaning - drop unused Python imports

### 3.1.22 2024-04-04

- T6119 (default): Use a compliant TOML parser
- T6171 (feature): dhcp server fail-over - Rename fail-over node
- T6128 (bug): minisign.pub is wrong on <https://vyos.net/get/nightly-builds/>
- T5882 (feature): vyos-utils: move to Dune as build system
- T5864 (default): 'show ntp' Commands Not Working
- T3843 (bug): l2tp configuration not cleared after delete
- T2187 (feature): Python Unit testing
- T788 (bug): Nightly builds are not signed

### 3.1.23 2024-04-03

- T6198 (feature): configverify: add common helper for PKI certificate validation
- T6192 (feature): Multi VRF support for SSH

### 3.1.24 2024-04-02

- T6167 (bug): VNI not set on VRF after reboot
- T6151 (default): BGP VRF - Route-leaking not work when the next-hop is a recursive route.
- T6033 (bug): hsflowd fails to start when using a tunnel interface

### 3.1.25 2024-04-01

- T6195 (feature): dropbear: package upgrade 2022.83-1 -> 2022.83-1+deb12u1
- T6193 (bug): dhcp-client: invalid warning "is not a DHCP interface but uses DHCP name-server option" for VLAN interfaces
- T6178 (bug): Reverse-proxy should check that certificate exists during commit

### 3.1.26 2024-03-31

- T6186 (bug): Fix regression in 'set system image default-boot'
- T5832 (feature): Keepalived: Allow using the 'dev' statement on excluded-addresses

### 3.1.27 2024-03-29

- T6159 (bug): Openvpn Server Op-cmd adds heading "OpenVPN status on vtunx" for every client connection

### 3.1.28 2024-03-28

- T6147 (bug): Contrack not working as expected with global state-policy
- T6175 (bug): op-mode: "renew dhcp interface <name>" does not check if it's an actual DHCP interface
- T6102 (bug): Clear dhcp-server lease throws python exception on 1.5-rolling

### 3.1.29 2024-03-26

- T6066 (bug): Setting same network in different ospf area will raise exception

### 3.1.30 2024-03-25

- T6145 (bug): Service config-sync does not rely on priorities but must

### 3.1.31 2024-03-24

- T6161 (feature): Output container images as JSON
- T6165 (bug): grub: vyos-grub-update failed to start on "slow" systems
- T6085 (bug): VTI interfaces are in UP state by default
- T6152 (bug): Kernel panic for ZimaBoard 232

### 3.1.32 2024-03-23

- T6160 (bug): isis: NameError: name 'process' is not defined
- T6131 (bug): Disabling openvpn interface(s) causes OSPF to fail to load on reboot
- T4022 (feature): Add package nat-rtsp-dkms

### 3.1.33 2024-03-22

- T6136 (bug): Configuring a dynamic address group, config script did not check whether the group was created
- T6130 (bug): [1.3.6->1.4.0-epa2 Migration] BGP "set community" missing
- T6090 (bug): [1.3.6->1.4.0-epa1 Migration] policy route fails due tcp flag case sensitivity
- T6155 (default): ixgbe: failed to initialize because an unsupported SFP+ module type was detected.
- T6125 (feature): Support 802.1ad (0x88a8) vlan filtering for bridge

### 3.1.34 2024-03-21

- T6143 (feature): Increase configuration timeout range for service config-sync

### 3.1.35 2024-03-20

- T6133 (feature): Add domain-name to commit-archive
- T6129 (feature): bgp: add route-map option "as-path exclude all"

### 3.1.36 2024-03-19

- T6127 (bug): Ability to view logs for rules with Offload not functional
- T6138 (bug): Contrack table op-mode fails with flowtable offload entries

### 3.1.37 2024-03-15

- T6118 (feature): radvd: RFC8781: add nat64prefix support

### 3.1.38 2024-03-12

- T6020 (bug): VRRP health-check script is not applied correctly in keepalived.conf
- T5646 (bug): QoS policy limiter broken if class without match

### 3.1.39 2024-03-11

- T6098 (bug): Description doesnt seem to allow for non international characters
- T2998 (bug): SNMP v3 oid "exclude" option doesn't work
- T6107 (bug): Nginx does not allow big config queries for configure endpoint API
- T6096 (bug): Config commits are not synced properly because @@vyos-sync is deleted by vyos-router
- T6093 (bug): Incorrect dhcp-options vendor-class-id regex
- T6083 (feature): ethtool: move string parsing to JSON parsing

- T6069 (bug): HTTP API segfault during concurrent configuration requests
- T6057 (feature): Add ability to disable syslog for contrackd
- T5504 (feature): Keepalived VRRP ability to set more than one peer-address
- T5717 (feature): ospfv3 - add allow to set metric-type to ospf redistribution while frr docs says its possible.
- T6071 (bug): firewall: CLI description limit of 256 characters cause config upgrade issues

### 3.1.40 2024-03-08

- T6086 (bug): NAT does not work with network-groups
- T6094 (bug): Destination Nat not Making Firewall Rules
- T6061 (bug): connection-status nat destination firewall filter not working in 1.4.0-epal
- T6075 (bug): Applying firewall rules with a non-existent interface group

### 3.1.41 2024-03-07

- T6104 (bug): Regression in commit-archive for non-interactive configuration
- T6084 (bug): OpenNHRP DMVPN configuration file clean after reboot if we have any IPSec configuration
- T5348 (bug): Service config-sync can freeze the secondary router if it has commit-archive location
- T6073 (bug): Contrack/NAT not being disabled when VRFs are defined
- T6095 (default): Tab completion for "set interfaces wireless wlan0 country-code" incorrect country "uk"

### 3.1.42 2024-03-06

- T6079 (bug): dhcp: migration fails for duplicate static-mapping
- T6063 (default): Kea DHCP: Expose match-client-id setting
- T5992 (default): DHCP: show dhcp server leases not showing all leases

### 3.1.43 2024-03-05

- T5903 (bug): NHRP don't start on reboot from version 1.5-rolling-202401010026
- T2447 (feature): Additional Boot Argument Configuration to limit CPU C-States

### 3.1.44 2024-03-04

- T6087 (feature): ospfv3: add support to redistribute IS-IS routes

### 3.1.45 2024-03-02

- T6081 (bug): QoS policy shaper target and interval wrong calculations

### 3.1.46 2024-02-29

- T6078 (feature): Update ethtool to 6.6
- T6077 (feature): banner: implement ASCII contest winner default logo
- T6074 (feature): container: do not allow deleting images which have a container running

### 3.1.47 2024-02-28

- T4270 (bug): dns forwarding - When "ignore-hosts-file" is unset, local hostname of router resolves to 127.0.1.1

### 3.1.48 2024-02-26

- T6064 (bug): Can not build VyOS if repository is not cloned to a branch
- T5754 (default): Update to StrongSwan 5.9.11

### 3.1.49 2024-02-25

- T6060 (feature): op-mode: container: support removing all container images at once

### 3.1.50 2024-02-24

- T5909 (bug): Container registry with authentication prevents config load (section container) after reboot

### 3.1.51 2024-02-23

- T5376 (bug): Conntrack FTP helper does not work properly

### 3.1.52 2024-02-22

- T6048 (bug): Exception in event handler script

### 3.1.53 2024-02-21

- T6050 (bug): Wrong scripting commands descriptions in accel-ppp services
- T3771 (feature): DHCPv6 server prefix delegation - dynamically add route to delegated prefix via requesting router

### 3.1.54 2024-02-19

- T5971 (default): Create the same view of ppp section for all accel-ppp services
- T6029 (default): Rewrite Accel-PPP services to an identical feature set
- T3722 (bug): op-mode IPsec show vpn ike sa always shows L-TIME 0

### 3.1.55 2024-02-18

- T6043 (bug): VxLAN and bridge error bug
- T6041 (bug): image-tools: install fails from PXE boot into live iso due to restrictive logic

### 3.1.56 2024-02-17

- T5972 (feature): login: add possibility to disable individual local user accounts

### 3.1.57 2024-02-16

- T6009 (bug): Firewall - Time not working properly when not using UTC
- T6005 (bug): Error on adding a wireguard interface to OSPFv3
- T6019 (feature): Bump nftables and libnftnl version
- T6001 (default): Add option to enable resolve-via-default
- T5965 (bug): WWAN modems using raw-ip do not work with dhclient/dhcp6c
- T5245 (bug): Wireless interfaces do not get IPv6 link-local address assigned

### 3.1.58 2024-02-15

- T5977 (bug): nftables: Operation not supported when using match-ipsec in outbound firewall
- T2612 (bug): HTTPS API, changing API key fails but goes through
- T5989 (bug): IP subnets not usable in UPnP ACLs
- T5719 (default): mdns repeater: Add op-mode commands
- T4839 (feature): Dynamic Firewall groups

### 3.1.59 2024-02-14

- T6034 (feature): rpki: move file based SSH keys for authentication to PKI subsystem
- T5981 (bug): IPsec site-to-site migrated PKI ca certificates are created with an '@'
- T5930 (bug): vrf - route-leak not work using route-target both command.
- T5709 (bug): IPoE-server fails if next pool mentioned but not defined
- T2044 (bug): RPKI doesn't boot properly
- T6032 (feature): bgp: add EVPN MAC-VRF Site-of-Origin support
- T5960 (default): Rewriting authentication section in accel-ppp services

### 3.1.60 2024-02-13

- T5928 (bug): Configuration fails to load on boot if offloading has VLAN interfaces defined
- T5064 (bug): Value validation for domain-groups seems to be broken

### 3.1.61 2024-02-12

- T6010 (bug): Support setting multiple values in BGP path-attribute
- T6004 (bug): RPKI is not configured
- T5952 (default): DHCP allow same MAC Address on same subnet
- T5849 (feature): Add SRv6 route commands

### 3.1.62 2024-02-10

- T6023 (bug): rpki: add support for CLI knobs expire-interval and retry-interval

### 3.1.63 2024-02-09

- T6028 (bug): QoS policy shaper wrong class\_id\_max and default\_minor\_id
- T6026 (bug): QoS hide attempts to delete qdisc from devices
- T5788 (feature): frr: update to 9.1 release
- T5703 (bug): QoS config on pppoe interface resets back to fq\_codel after tunnel reboots
- T5685 (feature): Keepalived VRRP prefix is not necessary for the virtual address

### 3.1.64 2024-02-08

- T6014 (feature): Bump keepalived version
- T5910 (bug): Grub problem(?) Serial Console no longer working
- T6021 (bug): QoS r2q wrong calculation

### 3.1.65 2024-02-07

- T6017 (bug): Update vyos-http-api-tools for security advisory
- T6016 (bug): Resolve intermittent failures in cleanup function after failed image install
- T6024 (feature): bgp: add additional missing FRR features
- T6011 (feature): rpki: known-hosts-file is no longer supported by FRR CLI - remove VyOS CLI node
- T5998 (feature): replay\_window setting under vpn in config

### 3.1.66 2024-02-06

- T6018 (default): smoketest: updating http-api framework requires a pause before test
- T5921 (bug): Trying to commit an OpenConnect configuration without any local users results in an exception
- T5687 (feature): Implement ECS settings for PowerDNS recursor

### 3.1.67 2024-02-05

- T5974 (bug): QoS policy shaper is currently miscalculating bandwidth and ceil values for the default class
- T5865 (feature): Rewrite ipv6 pool section to ipv6 named pools in Accel-ppp services

### 3.1.68 2024-02-02

- T5739 (bug): Password recovery does not work if public keys are configured
- T5955 (feature): Rootless containers/set uid/gid for container
- T6003 (feature): Add 'show rpki as-number' and 'show rpki prefix'
- T5848 (feature): Add triple-isolate flow isolation option to CAKE QoS policy

### 3.1.69 2024-02-01

- T5995 (bug): Kernel NIC-drivers for Huawei NICs are not properly enabled
- T5978 (bug): ethernet: hw-tc-offload does not actually get enabled on the NIC
- T5979 (enhancement): Add configurable kernel boot parameters
- T5973 (bug): vrf: RTNETLINK answers: File exists
- T5967 (bug): Multi-hop BFD connections can't be established; please add minimum-ttl option.
- T5619 (default): Update the Intel ixgbe driver due to issues with Intel X533

### 3.1.70 2024-01-31

- T6000 (bug): [1.3.x -> 1.5.x] migrating threw exception in /opt/vyatta/etc/config-migrate/migrate/https/5-to-6, performed workaround
- T5999 (bug): load-balancing reverse-proxy can't configure root as a redirect

### 3.1.71 2024-01-30

- T5980 (feature): Add image-tools support for configurable kernel boot options

### 3.1.72 2024-01-29

- T5988 (bug): image-tools: a check of valid image name is missing from 'add image'
- T5994 (bug): Fix typo in 'remote' module preventing 'add system image' via ftp

### 3.1.73 2024-01-26

- T5957 (bug): Firewall fails to delete inbound-interface name
- T5779 (bug): custom conntrack timeout rule not applicable
- T5984 (feature): Add user util numactl

### 3.1.74 2024-01-25

- T5983 (bug): image-tools: minor regression in pruning version files in compatibility mode
- T5927 (bug): QoS policy shaper-hfsc class does not have a `bandwidth` node but requires one in the check
- T5834 (bug): Rename 'enable-default-log' to 'default-log'

### 3.1.75 2024-01-22

- T5968 (feature): hsflowd: add VRF support
- T5961 (bug): QoS policy shaper vif with ceiling fails on commit
- T5958 (bug): QoS policy shaper-hfsc is not implemented
- T5969 (feature): op-mode: list multicast group membership

### 3.1.76 2024-01-21

- T5799 (bug): vyos unbootable after 1.4-rolling-202308240020 to 1.5-rolling-202312010026 upgrade
- T5787 (bug): dhcp-server allows duplicate static-mapping for the same IP address
- T5912 (bug): DHCP Static mapping don't work on every first lease
- T5692 (enhancement): NTP leap smear
- T5954 (feature): Enable nvme\_hwmon and drivetemp in KERNEL

### 3.1.77 2024-01-20

- T5964 (bug): disconnect interface wwan0 throws exception
- T5948 (bug): pdns-recursor crashes on restart if hostfile-update is enabled and dhcp client sends hostname with trailing dot
- T5945 (bug): Missing minisign public key for rolling release
- T5922 (bug): Firewall - bug in zone config
- T5915 (bug): Firewall zone - Re add op-mode commands
- T5724 (feature): About dhcp client hooks
- T5721 (bug): Error in migrating configuration from VyOS 1.4
- T5550 (bug): Source validation on interface does not work properly
- T5239 (bug): frr 'hostname' missing or incorrect, and domain-name missing totally
- T4726 (default): Add completion and validation for the accel-ppp RADIUS vendor option
- T4085 (feature): Rewrite L2TP/PPTP/SSTP/PPPoE services to get\_config\_dict
- T5963 (bug): QoS policy shaper rate calculations could be wrong for some ethernet devices

- T5876 (bug): Dhcp bug in latest 1.5 rolling releases
- T5962 (feature): QoS policy set default speed to 100mbit or 1gbit instead of 10mbit

### 3.1.78 2024-01-19

- T5897 (bug): VyOS with Cloud-init and VRF stucks at reboot/shutdown process
- T5554 (bug): Disable sudo for PAM RADIUS
- T4754 (default): Improvement: system login: show configured 2FA OTP key
- T5857 (bug): show interfaces wireless info
- T5841 (default): Remove old ssh-session-cleanup.service
- T5884 (default): Minor description fix (op-mode: generate wireguard)
- T5781 (default): Add ability to add additional minisign keys

### 3.1.79 2024-01-18

- T5863 (bug): Failure to Load Config on Recent 1.5 Versions
- T4638 (bug): Deleting a parent interface does not delete its underlying VLAN interfaces
- T5953 (default): Rename 'close\_action' value from `hold` to `trap` in IPSEC IKE

### 3.1.80 2024-01-17

- T5923 (bug): Config mode system\_console.py is not aware of revised GRUB file structure
- T4658 (feature): Rename DPD action `hold` to `trap`

### 3.1.81 2024-01-16

- T5859 (bug): Invalid format of pool range in accel-ppp services
- T5842 (feature): Rewrite PPTP service to get\_config\_dict
- T5801 (feature): Rewrite L2TP service to get\_config\_dict
- T5688 (default): Create the same view of pool configuration for all accel-ppp services

### 3.1.82 2024-01-15

- T5944 (bug): "reboot in 1" not working
- T5936 (bug): [1.3.5 -> 1.4.0-RC1 Migration] OSPF Passive Interface Configuration Not Working Correctly
- T5247 (bug): the bug of the command "show interfaces system"
- T5901 (bug): Cloud-init and DHCP exit hook errors
- T2556 (bug): "show interfaces vrrp" does not return any interface

### 3.1.83 2024-01-12

- T5925 (feature): Containers change systemd KillMode
- T5919 (bug): Firewall - opmode for ipv6
- T5306 (default): bgp config migration failed with v6only option configured with peer-group
- T3429 (bug): Hyper-V integration services not working on VyOS 1.4 (sagitta/current)

### 3.1.84 2024-01-11

- T5713 (bug): strip-private doesn't strip string after "secret"
- T5532 (bug): After add system image the boot stuck and works again after the second reboot
- T5814 (bug): VyOS 1.3 to 1.4 LTS Firewall ruleset migration script breaks configuration
- T3191 (bug): PAM RADIUS freezing when accounting does not configured on RADIUS server
- T5917 (feature): Restore annotations of (running)/(default boot) in select image list
- T5916 (default): Added segment routing check for index size and SRGB size
- T5913 (feature): Allow for Peer-Groups in ipv4-labeled-unicast SAFI

### 3.1.85 2024-01-10

- T5918 (bug): Verification problem for `set vpn ipsec interface`
- T5911 (bug): pki: service update ignored if certificate name contains a hyphen (-)
- T5886 (feature): Add support for ACME protocol (LetsEncrypt)
- T5766 (bug): http: rewrite conf-mode script to get\_config\_dict()
- T4256 (feature): Display static DHCP server leases in the operational command output
- T5902 (bug): http: remove virtual-host configuration in webserver
- T3316 (feature): Use Kea DHCP(v6) instead of ISC DHCP(v6)

- T5791 (default): Update dynamic dns configuration path to be consistent with other areas of VyOS
- T5708 (default): Additional dynamic dns improvements to align with ddclient 3.11.1 release
- T5573 (bug): Fix ddclient cache entries
- T5614 (default): Add conntrack helper matching on firewall

### 3.1.86 2024-01-09

- T5898 (bug): Replace partprobe with partx due to unable to install VyOS
- T5840 (feature): Upgrade Kea to 2.4.x
- T5838 (feature): Add Infiniband kernel modules
- T5785 (bug): API output of show container image broken
- T5249 (feature): Add rollback-soft feature to rollback without a reboot
- T2511 (feature): Migrate vyatta-op-quagga to new XML format
- T5905 (bug): pki: IPsec and VTI interface priority inversion when using x509 site-to-site peer

### 3.1.87 2024-01-08

- T5888 (bug): Firewall upgrade fails because of icmpv6
- T5844 (bug): HTTPS API doesn't start without configured keys even when GraphQL authentication type is set to token
- T5904 (feature): op-mode: add "show ipv6 route vrf <name> <prefix>" command

### 3.1.88 2024-01-07

- T5899 (feature): VyOS vm images use bookworm repo
- T5887 (feature): Upgrade Linux Kernel to 6.6.y (2023 LTS edition)

### 3.1.89 2024-01-06

- T3214 (bug): OpenVPN IPv6 fixes

### 3.1.90 2024-01-05

- T5894 (feature): Extend get\_config\_dict() with additional parameter with\_pki that defaults to False

### 3.1.91 2024-01-03

- T5880 (bug): `verify_source_interface` should not allow dynamic interfaces like `ppp`, `l2tp`, `ipoe` or `sstp` client interfaces
- T5879 (bug): `tunnel`: sourcing from dynamic `pppoe0` interface will fail on reboots

### 3.1.92 2024-01-02

- T5885 (default): `image-tools`: relax restriction on image-name length from 32 to 64

### 3.1.93 2024-01-01

- T5883 (bug): Preserve file ownership in `/config` subdirs on add system image
- T5474 (feature): Establish common file name pattern for XML conf mode commands

### 3.1.94 2023-12-30

- T5875 (bug): `login`: removing and re-adding a user keeps the home directory but UID will change, thus SSH keys no longer work
- T5653 (feature): Command to display fingerprint

### 3.1.95 2023-12-29

- T5829 (bug): Can't Add IPv6 Address to Containers
- T5852 (bug): Reboots fail with `eapol` WAN interface
- T5869 (bug): `vyos.template.first_host_address()` does not honor RFC4291 section 2.6.1

### 3.1.96 2023-12-28

- T5827 (bug): `image-tools`: 'show system image' Command Not in Order
- T4163 (feature): [BMP-BGP] Routing monitoring feature
- T5867 (feature): Upgrade `podman` to Debian Trixie version 4.7.x
- T5866 (feature): Add `op-mode` command to restart IPv6 RA daemon
- T5861 (bug): Flavor build system fails with third-party packages
- T5854 (feature): Extend `override-default` script to allow embedded `defaultValue` settings
- T5792 (default): Upgrade `ddclient` 3.11.2 release

### 3.1.97 2023-12-25

- T5855 (feature): Migrate "set service lldp snmp enable" -> `set service lldp snmp`
- T5837 (bug): `vyos.configdict.node_changed` does not return keys per adding
- T5856 (bug): SNMP service removal fails

### 3.1.98 2023-12-23

- T5678 (feature): Improvements in PPPoE configuration

### 3.1.99 2023-12-22

- T5804 (bug): SNAT "any" interface error

### 3.1.100 2023-12-21

- T5807 (bug): NAT66 op-mode bugs
- T5778 (bug): The `show dhcp server leases operation mode` command does not work as expected
- T5775 (default): Migrated Firewall Global State Policy ineffective on latest firewall zone config
- T5676 (bug): NAT66 source rule with negation source/destination prefix causes `TypeError`
- T5637 (bug): Firewall default-action log
- T5796 (bug): Openconnect - HTTPS security headers are missing

### 3.1.101 2023-12-20

- T5823 (feature): Protocol BGP add default values for config dictionary
- T5798 (enhancement): reverse-proxy load-balancing service should support multiple certificates for frontend

### 3.1.102 2023-12-19

- T5828 (default): Fix GRUB installation on arm64

### 3.1.103 2023-12-18

- T5751 (feature): Adjust new image tools for non-interactive use
- T5831 (feature): show system image should reverse order by addition date
- T5825 (bug): image-tools: restore authentication on 'add system image'
- T5821 (bug): image-tools: restore vrf-aware 'add system image'
- T5819 (bug): Don't echo password on install image
- T5806 (bug): Clear old raid data on new install image
- T5789 (bug): image-tools should copy ssh host keys on image update
- T5758 (default): Restore scanning configs when live installing

### 3.1.104 2023-12-15

- T5824 (bug): busybox cannot connect some websites from initramfs
- T5770 (bug): MACsec not encrypting
- T5803 (default): git/github: Adjust configuration for safe and baseline defaults

### 3.1.105 2023-12-14

- T5773 (bug): Unable to load config via HTTP
- T5816 (bug): BGP Large Community List Validation Broken
- T5812 (bug): rollback check max revision number does not work
- T5749 (feature): Show MAC address VRF and MTU by default for "show interfaces"
- T5774 (bug): commit-archive to FTP server broken after update (VyOS 1.5-rolling)
- T5826 (default): Add dmicode as an explicit dependency
- T5793 (default): mdns-repeater: Cleanup avahi-daemon configuration in /etc

### 3.1.106 2023-12-13

- T591 (feature): Support SRv6

### 3.1.107 2023-12-12

- T5815 (enhancement): Add load\_config module

### 3.1.108 2023-12-11

- T5741 (bug): WAN Load Balancing failover route tables aren't created

### 3.1.109 2023-12-10

- T5658 (default): Add VRF support for mtr

### 3.1.110 2023-12-09

- T5808 (bug): op-mode: ipv6 ospfv3 graceful-restart description contains incorrect info
- T5802 (bug): ping (ip or hostname) interface <tab> produces error
- T5747 (feature): op-mode add MAC VRF and MTU for show interfaces summary
- T3983 (bug): show pki certificate Doesn't show x509 certificates

### 3.1.111 2023-12-08

- T5782 (enhancement): Use a single config mode script for https and http-api
- T5768 (enhancement): Remove auxiliary http-api.conf for simplification of http-api config mode script

### 3.1.112 2023-12-04

- T5769 (bug): VTI tunnels lose their v6 Link Local addresses when set down/up

### 3.1.113 2023-12-03

- T5753 (feature): Add VXLAN vnifilter support
- T5759 (feature): Change VXLAN default MTU to 1500 bytes

### 3.1.114 2023-11-27

- T5763 (bug): Fix imprecise check for remote file name in vyos-load-config.py
- T5783 (feature): frr: smoketests must notice any daemon crash

### 3.1.115 2023-11-26

- T5760 (feature): DHCP client custom dhcp-options
- T2405 (feature): archive to GIT or other platform

### 3.1.116 2023-11-25

- T5655 (bug): commit-archive: Ctrl+C should not error out with stack trace, signal should be caught

### 3.1.117 2023-11-24

- T5776 (feature): Enable VFIO support
- T5402 (bug): VRRP router with rfc3768-compatibility sends multiple ARP replies

### 3.1.118 2023-11-23

- T5659 (bug): VPP cannot add interface to dataplane if it already has an address configured

### 3.1.119 2023-11-22

- T5767 (feature): Add reboot and poweroff the system via API
- T5729 (bug): Firewall, nat and policy route - Switch to valueless
- T5681 (feature): Interface match - Simplified and unified cli
- T5643 (feature): NAT - Allow interface groups on nat rules
- T5616 (feature): Firewall mark - Add capabilities for matching firewall mark
- T5590 (default): Firewall "log enable" logs every packet

### 3.1.120 2023-11-21

- T5762 (bug): http: api: smoketests fail as they can not establish IPv6 connection to unicorn backend server

### 3.1.121 2023-11-18

- T1354 (feature): Add support for VLAN-Aware bridges

### 3.1.122 2023-11-16

- T5726 (bug): HTTPS API image cannot be updated
- T5738 (feature): Extend XML building blocks
- T5736 (feature): igmp: migrate "protocols igmp" to "protocols pim"
- T5733 (feature): pim(6): rewrite FRR PIM daemon configuration to `get_config_dict()` and add missing IGMP features
- T5689 (default): FRR 9.0.1 in VyOS current segfaults on `show rpki prefix $prefix`
- T5595 (feature): Multicast - PIM bfd feature enable

### 3.1.123 2023-11-15

- T5695 (feature): Build FRR with LUA scripts `--enable-scripting` option
- T5677 (bug): `show lldp neighbors` generates `TypeError` when neighbor has no ``descr``
- T5728 (bug): Improve compatibility between OpenVPN on VyOS 1.5 and OpenVPN Connect Client
- T5732 (bug): generate firewall rule-resequence drops `geoip country-code` from output
- T5661 (enhancement): Add `show show ssh dynamic-protection attacker` and `show log ssh dynamic-protection`

### 3.1.124 2023-11-13

- T5698 (feature): EVPN ESI Multihoming
- T5563 (bug): container: Container environment variable cannot be set
- T5706 (bug): Systemd-udevd high CPU utilization for multiple dynamic `ppp/l2tp/ipoe` interfaces

### 3.1.125 2023-11-10

- T5727 (bug): validator: Use native URL validator instead of regex-based validator

### 3.1.126 2023-11-08

- T5720 (bug): PPPoE-server adding new interface does not work
- T5716 (bug): PPPoE-server shaper template bug `down-limiter` option does not rely on `fwmark`
- T5702 (feature): Add ability to set `include_ifmib_iface_prefix` and `ifmib_max_num_ifaces` for SNMP
- T5693 (feature): Adding variable `vyos_persistence_dir` (and improve variable `vyos_rootfs_dir`)
- T5648 (bug): ldpd neighbour template errors
- T5564 (bug): Both `show firewall group` and `show firewall summary` fails

- T5559 (feature): Selective proxy-arp/proxy-ndp when doing SNAT/DNAT
- T5541 (bug): Zone-Based Firewalling in VyOS Sagitta 1.4

### 3.1.127 2023-11-07

- T5586 (feature): Disable by default SNMP for Keepalived VRRP

### 3.1.128 2023-11-06

- T5705 (bug): rsyslog - Not working when using facility=all
- T5704 (feature): PPPoE-server add max-starting option
- T5707 (bug): Wireguard peer public key update leaves redundant peers and breaks connectivity

### 3.1.129 2023-11-03

- T5700 (bug): Monitoring telegraf deprecated plugins inputs outputs

### 3.1.130 2023-11-02

- T5701 (feature): Update telegraf package

### 3.1.131 2023-11-01

- T5690 (bug): Change to definition of environment variable 'vyos\_rootfs\_dir' is incorrect

### 3.1.132 2023-10-31

- T5699 (feature): vxlan: migrate "external" CLI know to "parameters external"
- T5668 (feature): Disable VXLAN bridge learning and enable neigh\_suppress when using EVPN

### 3.1.133 2023-10-27

- T5663 (bug): pmacct package contains unwanted data
- T5652 (bug): Config migrate to image upgrade does not properly generate home directory

### 3.1.134 2023-10-26

- T5683 (bug): reverse-proxy pki filenames mismatch
- T5600 (bug): Firewall - Remove or extend constraint on 'interface-name'
- T5598 (bug): unknown parameter 'nf\_contrack\_helper' ignored
- T5571 (bug): Firewall does not delete networks from the table raw
- T4903 (bug): contrack ignore does not support IPv6 addresses
- T4309 (feature): Support network/address-groups and ipv6-network/ipv6-address-groups in contrack ignore
- T5594 (bug): VRRP - Error if using IPv6 Link Local as hello source address
- T5606 (feature): IPSec VPN: Allow multiple CAs certificates
- T5568 (default): Install image from live ISO always defaults boot to KVM entry
- T5558 (default): Update config test to check resulting migrations

### 3.1.135 2023-10-23

- T5299 (bug): QoS shaper ceiling does not work
- T5667 (feature): BGP label-unicast - enable ecmp

### 3.1.136 2023-10-22

- T5254 (bug): Modification of any interface setting sets MTU back to default when MTU has been inherited from a bond
- T5671 (feature): vxlan: change port to IANA assigned default port

### 3.1.137 2023-10-21

- T5670 (bug): bridge: missing member interface validator
- T5617 (feature): Add an option to exclude single values to the numeric validator

### 3.1.138 2023-10-20

- T5233 (bug): Op-mode flow-accounting netflow with disable-imt errors
- T5232 (bug): Flow-accounting uacctd.service cannot restart correctly

### 3.1.139 2023-10-19

- T4913 (default): Rewrite the wireless op mode in the new style

### 3.1.140 2023-10-18

- T5642 (bug): op cmd: generate tech-support archive: does not work
- T5521 (bug): Home owner directory changed to vyos for the user after reboot

### 3.1.141 2023-10-17

- T5662 (bug): Fix indexing error in configdep script organization
- T5644 (bug): Firewall groups deletion can break config

### 3.1.142 2023-10-16

- T5165 (feature): Policy local-route ability set protocol and port

### 3.1.143 2023-10-14

- T5629 (bug): Policy local-route bug after migration to destination node address

### 3.1.144 2023-10-12

- T5649 (bug): vyos-1x should generate XML cache after building command templates for less cryptic error on typo

### 3.1.145 2023-10-10

- T5589 (bug): Nonstripped binaries exists in VyOS
- T5489 (feature): Change to BBR as TCP congestion control, or at least make it an config option

### 3.1.146 2023-10-08

- T5630 (feature): pppoe: allow to specify MRU in addition to already configurable MTU

### 3.1.147 2023-10-06

- T5576 (feature): Add bgp remove-private-as all option

### 3.1.148 2023-10-05

- T4320 (default): Remove legacy version files in vyatta-cfg-system/cfg-version

### 3.1.149 2023-10-04

- T5632 (feature): Add jq package to parse JSON files
- T3655 (bug): NAT Problem with VRF
- T5585 (bug): Fix file access mode for dynamic dns configuration

### 3.1.150 2023-10-03

- T5618 (bug): Flow-accounting crashes when IMT is enabled
- T5579 (bug): Log firewall - Wrong command after firewall refactor
- T5561 (feature): NAT - Inbound or outbound interface should not be mandatory
- T5626 (feature): Only select required Kernel CGROUP controllers
- T5628 (feature): op-mode: login: DeprecationWarning: 'spwd'

### 3.1.151 2023-09-28

- T5596 (feature): bgp: add new features from FRR 9
- T5412 (feature): Add support for extending config-mode dependencies in supplemental package

### 3.1.152 2023-09-24

- T5604 (bug): List of debian archives is out of date (non-free-firmware is missing)
- T5591 (feature): Cleanup of FRR daemons-file and various FRR fixes

### 3.1.153 2023-09-22

- T5602 (feature): For reverse-proxy type of load-balancing feature, support "backup" option in backends configuration
- T5609 (enhancement): Add util to get drive device name from id
- T5608 (enhancement): Rewrite add/delete raid member to Python and remove from vyatta-op
- T5607 (bug): Adjust RAID smoketest for non-deterministic SCSI device probing

### 3.1.154 2023-09-20

- T5588 (bug): Add kernel `contrack_bridge` module
- T5241 (feature): Support veth interfaces to working with netns
- T5592 (feature): `salt: upgrade minion to 3005.2`

### 3.1.155 2023-09-19

- T5597 (feature): `isis: add new features from FRR 9.`

### 3.1.156 2023-09-18

- T5575 (bug): `ARP/NDP table-size isnt set properly`

### 3.1.157 2023-09-15

- T5587 (bug): Firewall can not pass the smoketest
- T5581 (feature): Add `"show ip nht"` op-mode command (IPv4 nexthop tracking table)

### 3.1.158 2023-09-11

- T5562 (bug): Smoketests fail for `vyos:current (test_netns.py)`
- T5551 (bug): Missing check for `boot_configuration_complete` raises error in `vyos-save-config.py`
- T5353 (bug): `config-mgmt: normalize archive updates and commit log entries`

### 3.1.159 2023-09-10

- T5555 (bug): Fix timezone migrator (`system 13-to-14`)

### 3.1.160 2023-09-09

- T5423 (bug): `ipsec: no output for op-cmd "show vpn ike secrets"`

### 3.1.161 2023-09-08

- T5560 (bug): VyOS version in current branch should be changed from 1.4 to 1.5

### 3.1.162 2023-09-07

- T5556 (bug): reboot now and poweroff does not work

### 3.1.163 2023-09-06

- T5548 (bug): HAProxy renders timeouts incorrectly

## 3.2 1.4 Sagitta

### 3.2.1 2024-04-25

- T6263 (bug): Multicast: Could not commit multicast config with multicast join group using source-address
- T5833 (bug): Not all AFIs compatible with VRF

### 3.2.2 2024-04-24

- T6255 (bug): Static table description should not contain white-space
- T6226 (feature): add HAProxy `tcp-request content accept` related block to load-balancing reverse proxy config
- T6109 (bug): remote syslog do not get all the logs
- T6217 (feature): VRRP contrack-sync script change name of the logger
- T6244 (feature): Spacing of "Show System Uptime" hard to parse

### 3.2.3 2024-04-23

- T6260 (bug): image-tools: remove failed image directory if 'No space left on device' error
- T6261 (default): Typo in op\_mode connect\_disconnect print statement for check\_ppp\_running
- T6237 (feature): IPSec remote access VPN: ability to set EAP ID of clients

### 3.2.4 2024-04-22

- T5996 (bug): unescape backslashes for config save, compare commands
- T6103 (bug): DHCP-server bootfile-name double slash syntax weird behaviour
- T6080 (default): Default NTP server settings
- T5986 (bug): Container: Error on commit when environment variable value contains \n line break

### 3.2.5 2024-04-21

- T6191 (bug): Policy Route TCP-MSS Behavior Different from 1.3.x
- T5535 (feature): disable-directed-broadcast should be moved to firewall global-options

### 3.2.6 2024-04-20

- T6252 (bug): gre tunnel - doesn't allow configure jumbo frame more than 8024

### 3.2.7 2024-04-19

- T6221 (bug): Enabling VRF breaks connectivity
- T6035 (bug): QoS policy shaper queue-type random-detect requires limit avpkt
- T6246 (feature): Enable basic haproxy http-check configuration options
- T6242 (feature): Loadbalancer reverse-proxy: SSL backend skip CA certificate verification

### 3.2.8 2024-04-17

- T6168 (bug): add system image does not set default boot to current console type in compatibility mode
- T6243 (bug): Update vyos-http-api-tools for package idna security advisory
- T6154 (enhancement): Installer should ask for password twice
- T5966 (default): Adjust dynamic dns configuration address subpath to be more intuitive and other op-mode adjustments
- T5723 (default): mdns repeater: Always reload systemd daemon before applying changes
- T5722 (bug): Failing to add route in failover if gateway not in the same interface network
- T5612 (default): Miscellaneous improvements and fixes for dynamic DNS configuration
- T5574 (default): Support per-service cache management for dynamic dns providers
- T5360 (bug): ddclient generating abuse

### 3.2.9 2024-04-15

- T6100 (bug): NAT config migration error in 1.4.0-epal if invalid address/network defined in 1.3.6 version
- T5734 (bug): OpenVPN server dh-params that are not in PKI error

### 3.2.10 2024-04-14

- T6210 (feature): Add container ability to configure capability sys-nice

### 3.2.11 2024-04-13

- T6173 (bug): Build Causes Errors When "--version" Contains Slashes ("/")
- T2518 (feature): Support NAT for ipv6(NPT)
- T6238 (default): vyos-build Check pull request title requires the python script
- T6235 (default): Git check PR status: conflicts and resolution

### 3.2.12 2024-04-12

- T5872 (default): ipsec remote access VPN: support dhcp-interface
- T6216 (bug): Upgrade error from 1.3 to 1.4 - Firewall using character '+'
- T6214 (bug): Error when using some constraints
- T6213 (bug): Firewall group constraints
- T6148 (bug): Reset vpn ipsec command breaks tunnel and does not reset SAs that are down
- T1487 (default): DNS (pdns\_recursor) stats logs not saved to disk
- T6222 (bug): VRRP rfc3768-compatibility not working correctly when resulting interface name is over 15 characters
- T6218 (bug): Container network interface in VRF fails to generate IPv6 link-local address
- T5959 (default): Streamline dns forwarding service
- T5846 (default): Refactor and simplify DUID definition in conf-mode
- T5631 (feature): Ability to export the current configuration in JSON format
- T5615 (default): Narrow down spurious name conflict with mdns
- T5530 (default): Add LFA to IS-IS
- T5195 (default): Break up the vyos.util module
- T5124 (bug): Python3 deprecation distutils.version import LooseVersion
- T1871 (feature): add MTU option when configure limiter traffic-policy
- T874 (feature): Support for Two Factor Authentication for CLI access via Google Authenticator/OTP
- T6204 (default): Remove shebang lines from Python modules
- T6166 (bug): Tech support generation error for custom output location
- T6062 (feature): container: add support for image manipulation based on tag name
- T5877 (default): Reduce unnecessary nesting in system domain-search path and improve smoketest

- T5871 (default): ipsec remote access VPN: specify "cacerts" to disambiguate multiple remote access configurations
- T5870 (default): ipsec remote access VPN: add x509 ("pubkey") authentication
- T5772 (default): Require HTTPS API server configurations to include at least one key if key-based auth is used
- T5447 (feature): Allow static MACsec keys with peers
- T4221 (default): Add a template filter for converting scalars to single-item lists
- T3766 (feature): containers: Expanding options for networking and building containers

### 3.2.13 2024-04-11

- T4516 (feature): Rewrite system image manipulation tools in Python
- T4548 (feature): GRUB loader configuration rework
- T3774 (bug): atop logs are not limited in size
- T3574 (default): Add constraintGroup for combining validators with logical AND
- T3474 (default): Revisit storing syntax version of interface definitions in XML file
- T160 (feature): Support NAT64
- T6228 (bug): Cleanup of not existing units

### 3.2.14 2024-04-10

- T6207 (bug): image-tools: restore ability to copy config.boot.default on image install
- T5750 (bug): Upgrade from 1.3.4 to 1.4 Rolling fails QoS
- T5858 (bug): Show conntrack statistics formatting is all over the place
- T4734 (feature): Feature Request: openvpn: add OTP 2FA support

### 3.2.15 2024-04-09

- T3409 (feature): Add back TCP-MSS Clamp to PMTU
- T6121 (feature): Extend service config-sync for sections vpn, policy, vrf

### 3.2.16 2024-04-08

- T6197 (bug): IPoE-server interface client-subnet looks broken or works with the wrong logic
- T6196 (bug): Route-map and summary-only do not work in BGP aggregation at the same time
- T6068 (feature): dhcp server: allow switching between load-balanced and hotspare mode

### 3.2.17 2024-04-07

- T6205 (bug): ipoe: error in migration script logic while renaming mac-address to mac node
- T6039 (bug): cloud-init DNS search-domain causes configuration migration/validation error
- T5862 (bug): Default MTU is not acceptable in some environments
- T6208 (feature): container: rename "cap-add" CLI node to "capability"
- T6188 (feature): Add Firewall Rule Description to "show firewall" commands
- T1244 (default): Support for StartupResync in contrackd

### 3.2.18 2024-04-06

- T6203 (enhancement): Remove obsoleted xml lib
- T6202 (bug): Multi-Protocol BGP is broken by 6PE patch in upstream FRR 9.1

### 3.2.19 2024-04-05

- T6089 (bug): [1.3.6->1.4.0-epa1 Migration] "ospf passive-interface default" incorrectly added
- T2590 (bug): DHCPv6 not updating nameservers and search domains since replacing isc-dhcp-client with WIDE dhcp6c
- T6199 (feature): spring cleaning - drop unused Python imports

### 3.2.20 2024-04-04

- T6119 (default): Use a compliant TOML parser
- T6171 (feature): dhcp server fail-over - Rename fail-over node
- T6115 (bug): Build from Git tags fail
- T5122 (feature): Move "archive-areas" to defaults.toml to support "non-free-firmware" repository
- T5121 (bug): Incorrect "architecture" config loaded
- T4951 (default): Add an op mode exception for cases when operations fail due to insufficient system resources
- T4883 (default): Add a description field for routing tables
- T4796 (bug): build-vyos-image ignores multiple options
- T4795 (feature): Cleanup custom python validators
- T4761 (default): Add a generic URL validator
- T3843 (bug): l2tp configuration not cleared after delete
- T3681 (default): The VMware Tools resume script did not run successfully in this virtual machine.

- T1991 (feature): Rework time services
- T5711 (default): Put the version data file inside the ISO image
- T5672 (default): Remove the old-style command definition importer
- T5639 (default): Group vyos-1x dependencies by their VyOS components and specify their purpose
- T5638 (default): Add support for requiring numeric values to be ranges rather than single numbers
- T5634 (default): Remove support for Blowfish and DES from OpenVPN
- T5605 (default): Do not generate keysize option in OpenVPN configs
- T5582 (default): Add a command to force NTP sync
- T5449 (default): Add options for TCP MSS probing
- T4440 (default): Add OCI compliant image labels to vyos-build and vyos containers
- T671 (enhancement): Identify and remove dead code
- T5109 (feature): Improve OCaml XML validator
- T1449 (feature): Add opportunity to include custom default configs (few) at building

### 3.2.21 2024-04-03

- T6198 (feature): configverify: add common helper for PKI certificate validation
- T6192 (feature): Multi VRF support for SSH

### 3.2.22 2024-04-02

- T6167 (bug): VNI not set on VRF after reboot
- T6151 (default): BGP VRF - Route-leaking not work when the next-hop is a recursive route.
- T6033 (bug): hsflowd fails to start when using a tunnel interface

### 3.2.23 2024-04-01

- T6195 (feature): dropbear: package upgrade 2022.83-1 -> 2022.83-1+deb12u1
- T6193 (bug): dhcp-client: invalid warning "is not a DHCP interface but uses DHCP name-server option" for VLAN interfaces
- T6178 (bug): Reverse-proxy should check that certificate exists during commit

### 3.2.24 2024-03-31

- T6186 (bug): Fix regression in 'set system image default-boot'
- T5832 (feature): Keepalived: Allow using the 'dev' statement on excluded-addresses

### 3.2.25 2024-03-28

- T6147 (bug): Conntrack not working as expected with global state-policy
- T6175 (bug): op-mode: "renew dhcp interface <name>" does not check if it's an actual DHCP interface

### 3.2.26 2024-03-26

- T6066 (bug): Setting same network in different ospf area will raise exception

### 3.2.27 2024-03-25

- T6145 (bug): Service config-sync does not rely on priorities but must

### 3.2.28 2024-03-24

- T6161 (feature): Output container images as JSON
- T6165 (bug): grub: vyos-grub-update failed to start on "slow" systems
- T6085 (bug): VTI interfaces are in UP state by default
- T6152 (bug): Kernel panic for ZimaBoard 232

### 3.2.29 2024-03-23

- T6160 (bug): isis: NameError: name 'process' is not defined
- T6131 (bug): Disabling openvpn interface(s) causes OSPF to fail to load on reboot
- T4022 (feature): Add package nat-rtsp-dkms

### 3.2.30 2024-03-22

- T6136 (bug): Configuring a dynamic address group, config script did not check whether the group was created
- T6130 (bug): [1.3.6->1.4.0-epa2 Migration] BGP "set community" missing
- T6090 (bug): [1.3.6->1.4.0-epa1 Migration] policy route fails due tcp flag case sensitivity
- T6155 (default): ixgbe: failed to initialize because an unsupported SFP+ module type was detected.
- T6125 (feature): Support 802.1ad (0x88a8) vlan filtering for bridge
- T5624 (default): Remove /etc/debian\_version from the image

### 3.2.31 2024-03-21

- T6143 (feature): Increase configuration timeout range for service config-sync

### 3.2.32 2024-03-20

- T6133 (feature): Add domain-name to commit-archive
- T6129 (feature): bgp: add route-map option "as-path exclude all"

### 3.2.33 2024-03-19

- T6127 (bug): Ability to view logs for rules with Offload not functional
- T6138 (bug): Contrack table op-mode fails with flowtable offload entries

### 3.2.34 2024-03-15

- T6118 (feature): radvd: RFC8781: add nat64prefix support

### 3.2.35 2024-03-12

- T6020 (bug): VRRP health-check script is not applied correctly in keepalived.conf
- T5646 (bug): QoS policy limiter broken if class without match
- T2433 (feature): Improve CLI value validator performance
- T1436 (bug): Config entries with default values do not correctly show as changed

### 3.2.36 2024-03-11

- T6098 (bug): Description doesnt seem to allow for non international characters
- T6070 (bug): bnx2x NIC causes a commit error due to incorrect implementation of EEE status reading
- T2998 (bug): SNMP v3 oid "exclude" option doesn't work
- T6107 (bug): Nginx does not allow big config queries for configure endpoint API
- T6096 (bug): Config commits are not synced properly because 00vyos-sync is deleted by vyos-router
- T6093 (bug): Incorrect dhcp-options vendor-class-id regex
- T6083 (feature): ethtool: move string parsing to JSON parsing
- T6069 (bug): HTTP API segfault during concurrent configuration requests
- T6057 (feature): Add ability to disable syslog for contrackd
- T5504 (feature): Keepalived VRRP ability to set more than one peer-address
- T5717 (feature): ospfv3 - add allow to set metric-type to ospf redistribution while frr docs says its possible.

- T6071 (bug): firewall: CLI description limit of 256 characters cause config upgrade issues

### 3.2.37 2024-03-08

- T6086 (bug): NAT does not work with network-groups
- T6094 (bug): Destination Nat not Making Firewall Rules
- T6061 (bug): connection-status nat destination firewall filter not working in 1.4.0-epal
- T6075 (bug): Applying firewall rules with a non-existent interface group

### 3.2.38 2024-03-07

- T6104 (bug): Regression in commit-archive for non-interactive configuration
- T6084 (bug): OpenNHRP DMVPN configuration file clean after reboot if we have any IPSec configuration
- T5348 (bug): Service config-sync can freeze the secondary router if it has commit-archive location
- T6073 (bug): Contrack/NAT not being disabled when VRFs are defined
- T6095 (default): Tab completion for "set interfaces wireless wlan0 country-code" incorrect country "uk"

### 3.2.39 2024-03-06

- T6079 (bug): dhcp: migration fails for duplicate static-mapping

### 3.2.40 2024-03-05

- T5903 (bug): NHRP don't start on reboot from version 1.5-rolling-202401010026
- T2447 (feature): Additional Boot Argument Configuration to limit CPU C-States

### 3.2.41 2024-03-04

- T6054 (bug): load-balancing wan - doesn't configure a list of ports
- T6087 (feature): ospfv3: add support to redistribute IS-IS routes

### 3.2.42 2024-03-02

- T6081 (bug): QoS policy shaper target and interval wrong calculations

### 3.2.43 2024-02-29

- T6078 (feature): Update ethtool to 6.6
- T6077 (feature): banner: implement ASCII contest winner default logo
- T6074 (feature): container: do not allow deleting images which have a container running

### 3.2.44 2024-02-28

- T6055 (bug): PKI error: "failed to install x value" when executed the command from conf mode
- T4270 (bug): dns forwarding - When "ignore-hosts-file" is unset, local hostname of router resolves to 127.0.1.1

### 3.2.45 2024-02-27

- T6065 (bug): Duplicate lines in build-vyos-image script cause sagitta build to fail
- T5080 (bug): Conntrack enabled by default

### 3.2.46 2024-02-26

- T6064 (bug): Can not build VyOS if repository it not cloned to a branch
- T5754 (default): Update to StrongSwan 5.9.11

### 3.2.47 2024-02-25

- T6060 (feature): op-mode: container: support removing all container images at once

### 3.2.48 2024-02-24

- T5909 (bug): Container registry with authentication prevents config load (section container) after reboot

### 3.2.49 2024-02-23

- T5376 (bug): Conntrack FTP helper does not work properly
- T970 (feature): Hostname Support in NAT and Firewall Rules
- T4940 (feature): Interface debugging

### 3.2.50 2024-02-22

- T6048 (bug): Exception in event handler script
- T3902 (bug): Firewall does not load on boot, address-group not found, even though it exists

### 3.2.51 2024-02-21

- T6050 (bug): Wrong scripting commands descriptions in accel-ppp services

### 3.2.52 2024-02-19

- T5971 (default): Create the same view of ppp section for all accel-ppp services
- T6029 (default): Rewrite Accel-PPP services to an identical feature set
- T3722 (bug): op-mode IPsec show vpn ike sa always shows L-TIME 0

### 3.2.53 2024-02-18

- T6043 (bug): VxLAN and bridge error bug
- T6041 (bug): image-tools: install fails from PXE boot into live iso due to restrictive logic

### 3.2.54 2024-02-17

- T5972 (feature): login: add possibility to disable individual local user accounts

### 3.2.55 2024-02-16

- T6009 (bug): Firewall - Time not working properly when not using UTC
- T6005 (bug): Error on adding a wireguard interface to OSPFv3
- T2113 (bug): OpenVPN Options error: you cannot use --verify-x509-name with --compat-names or --no-name-remapping
- T6019 (feature): Bump nftables and libnftnl version
- T3471 (bug): DHCP hook is not able to detect all running DHCP instances
- T6015 (default): "journalctl\_charon" file does not contain data in the generated "ipsec debug-archive" file
- T6001 (default): Add option to enable resolve-via-default

- T5965 (bug): WWAN modems using raw-ip do not work with dhclient/dhcp6c
- T5418 (bug): PPPoE-Server Client IP pool Subnet
- T5245 (bug): Wireless interfaces do not get IPv6 link-local address assigned

### 3.2.56 2024-02-15

- T5977 (bug): nftables: Operation not supported when using match-ipsec in outbound firewall
- T2612 (bug): HTTPS API, changing API key fails but goes through
- T5989 (bug): IP subnets not usable in UPnP ACLs
- T5890 (default): OTP key generation is broken
- T5719 (default): mdns repeater: Add op-mode commands
- T4839 (feature): Dynamic Firewall groups
- T4801 (feature): Support for building AWS-ready ISO
- T3993 (enhancement): Extend HTTP API GraphQL support
- T3991 (bug): PKI operational command return traceback
- T3780 (bug): VTI not being brought down when tunnel is down
- T3001 (feature): Disable spectre mitigation patches from CLI
- T562 (feature): PDNS: Add support for authoritative dns server
- T71 (feature): Add virtual IP and route installation policy options for IPsec
- T5496 (default): `show firewall` error
- T4038 (default): Rewrite `vyatta-image-tools.pl` in Python
- T4997 (default): Add DHCP client user hooks dir
- T775 (feature): Config Sync between two VyOS routers
- T381 (feature): config nodes for EasyRSA CAs
- T118 (feature): Native Zabbix Support

### 3.2.57 2024-02-14

- T6034 (feature): rpki: move file based SSH keys for authentication to PKI subsystem
- T5981 (bug): IPsec site-to-site migrated PKI ca certificates are created with an '@'
- T5930 (bug): vrf - route-leak not work using route-target both command.
- T5709 (bug): IPoE-server fails if next pool mentioned but not defined
- T4119 (bug): Issue with l2tp remote-access ipv6 configuration
- T2044 (bug): RPKI doesn't boot properly
- T6032 (feature): bgp: add EVPN MAC-VRF Site-of-Origin support
- T5960 (default): Rewriting authentication section in accel-ppp services

### 3.2.58 2024-02-13

- T5928 (bug): Configuration fails to load on boot if offloading has VLAN interfaces defined
- T5482 (bug): Chrony NTP Server Fails To Sync Time
- T5064 (bug): Value validation for domain-groups seems to be broken

### 3.2.59 2024-02-12

- T6010 (bug): Support setting multiple values in BGP path-attribute
- T6004 (bug): RPKI is not configured
- T5952 (default): DHCP allow same MAC Address on same subnet
- T5849 (feature): Add SRv6 route commands

### 3.2.60 2024-02-10

- T6023 (bug): rpki: add support for CLI knobs expire-interval and retry-interval
- T1090 (default): Webproxy overhaul

### 3.2.61 2024-02-09

- T6028 (bug): QoS policy shaper wrong class\_id\_max and default\_minor\_id
- T6026 (bug): QoS hide attempts to delete qdisc from devices
- T5788 (feature): frr: update to 9.1 release
- T5703 (bug): QoS config on pppoe interface resets back to fq\_codel after tunnel reboots
- T5685 (feature): Keepalived VRRP prefix is not necessary for the virtual address

### 3.2.62 2024-02-08

- T6014 (feature): Bump keepalived version
- T5910 (bug): Grub problem(?) Serial Console no longer working
- T6021 (bug): QoS r2q wrong calculation

### 3.2.63 2024-02-07

- T6017 (bug): Update vyos-http-api-tools for security advisory
- T6016 (bug): Resolve intermittent failures in cleanup function after failed image install
- T6024 (feature): bgp: add additional missing FRR features
- T6011 (feature): rpki: known-hosts-file is no longer supported by FRR CLI - remove VyOS CLI node

- T5998 (feature): `replay_window` setting under `vpn` in `config`

### 3.2.64 2024-02-06

- T6018 (default): `smoketest`: updating `http-api` framework requires a pause before test
- T5921 (bug): Trying to commit an OpenConnect configuration without any local users results in an exception
- T5687 (feature): Implement ECS settings for PowerDNS recursor

### 3.2.65 2024-02-05

- T5974 (bug): QoS policy shaper is currently miscalculating bandwidth and ceil values for the default class
- T5865 (feature): Rewrite `ipv6 pool` section to `ipv6 named pools` in `Accel-ppp` services

### 3.2.66 2024-02-02

- T5739 (bug): Password recovery does not work if public keys are configured
- T5955 (feature): Rootless containers/set `uid/gid` for container
- T5941 (bug): [1.3.5 -> 1.4.0-RC1 Migration] Orphaned Configuration Nodes Cause Issues
- T6003 (feature): Add `'show rpki as-number'` and `'show rpki prefix'`
- T5848 (feature): Add `triple-isolate` flow isolation option to CAKE QoS policy

### 3.2.67 2024-02-01

- T5995 (bug): Kernel NIC-drivers for Huawei NICs are not properly enabled
- T5978 (bug): `ethernet: hw-tc-offload` does not actually get enabled on the NIC
- T5979 (enhancement): Add configurable kernel boot parameters
- T5973 (bug): `vrf: RTNETLINK answers: File exists`
- T5967 (bug): Multi-hop BFD connections can't be established; please add `minimum-ttl` option.
- T5619 (default): Update the Intel `ixgbe` driver due to issues with Intel X533

### 3.2.68 2024-01-31

- T6000 (bug): [1.3.x -> 1.5.x] migrating threw exception in /opt/vyatta/etc/config-migrate/migrate/https/5-to-6, performed workaround
- T5999 (bug): load-balancing reverse-proxy can't configure root as a redirect

### 3.2.69 2024-01-30

- T5980 (feature): Add image-tools support for configurable kernel boot options

### 3.2.70 2024-01-29

- T5988 (bug): image-tools: a check of valid image name is missing from 'add image'
- T5994 (bug): Fix typo in 'remote' module preventing 'add system image' via ftp

### 3.2.71 2024-01-26

- T5957 (bug): Firewall fails to delete inbound-interface name
- T5779 (bug): custom conntrack timeout rule not applicable
- T5984 (feature): Add user util numactl

### 3.2.72 2024-01-25

- T5983 (bug): image-tools: minor regression in pruning version files in compatibility mode
- T5927 (bug): QoS policy shaper-hfsc class does not have a `bandwidth` node but requires one in the check
- T5834 (bug): Rename 'enable-default-log' to 'default-log'

### 3.2.73 2024-01-22

- T5968 (feature): hsflowd: add VRF support
- T5975 (bug): GraphQL expects script otp.py that does not exists in 1.4
- T5961 (bug): QoS policy shaper vif with ceiling fails on commit
- T5958 (bug): QoS policy shaper-hfsc is not implemented
- T5160 (feature): Firewall refactor
- T5969 (feature): op-mode: list multicast group membership

### 3.2.74 2024-01-21

- T5799 (bug): vyos unbootable after 1.4-rolling-202308240020 to 1.5-rolling-202312010026 upgrade
- T5787 (bug): dhcp-server allows duplicate static-mapping for the same IP address
- T5692 (enhancement): NTP leap smear
- T5954 (feature): Enable nvme\_hwmon and drivetemp in KERNEL

### 3.2.75 2024-01-20

- T5915 (bug): Firewall zone - Re add op-mode commands
- T5805 (bug): Missed per-interface statistic in telegraf
- T5724 (feature): About dhcp client hooks
- T5577 (bug): Optimize PAM configs for RADIUS/TACACS+
- T5550 (bug): Source validation on interface does not work properly
- T5267 (bug): Another corruption on upgrade
- T5239 (bug): frr 'hostname' missing or incorrect, and domain-name missing totally
- T5219 (bug): ddclient: Cloudflare doesn't require login
- T5217 (feature): Add firewall SYNPROXY
- T5203 (feature): load-balancing wan add systemd unit instead of old vyatta-wanloadbalance.init
- T5199 (bug): Salt-minion cannot connect to server in python 3.10 and up
- T5138 (feature): Add patch to accel-ppp build L2TP LNS use Calling-Number as RADIUS Calling-Station-ID
- T5054 (bug): ipsec: "show vpn ipsec remote-access" does not list active connections
- T5053 (bug): Vyatta-cfg Post-Removal Hook Tries to Disable Deleted Service
- T5035 (feature): Add more actions to policy route rule
- T4990 (bug): Commit results may not be properly saved if power is cut immediately after a successful commit
- T4988 (default): Expose time and size conversion functions as Jinja2 filters
- T4986 (feature): Ability to filter traffic originating from the router itself via firewall
- T4963 (default): vyos.ethtool: improve/fix driver name detection
- T4935 (bug): ospfv3: "not-advertise" and "advertise" conflict
- T4897 (bug): Setting 'source-address' or `source-interface` on existing vxlan interface doesn't work
- T4888 (default): Rewrite the contrack sync script using vyos.opmode
- T4863 (feature): need an option for route policy to apply to dynamic interfaces l2tp\*/ipoe\*/pppoe\* (for TCP MSS setting)
- T4817 (feature): Please add support for RFC 9234

- T4765 (default): Normalize field names in op mode JSON outputs
- T4751 (enhancement): Feature Request: system login: 2FA OTP key generator in VyOS CLI
- T4726 (default): Add completion and validation for the accel-ppp RADIUS vendor option
- T4722 (default): Improve abbreviation/acronym consistency
- T4172 (feature): Patch ndppd to not read route table if there are no auto prefixes
- T4085 (feature): Rewrite L2TP/PPTP/SSTP/PPPoE services to get\_config\_dict
- T4031 (feature): Ability to configure DMVPN in vrf
- T4030 (bug): SR-IOV and interface renaming bug
- T4014 (feature): Add “command” and “arg” configuration options for containers
- T3965 (default): arm: Extend configure scripts to allow for arm builds
- T3813 (bug): Some custom sysctl parameters can't be applied bug
- T3778 (bug): Abnormal network communication and settings
- T3591 (bug): OpenVPN with/without VRF not working (NordVPN)
- T3372 (feature): Support public HTTPS repos in live-build
- T5963 (bug): QoS policy shaper rate calculations could be wrong for some ethernet devices
- T5962 (feature): QoS policy set default speed to 100mbit or 1gbit instead of 10mbit
- T5697 (bug): event-handler keep failing
- T4779 (default): Make raw op mode command outputs use bytes for data amount values

### 3.2.76 2024-01-19

- T5897 (bug): VyOS with Cloud-init and VRF sticks at reboot/shutdown process
- T5554 (bug): Disable sudo for PAM RADIUS
- T4754 (default): Improvement: system login: show configured 2FA OTP key
- T5857 (bug): show interfaces wireless info
- T5841 (default): Remove old ssh-session-cleanup.service
- T5543 (bug): Fix source address handling in static joins
- T5884 (default): Minor description fix (op-mode: generate wireguard)
- T5781 (default): Add ability to add additional minisign keys

### 3.2.77 2024-01-18

- T5863 (bug): Failure to Load Config on Recent 1.5 Versions
- T4638 (bug): Deleting a parent interface does not delete its underlying VLAN interfaces
- T5953 (default): Rename 'close\_action' value from `hold` to `trap` in IPSEC IKE
- T905 (bug): The command show remote-config does not work for remote-platform openvpn

### 3.2.78 2024-01-17

- T5923 (bug): Config mode system\_console.py is not aware of revised GRUB file structure
- T4658 (feature): Rename DPD action `hold` to `trap`
- T5932 (bug): 1.4-rolling-202304120317 to 1.4.0-rc1: dynamic dns migration fail

### 3.2.79 2024-01-16

- T5951 (bug): [1.4.0-RC2] show hardware dmi Operational Mode Command Broken
- T5937 (bug): [1.3.5 -> 1.4.0-RC1 Migration] IPv6 BGP Neighbor Peer Groups Missing / Not Migrated
- T5889 (bug): Migration NAT 5-to-6 bug
- T5859 (bug): Invalid format of pool range in accel-ppp services
- T5842 (feature): Rewrite PPTP service to get\_config\_dict
- T5801 (feature): Rewrite L2TP service to get\_config\_dict
- T5688 (default): Create the same view of pool configuration for all accel-ppp services

### 3.2.80 2024-01-15

- T5944 (bug): "reboot in 1" not working
- T5936 (bug): [1.3.5 -> 1.4.0-RC1 Migration] OSPF Passive Interface Configuration Not Working Correctly
- T5247 (bug): the bug of the command "show interfaces system"
- T5901 (bug): Cloud-init and DHCP exit hook errors
- T4856 (bug): DHCP-client exit hook for IPsec is incorrect
- T2556 (bug): "show interfaces vrrp" does not return any interface

### 3.2.81 2024-01-14

- T4428 (feature): Update ddclient to newer version

### 3.2.82 2024-01-12

- T5925 (feature): Containers change systemd KillMode
- T5920 (bug): Quick Start documentation contains error
- T5919 (bug): Firewall - opmode for ipv6
- T5306 (default): bgp config migration failed with v6only option configured with peer-group
- T3429 (bug): Hyper-V integration services not working on VyOS 1.4 (sagitta/current)

### 3.2.83 2024-01-11

- T5896 (bug): Config Error on Boot with Podman and Firewall
- T5532 (bug): After add system image the boot stuck and works again after the second reboot
- T5512 (bug): build linux-firmware script cannot expand asterisks if firmware name is a glob string
- T5379 (bug): show system updates doesnt seem to be working
- T5275 (default): Add op mode commands for exporting certificates to PEM files with correct headers
- T5274 (default): Add a deprecation warning for OpenVPN site-to-site with pre-shared secret
- T5262 (default): Warn the user about unsaved config on reboot/shutdown attempts
- T5257 (feature): Cannot assign netflow source ip to ip in non default VRF
- T5026 (feature): Python3 modules crypt and spwd are deprecated
- T5814 (bug): VyOS 1.3 to 1.4 LTS Firewall ruleset migration script breaks configuration
- T4610 (bug): Firewall with 20K entries cannot load after reboot
- T3191 (bug): PAM RADIUS freezing when accounting does not configured on RADIUS server
- T5917 (feature): Restore annotations of (running)/(default boot) in select image list
- T5916 (default): Added segment routing check for index size and SRGB size
- T5913 (feature): Allow for Peer-Groups in ipv4-labeled-unicast SAFI

### 3.2.84 2024-01-10

- T5918 (bug): Verification problem for ``set vpn ipsec interface``
- T5911 (bug): `pki: service update` ignored if certificate name contains a hyphen (-)
- T5886 (feature): Add support for ACME protocol (LetsEncrypt)
- T5766 (bug): `http: rewrite conf-mode script` to `get_config_dict()`
- T5144 (default): Modernize dynamic dns operation
- T4689 (feature): Support RFS(Receive Flow Steering)
- T4659 (feature): Use `vytysh` to display bridge and some interface parameter information
- T4646 (bug): USB serial output console does not work
- T4577 (bug): `WWAN commit` failed which simple config
- T4502 (feature): Consider implementing (NAT/other) flow table offload
- T4446 (default): Unified CLI for displaying neighbors (ARP, IP, and NDP)
- T4427 (default): Remove the `vyos-utils` package list from `vyos-build`
- T4300 (feature): Extend list of supported interfaces for Cloud-init Network Configuration
- T4250 (bug): Organize `logrotate` settings to avoid duplicates
- T4236 (feature): Generate `ovpn` `openvpn` client configuration files
- T4222 (feature): Support for TWAMP as round-trip metric
- T3833 (bug): Cloud-init not finding data source in OpenStack
- T5902 (bug): `http: remove virtual-host` configuration in `webserver`
- T3499 (bug): Podman is not compatible with `nat` rules
- T3430 (bug): Cloud-init failing with “Unable to render networking” on VyOS 1.3
- T3011 (bug): router becomes unreachable for few minutes when `vti` interfaces goes down
- T5791 (default): Update dynamic dns configuration path to be consistent with other areas of VyOS
- T5708 (default): Additional dynamic dns improvements to align with `ddclient` 3.11.1 release
- T5573 (bug): Fix `ddclient` cache entries
- T5012 (feature): Control network configuration from Cloud-Init config
- T3116 (feature): Support back-end L4 level load balancing
- T5614 (default): Add `conntrack` helper matching on firewall
- T4782 (enhancement): Allow multiple CA certificates (on e.g. EAPoL)
- T2199 (default): Rewrite firewall in new XML/Python style

### 3.2.85 2024-01-09

- T5898 (bug): Replace partprobe with partx due to unable to install VyOS
- T5838 (feature): Add Infiniband kernel modules
- T5785 (bug): API output of show container image broken
- T5410 (feature): Improve ``utils.convert.convert_data()`` to process all stdtypes
- T5269 (default): OpenVPN non-TLS site-to-site mode deprecation
- T5249 (feature): Add rollback-soft feature to rollback without a reboot
- T4944 (default): Prevent op mode functions from returning bare literals in raw output
- T4910 (default): Rewrite the remote access VPN op mode in the new style
- T4470 (feature): Rewrite load-balancing wan to XML/Python
- T3763 (bug): wireguard checks if port already binding
- T3489 (bug): NUMA has been disabled for the past few years and no-one has noticed
- T3476 (feature): Update availability check
- T2845 (bug): BGP conf\_mode unable to delete configuration with peer-group
- T2844 (bug): BGP conf\_mode errors disable-send-community
- T2755 (default): Requirements for partial interface setup
- T2721 (enhancement): Set FQ-CoDel as the default queueing mechanism for every class in Shaper
- T2511 (feature): Migrate vyatta-op-quagga to new XML format
- T2302 (default): Convert configuration scripts from executables to modules and use a script runner
- T2281 (feature): DHCP and Static IPs on Same Interface
- T2216 (default): Containerized third-party applications for VyOS
- T2171 (feature): Unify creation and manipulation of interfaces
- T1759 (feature): Replacing Vyatta::Interface perl
- T2408 (enhancement): DHCP Relay upstream and downstream interfaces
- T1297 (feature): Add GARP settings to VRRP/keepalived

### 3.2.86 2024-01-08

- T5888 (bug): Firewall upgrade fails because of icmpv6
- T5844 (bug): HTTPS API doesn't start without configured keys even when GraphQL authentication type is set to token
- T5664 (bug): 1.4 user has no permissions?
- T5215 (default): Add a built-in ICMP health check for VRRP groups
- T5045 (bug): BFD is not starting after upgrade to 1.4-rolling-202302150317
- T4193 (default): Add support for transparent firewall

- T3754 (default): Make config scripts more testable
- T3663 (default): Use inotify file watching where applicable
- T3480 (bug): Does not possible to change console baud-rate
- T2897 (default): Remove cluster command
- T5904 (feature): op-mode: add "show ipv6 route vrf <name> <prefix>" command

### 3.2.87 2024-01-07

- T5891 (bug): OpenVPN IPv6 config issue with 1.4-rc1
- T5887 (feature): Upgrade Linux Kernel to 6.6.y (2023 LTS edition)

### 3.2.88 2024-01-06

- T3670 (feature): Option to disable HTTP port 80 redirect

### 3.2.89 2024-01-05

- T3642 (feature): PKI configuration
- T5894 (feature): Extend get\_config\_dict() with additional parameter with\_pki that defaults to False

### 3.2.90 2024-01-04

- T4072 (feature): Feature Request: Firewall on bridge interfaces
- T3459 (default): Inform the user when unable to install outdated image

### 3.2.91 2024-01-03

- T5880 (bug): verify\_source\_interface should not allow dynamic interfaces like ppp, l2tp, ipoe or sstp client interfaces
- T5879 (bug): tunnel: sourceing from dynamic pppoe0 interface will fail on reboots
- T4500 (bug): Missing firewall logs

### 3.2.92 2024-01-02

- T5885 (default): image-tools: relax restriction on image-name length from 32 to 64

### 3.2.93 2024-01-01

- T5883 (bug): Preserve file ownership in /config subdirs on add system image
- T5474 (feature): Establish common file name pattern for XML conf mode commands

### 3.2.94 2023-12-30

- T5875 (bug): login: removing and re-adding a user keeps the home directory but UID will change, thus SSH keys no longer work
- T5653 (feature): Command to display fingerprint

### 3.2.95 2023-12-29

- T5829 (bug): Can't Add IPv6 Address to Containers
- T5852 (bug): Reboots fail with eapol WAN interface
- T5869 (bug): vyos.template.first\_host\_address() does not honor RFC4291 section 2.6.1

### 3.2.96 2023-12-28

- T4163 (feature): [BMP-BGP] Routing monitoring feature
- T5867 (feature): Upgrade podman to Debian Trixie version 4.7.x
- T5866 (feature): Add op-mode command to restart IPv6 RA daemon
- T5861 (bug): Flavor build system fails with third-party packages
- T5854 (feature): Extend override-default script to allow embedded defaultValue settings
- T5792 (default): Upgrade ddclient 3.11.2 release

### 3.2.97 2023-12-25

- T5855 (feature): Migrate "set service lldp snmp enable" -> `set service lldp snmp`
- T5837 (bug): vyos.configdict.node\_changed does not return keys per adding
- T5856 (bug): SNMP service removal fails

### 3.2.98 2023-12-24

- T5853 (default): Typo interfaces-virtual-ethernet.xml.in

### 3.2.99 2023-12-22

- T5804 (bug): SNAT "any" interface error
- T4760 (bug): VyOS does not support running multiple instances of DHCPv6 clients

### 3.2.100 2023-12-21

- T5778 (bug): The show dhcp server leases operation mode command does not work as expected
- T5775 (default): Migrated Firewall Global State Policy ineffective on latest firewall zone config
- T5637 (bug): Firewall default-action log
- T5796 (bug): Openconnect - HTTPS security headers are missing
- T3580 (feature): Refactoring firewall ipv6 rule icmpv6
- T2898 (feature): Support NDP proxy
- T2229 (feature): PPPoE Default Queue type selection

### 3.2.101 2023-12-20

- T5823 (feature): Protocol BGP add default values for config dictionary
- T5798 (enhancement): reverse-proxy load-balancing service should support multiple certificates for frontend

### 3.2.102 2023-12-19

- T5828 (default): Fix GRUB installation on arm64

### 3.2.103 2023-12-18

- T5751 (feature): Adjust new image tools for non-interactive use
- T5831 (feature): show system image should reverse order by addition date
- T5825 (bug): image-tools: restore authentication on 'add system image'
- T5821 (bug): image-tools: restore vrf-aware 'add system image'
- T5819 (bug): Don't echo password on install image
- T5806 (bug): Clear old raid data on new install image
- T5789 (bug): image-tools should copy ssh host keys on image update
- T5758 (default): Restore scanning configs when live installing

### 3.2.104 2023-12-15

- T5824 (bug): busybox cannot connect some websites from initramfs
- T5803 (default): git/github: Adjust configuration for safe and baseline defaults

### 3.2.105 2023-12-14

- T5773 (bug): Unable to load config via HTTP
- T5816 (bug): BGP Large Community List Validation Broken
- T5812 (bug): rollback check max revision number does not work
- T5749 (feature): Show MAC address VRF and MTU by default for "show interfaces"
- T5774 (bug): commit-archive to FTP server broken after update (VyOS 1.5-rolling)
- T5826 (default): Add dmicode as an explicit dependency
- T5793 (default): mdns-repeater: Cleanup avahi-daemon configuration in /etc

### 3.2.106 2023-12-13

- T591 (feature): Support SRv6

### 3.2.107 2023-12-12

- T4704 (feature): Allow to set metric (MED) to rtt with rtt,+rtt or -rtt
- T5815 (enhancement): Add load\_config module
- T5413 (default): Deny the opportunity to use one public/private key pair on both wireguard peers.

### 3.2.108 2023-12-11

- T5741 (bug): WAN Load Balancing failover route tables aren't created

### 3.2.109 2023-12-10

- T5658 (default): Add VRF support for mtr

### 3.2.110 2023-12-09

- T5808 (bug): op-mode: ipv6 ospfv3 graceful-restart description contains incorrect info
- T5802 (bug): ping (ip or hostname) interface <tab> produces error
- T5747 (feature): op-mode add MAC VRF and MTU for show interfaces summary
- T3983 (bug): show pki certificate Doesn't show x509 certificates

### 3.2.111 2023-12-08

- T5782 (enhancement): Use a single config mode script for https and http-api
- T5768 (enhancement): Remove auxiliary http-api.conf for simplification of http-api config mode script
- T5809 (default): Enable GRUB support for gzip compressed kernels

### 3.2.112 2023-12-04

- T5769 (bug): VTI tunnels lose their v6 Link Local addresses when set down/up

### 3.2.113 2023-12-03

- T5753 (feature): Add VXLAN vnifilter support
- T5759 (feature): Change VXLAN default MTU to 1500 bytes

### 3.2.114 2023-11-30

- T4601 (bug): dhcp : relay agent IP address issue.

### 3.2.115 2023-11-28

- T4276 (bug): IPsec peers dh-group negotiation issue with pfs enabled and multiple proposals configured with IKEv1

### 3.2.116 2023-11-27

- T5763 (bug): Fix imprecise check for remote file name in vyos-load-config.py
- T5783 (feature): frr: smoketests must notice any daemon crash

### 3.2.117 2023-11-26

- T5760 (feature): DHCP client custom dhcp-options
- T2405 (feature): archive to GIT or other platform

### 3.2.118 2023-11-25

- T5655 (bug): commit-archive: Ctrl+C should not error out with stack trace, signal should be caught
- T4946 (default): Rewrite "add system image" in the new op-mode
- T4454 (default): `install-image` should check free storage

### 3.2.119 2023-11-24

- T5776 (feature): Enable VFIO support
- T5402 (bug): VRRP router with rfc3768-compatibility sends multiple ARP replies
- T3895 (default): VYOS firewall rules do not adhere to time schedule unless placed in UTC mode.

### 3.2.120 2023-11-23

- T4891 (bug): BFD flapping loop
- T4867 (bug): "show bgp neighbors ... advertised-routes" and some other commands fail for IPv4 neighbors

### 3.2.121 2023-11-22

- T5767 (feature): Add reboot and poweroff the system via API
- T5729 (bug): Firewall, nat and policy route - Switch to valueless
- T5681 (feature): Interface match - Simplified and unified cli
- T4877 (bug): Need verification in using import vrf and import vpn, export vpn commands
- T4021 (bug): Long commit time on bridge interface with 1-4094 allowed VLAN tags
- T5338 (feature): Add 'mpls bgp forwarding' feature
- T3818 (bug): BGP export route-map only works after bgpd restart
- T5590 (default): Firewall "log enable" logs every packet
- T5426 (default): Add exceptions in vici functions calls

### 3.2.122 2023-11-21

- T5762 (bug): http: api: smoketests fail as they can not establish IPv6 connection to uvicorn backend server

### 3.2.123 2023-11-20

- T2816 (default): Rewrite IPsec scripts with the new XML/Python approach

### 3.2.124 2023-11-18

- T1354 (feature): Add support for VLAN-Aware bridges

### 3.2.125 2023-11-16

- T5726 (bug): HTTPS API image cannot be updated
- T5738 (feature): Extend XML building blocks
- T5736 (feature): igmp: migrate "protocols igmp" to "protocols pim"
- T5733 (feature): pim(6): rewrite FRR PIM daemon configuration to get\_config\_dict() and add missing IGMP features
- T5689 (default): FRR 9.0.1 in VyOS current segfaults on show rpki prefix \$prefix
- T5595 (feature): Multicast - PIM bfd feature enable
- T3638 (bug): Passwords With Dollar Sign Set Incorrectly

### 3.2.126 2023-11-15

- T5695 (feature): Build FRR with LUA scripts --enable-scripting option
- T5665 (bug): radius user not working
- T5728 (bug): Improve compatibility between OpenVPN on VyOS 1.5 and OpenVPN Connect Client
- T5732 (bug): generate firewall rule-resequence drops geoip country-code from output
- T5661 (enhancement): Add show show ssh dynamic-protection attacker and show log ssh dynamic-protection
- T1276 (bug): dhcp relay + VLAN fails

### 3.2.127 2023-11-13

- T5698 (feature): EVPN ESI Multihoming
- T5563 (bug): container: Container environment variable cannot be set
- T5706 (bug): Systemd-udev high CPU utilization for multiple dynamic ppp/l2tp/ipoe interfaces

### 3.2.128 2023-11-10

- T5727 (bug): validator: Use native URL validator instead of regex-based validator

### 3.2.129 2023-11-08

- T5720 (bug): PPPoE-server adding new interface does not work
- T5716 (bug): PPPoE-server shaper template bug down-limiter option does not rely on fwmark
- T5702 (feature): Add ability to set include\_ifmib\_iface\_prefix and ifmib\_max\_num\_ifaces for SNMP
- T5648 (bug): ldpd neighbour template errors
- T5564 (bug): Both show firewall group and show firewall summary fails
- T5559 (feature): Selective proxy-arp/proxy-ndp when doing SNAT/DNAT
- T5541 (bug): Zone-Based Firewalling in VyOS Sagitta 1.4
- T5513 (bug): Anomalies in show firewall command after refactoring
- T4864 (bug): `show firewall` command errors

### 3.2.130 2023-11-07

- T5586 (feature): Disable by default SNMP for Keepalived VRRP

### 3.2.131 2023-11-06

- T5705 (bug): rsyslog - Not working when using facility=all
- T5704 (feature): PPPoE-server add max-starting option
- T5707 (bug): Wireguard peer public key update leaves redundant peers and breaks connectivity
- T4269 (feature): node.def generator should automatically add default values

### 3.2.132 2023-11-05

- T4020 (feature): Add ability to control FRR daemons options

### 3.2.133 2023-11-03

- T5700 (bug): Monitoring telegraf deprecated plugins inputs outputs
- T5018 (bug): Redirect to IFB removed after change in qos policy

### 3.2.134 2023-11-02

- T5701 (feature): Update telegraf package

### 3.2.135 2023-11-01

- T5690 (bug): Change to definition of environment variable 'vyos\_rootfs\_dir' is incorrect

### 3.2.136 2023-10-31

- T5699 (feature): vxlan: migrate "external" CLI know to "parameters external"
- T5668 (feature): Disable VXLAN bridge learning and enable neigh\_suppress when using EVPN

### 3.2.137 2023-10-27

- T5652 (bug): Config migrate to image upgrade does not properly generate home directory
- T4057 (bug): Commit time for deleting sflow configuration ~1.5 min

### 3.2.138 2023-10-26

- T5683 (bug): reverse-proxy pki filenames mismatch
- T4903 (bug): conntrack ignore does not support IPv6 addresses
- T4309 (feature): Support network/address-groups and ipv6-network/ipv6-address-groups in conntrack ignore
- T5606 (feature): IPsec VPN: Allow multiple CAs certificates
- T5650 (default): Progressbars suffer from staircasing effect
- T5568 (default): Install image from live ISO always defaults boot to KVM entry
- T3509 (default): No BCP38 for IPv6 on VyOS

### 3.2.139 2023-10-23

- T5299 (bug): QoS shaper ceiling does not work
- T5667 (feature): BGP label-unicast - enable ecmp
- T5337 (bug): MPLS/BGP: Route leak does not happen from the VPNv4 table to specific vrf

### 3.2.140 2023-10-22

- T5254 (bug): Modification of any interface setting sets MTU back to default when MTU has been inherited from a bond
- T5671 (feature): vxlan: change port to IANA assigned default port

### 3.2.141 2023-10-21

- T5670 (bug): bridge: missing member interface validator
- T5617 (feature): Add an option to exclude single values to the numeric validator
- T5414 (bug): dhcp-server does not allow valid bootfile-names
- T5261 (feature): Add AWS gateway load-balanceing tunnel handler (gwlbun)
- T5260 (bug): Python3 module crypt is deprecated
- T5191 (default): Replace underscores with hyphens in command-line options generated by vyos.opmode
- T5172 (default): Set Python3 version dependency for vyos-1x to 3.10
- T4956 (default): 'show hardware cpu' issue on arm64
- T4837 (default): Expose "show ip route summary" in the op mode API
- T4770 (feature): Rewrite OpenVPN op-mode to vyos.opmode format
- T4657 (bug): op-mode scripts with type hints in `return` do not work
- T4604 (bug): bgpd eats huge amount of memory (about 500Megs a day)
- T4432 (default): Display load average normalized according to the number of CPU cores
- T4416 (default): Convert 'traceroute' operation to the new syntax and expand available options using python
- T4402 (bug): OpenVPN client-ip-pool option is broken
- T3433 (default): A review of the use of racist language in VyOS
- T2719 (feature): Standardized op mode script structure

### 3.2.142 2023-10-20

- T5233 (bug): Op-mode flow-accounting netflow with disable-imt errors
- T5232 (bug): Flow-accounting uacctd.service cannot restart correctly

### 3.2.143 2023-10-19

- T4913 (default): Rewrite the wireless op mode in the new style

### 3.2.144 2023-10-18

- T5642 (bug): op cmd: generate tech-support archive: does not work
- T5521 (bug): Home owner directory changed to vyos for the user after reboot

### 3.2.145 2023-10-17

- T5662 (bug): Fix indexing error in configdep script organization
- T5235 (bug): SSH keys with special characters cannot be applied via Cloud-init

### 3.2.146 2023-10-16

- T5165 (feature): Policy local-route ability set protocol and port

### 3.2.147 2023-10-14

- T5629 (bug): Policy local-route bug after migration to destination node address

### 3.2.148 2023-10-13

- T5227 (feature): mDNS reflector should allow additional domains to browse and allow filtering services
- T5166 (feature): Remove local minisign package from build repo for 1.4
- T5118 (bug): Cleanup vestigial ntp completion script
- T5115 (default): Support custom port for name servers for forwarding zones
- T5113 (default): PDNS: Support custom port for DNS forwarders
- T5112 (feature): Enable support for Network Time Security (NTS) for chrony
- T5143 (enhancement): Apply constraint on powerdns forward-zones configuration

### 3.2.149 2023-10-12

- T5649 (bug): vyos-1x should generate XML cache after building command templates for less cryptic error on typo

### 3.2.150 2023-10-10

- T5489 (feature): Change to BBR as TCP congestion control, or at least make it an config option
- T5479 (bug): Helper leftovers found in nftables (firewall) even with all helpers disabled
- T5436 (bug): vyos-preconfig-bootup.script is missing
- T5014 (feature): Destination NAT - Add Load Balancing capabilities

### 3.2.151 2023-10-08

- T5630 (feature): pppoe: allow to specify MRU in addition to already configurable MTU

### 3.2.152 2023-10-06

- T5096 (feature): Change 'accept' firewall rule action from 'return' to 'accept'
- T5576 (feature): Add bgp remove-private-as all option
- T3506 (default): Migrate loadkey command to op-mode

### 3.2.153 2023-10-05

- T4320 (default): Remove legacy version files in vyatta-cfg-system/cfg-version

### 3.2.154 2023-10-04

- T5632 (feature): Add jq package to parse JSON files
- T3655 (bug): NAT Problem with VRF
- T5585 (bug): Fix file access mode for dynamic dns configuration

### 3.2.155 2023-10-03

- T5618 (bug): Flow-accounting crushes when IMT is enabled
- T5561 (feature): NAT - Inbound or outbound interface should not be mandatory
- T5553 (feature): Firewall - Add action continue
- T5250 (bug): Firewall - show firewall group
- T4383 (bug): Flow Accounting returns permission error and fails to start
- T5626 (feature): Only select required Kernel CGROUP controllers
- T5628 (feature): op-mode: login: DeprecationWarning: 'spwd'

### 3.2.156 2023-10-01

- T936 (feature): Reimplementation of tech-support diagnostic file generation

### 3.2.157 2023-09-30

- T5048 (bug): QoS doesn't work correctly root task
- T4989 (bug): QoS Policy Limiter - classes for marked traffic do not work

### 3.2.158 2023-09-28

- T5596 (feature): bgp: add new features from FRR 9
- T5412 (feature): Add support for extending config-mode dependencies in supplemental package

### 3.2.159 2023-09-26

- T5480 (bug): Ability to disable SNMP for VRRP keepalived service

### 3.2.160 2023-09-25

- T5533 (bug): Keepalived VRRP IPv6 group enters in FAULT state

### 3.2.161 2023-09-24

- T5511 (feature): Cleanup of unused directories (and files) in order to shrink image-size

### 3.2.162 2023-09-23

- T5518 (default): Add MLD protocol support

### 3.2.163 2023-09-22

- T5602 (feature): For reverse-proxy type of load-balancing feature, support "backup" option in backends configuration
- T5609 (enhancement): Add util to get drive device name from id
- T5608 (enhancement): Rewrite add/delete raid member to Python and remove from vyatta-op
- T5607 (bug): Adjust RAID smoketest for non-deterministic SCSI device probing

### 3.2.164 2023-09-20

- T5588 (bug): Add kernel `conntrack_bridge` module
- T5271 (default): Add support for peer-fingerprint to OpenVPN
- T5241 (feature): Support veth interfaces to working with netns
- T5238 (default): interface `virtual-etherne` - error when it doesn't use a peer
- T5592 (feature): `salt: upgrade minion to 3005.2`

### 3.2.165 2023-09-19

- T5597 (feature): `isis: add new features from FRR 9.`
- T4284 (feature): `QoS: rewrite to XML and Python`

### 3.2.166 2023-09-18

- T5419 (feature): `Software/Hardware fastpath with nftables flowtable`

### 3.2.167 2023-09-15

- T5581 (feature): Add `"show ip nht"` op-mode command (IPv4 nexthop tracking table)

### 3.2.168 2023-09-11

- T5567 (bug): `vyos-lx: webproxy: maximum-object-size allowed ranges not in sync with Equuleus`
- T5551 (bug): `Missing check for boot_configuration_complete raises error in vyos-save-config.py`
- T5353 (bug): `config-mgmt: normalize archive updates and commit log entries`
- T3424 (default): `PPPoE IA-PD doesn't work in VRF`
- T2773 (feature): `EIGRP support for VRF`

### 3.2.169 2023-09-10

- T5565 (bug): `Builds as vyos-999-timestamp instead of vyos-1.4-rolling-timestamp`
- T5555 (bug): `Fix timezone migrator (system 13-to-14)`
- T5529 (bug): `Missing symbolic link in linux-firmware package.`

### 3.2.170 2023-09-09

- T5540 (bug): vyos-1x: Wrong VHT configuration for WiFi 802.11ac
- T5423 (bug): ipsec: no output for op-cmd "show vpn ike secrets"
- T3700 (feature): Support VLAN tunnel mapping of VLAN aware bridges

### 3.2.171 2023-09-08

- T5502 (bug): Firewall - wrong parser for inbound and/or outbound interface
- T5460 (feature): Firewall - remove config-trap
- T5450 (feature): Firewall interface group - Allow inverted matcher
- T4426 (default): Add arpwatch to the image
- T4356 (bug): DHCP v6 client only supports single interface configuration

### 3.2.172 2023-09-07

- T5510 (feature): Shrink imagesize and improve read performance by changing mksquashfs syntax

### 3.2.173 2023-09-06

- T5542 (bug): ipoe-server: external-dhcp(dhcp-relay) not woking / not implemented
- T5548 (bug): HAProxy renders timeouts incorrectly
- T5544 (feature): Allow CAP\_SYS\_MODULE to be set on containers

### 3.2.174 2023-09-05

- T5524 (feature): Add config directory to liveCD
- T5519 (bug): Function `call` sometimes hangs
- T5508 (bug): Configuration Migration Fails to New Netfilter Firewall Syntax
- T5495 (feature): Enable snmp module also for frr/ldpd
- T2958 (bug): DHCP server doesn't work from a live CD
- T5428 (bug): dhcp: client renewal fails when running inside VRF

### 3.2.175 2023-09-04

- T5536 (bug): show dhcp client leases causes No module named 'vyos.validate'
- T5506 (bug): Container bridge interfaces do not have a link-local address

### 3.2.176 2023-09-03

- T5538 (bug): Change order within variable lb\_config\_tmpl to fit order of manpage and fix some typos
- T4612 (feature): Support arbitrary netmasks in firewall rules

### 3.2.177 2023-08-31

- T5190 (feature): Cloud-Init cannot fetch Meta-data on machines where the main Ethernet interface is not eth0
- T4895 (bug): Tag nodes are overwritten when configured by Cloud-Init from User-Data
- T4776 (bug): NVME storage is not detected properly during installation
- T5531 (feature): Containers add label option
- T5525 (default): Change dev.packages.vyos.net repo to rolling-packages.vyos.net  
vyos-build:current uses

### 3.2.178 2023-08-30

- T4933 (default): Malformed lines cause vyos.util.colon\_separated\_to\_dict fail with a nondescript error
- T4790 (bug): RADIUS login does not work if sum of timeouts more than 50s
- T4113 (bug): Incorrect GRUB configuration parsing
- T5520 (bug): Likely source of corruption on system update exposed by change in coreutils for Bookworm
- T4151 (feature): IPV6 local PBR Support
- T4485 (default): OpenVPN: Allow multiple CAs certificates

### 3.2.179 2023-08-29

- T3940 (bug): DHCP client does not remove IP address when stopped by the 02-vyos-stopdhclient hook
- T3713 (default): Create a meta-package for user utilities
- T3339 (bug): Cloud-Init domain search setting not applied
- T3577 (bug): Generating vpn x509 key pair fails with command not found

### 3.2.180 2023-08-28

- T4745 (bug): CLI TAB issue with values with '-' at the beginning in conf mode
- T5472 (bug): NAT redirect should not require port

### 3.2.181 2023-08-27

- T4759 (bug): domain-group on policy route not working
- T1097 (feature): Make firewall groups work everywhere that's appropriate

### 3.2.182 2023-08-26

- T5039 (bug): Can't add new local user
- T5023 (bug): PKI commit fails to update dependents
- T4512 (feature): enable-default-log on zone-policy
- T5003 (default): Upgrade base system to Debian 12 "Bookworm"

### 3.2.183 2023-08-25

- T5468 (feature): Remove unused manpages to free up space
- T5463 (feature): Containers allow publish IPv6 address port
- T4412 (bug): commit archive: reboot not working with sftp
- T3702 (feature): Policy: Allow routing by fwmark
- T3536 (default): Unable to list all available routes

### 3.2.184 2023-08-24

- T5448 (feature): Add service zabbix-agent
- T5006 (bug): Http api segfault with concurrent requests
- T5505 (feature): system: zebra route-map is not removed from FRR
- T5305 (bug): REST API configure operation should not be defined as async
- T4292 (feature): Rewrite vyatta-save-config.pl to Python

### 3.2.185 2023-08-23

- T5478 (bug): Cannot configure resolver-cache options for firewall
- T5466 (feature): L3VPN - label allocation mode
- T5453 (bug): Fix nat66 - broken after load-balance was introduced in nat
- T5446 (bug): bgp: validity check for bestpath med option
- T5500 (feature): Minor fixes to configtree render

- T5469 (default): Incorrect dependency set in the openvpn-dco package when building VyOS for arm64
- T5387 (feature): dhcp6c: add a no release option
- T5491 (feature): Hostapd - AP-Mode - allow white-/blacklisting of Clients
- T4889 (default): Add nftables NAT REDIRECT [to localhost] to CLI

### 3.2.186 2023-08-22

- T5407 (bug): Static routes pointed to container networks fail to persist after reboot

### 3.2.187 2023-08-20

- T5470 (bug): wlan: can not disable interface if SSID is not configured

### 3.2.188 2023-08-18

- T5488 (bug): System conntrack ignore does not take any effect

### 3.2.189 2023-08-17

- T4202 (bug): NFT: Zone policies fail to apply when "l2tp+" is in the interface list
- T5409 (feature): Add 'set interfaces wireguard wgX threaded'
- T5476 (feature): netplug: replace Perl helper scripts with a Python equivalent
- T5223 (bug): tunnel key doesn't clear
- T5490 (feature): login: add missing regex for home directory and radius server key

### 3.2.190 2023-08-16

- T5483 (bug): Residual dhcp-server test file causing zabbix-agent smoketest to fail

### 3.2.191 2023-08-15

- T5293 (feature): Support for Floating Rules (Global Firewall-Rules that are automatically applied before all other Zone Rules)
- T5273 (default): Add op mode commands for displaying certificate details and fingerprints
- T5270 (default): Make OpenVPN `tls dh-params` optional

### 3.2.192 2023-08-14

- T5477 (bug): op-mode pki.py should use Config for defaults
- T5461 (feature): Improve rootfs directory variable
- T5457 (feature): Add environmental variable pointing to current rootfs directory
- T5440 (bug): Restore pre/postconfig scripts if user deleted them

### 3.2.193 2023-08-12

- T5467 (bug): ospf(v3): removing an interface from the OSPF process does not clear FRR configuration

### 3.2.194 2023-08-11

- T5465 (feature): adjust-mss: config migration fails if applied to a VLAN or Q-in-Q interface
- T2665 (bug): vyos.xml.defaults for tag nodes
- T5434 (enhancement): Replace remaining calls of vyos.xml library
- T5319 (enhancement): Remove remaining workarounds for incorrect defaults
- T5464 (feature): ipv6: add support for per-interface dad (duplicate address detection) setting

### 3.2.195 2023-08-10

- T5416 (bug): Ignoring "ipsec match-none" for firewall
- T5329 (bug): Wireguard interface as GRE tunnel source causes configuration error on boot

### 3.2.196 2023-08-09

- T5452 (bug): Uncaught error in generate\_cache during vyos-1x build
- T5443 (enhancement): Add merge\_defaults as Config method
- T5435 (enhancement): Expose utility function for default values at path

### 3.2.197 2023-08-07

- T5406 (bug): "update webproxy blacklists" fails when vrf is being configured
- T5302 (bug): QoS class with multiple matches generates one filter rule but expects several rules
- T5266 (bug): QoS- HTB error when match with a dscp parameter for queue-type 'priority'
- T5071 (bug): QoS-Rewrite: DSCP match missing

### 3.2.198 2023-08-06

- T5420 (feature): nftables - upgrade to latest 1.0.8
- T5445 (feature): dyndns: add possibility to specify update interval (timeout)

### 3.2.199 2023-08-05

- T5291 (bug): vyatta-cfg-cmd-wrapper missing `${vyos_libexec_dir}` variable
- T5290 (bug): Failing commits for SR-IOV interfaces using ixgbevf driver due to change speed/duplex settings
- T5439 (bug): Upgrade to FRR version 9.0 added new daemons which must be adjusted

### 3.2.200 2023-08-04

- T5427 (bug): Change migration script len arguments checking

### 3.2.201 2023-08-03

- T5301 (bug): NTP: chrony only allows one bind address
- T5154 (bug): Chrony - multiple listen addresses

### 3.2.202 2023-08-02

- T5374 (feature): Ability to set 24-hour time format
- T5350 (bug): Confusing warning message when committing VRRP config
- T5430 (bug): bridge: vxlan interfaces are not listed as bridgable in completion helpers
- T5429 (bug): vxlan: source-interface is not honored and throws config error
- T5415 (feature): Upgrade FRR to version 9.0
- T5422 (feature): Support LXD Agent

### 3.2.203 2023-08-01

- T5399 (bug): "show ntp" fails when vrf is being configured
- T5346 (bug): MPLS sysctl not persistent for L2TP interfaces
- T5343 (feature): BGP peer group VPNv4 & VPNv6 Address Family Support
- T5339 (feature): Geneve interface - option to use IPv4 as inner protocol
- T5335 (bug): ISIS: error when loading config from file

### 3.2.204 2023-07-31

- T5421 (feature): Add arg to completion helper 'list\_interfaces' to filter out vlan subinterfaces

### 3.2.205 2023-07-29

- T5403 (feature): Add support for extending xml cache

### 3.2.206 2023-07-28

- T4602 (bug): DHCP `ping-check` enabled by default
- T5411 (feature): Remove old background monitoring implementation
- T5317 (enhancement): configtree: remove mutable references
- T5316 (enhancement): configtree: use a single pass of the diff algorithm

### 3.2.207 2023-07-27

- T5368 (feature): FastNetmon service ids ddos-protection add support sflow mode

### 3.2.208 2023-07-26

- T5398 (bug): FRR mangles container network interface names
- T5365 (bug): Container systemd units require authentication
- T4974 (feature): OpenVPN- Data Channel Offload(DCO)

### 3.2.209 2023-07-25

- T5377 (feature): ospf: add graceful restart FRR feature (RFC 3623)

### 3.2.210 2023-07-21

- T5373 (bug): LLDP seems to be running even if its disabled on all interfaces
- T5328 (default): bgp: Incorrect warning showed for address-family configured with neighbor as interface
- T5363 (bug): Bash history file does not exists after reboot and any other file in home directory
- T5385 (bug): reference\_tree: catch parse error on non-transcluded files
- T5361 (bug): "monitor log" behaves like "show log"

### 3.2.211 2023-07-20

- T5362 (bug): ``set high-availability vrrp global-parameters version 3`` seems to have no effect
- T5355 (bug): IPsec: OP cmd : "show vpn ike sa" does not show output
- T5330 (enhancement): Keep track of source of config dict value when merging defaults
- T4497 (feature): ping cannot force ipv4 or ipv6
- T4288 (bug): IPsec tunnel will break when ESP timeout

### 3.2.212 2023-07-19

- T5340 (bug): SNMP and VRF
- T5059 (feature): add 'disable' option to DHCP relay config

### 3.2.213 2023-07-17

- T2051 (bug): Throughput anomalies

### 3.2.214 2023-07-16

- T141 (feature): TACACS+ Support

### 3.2.215 2023-07-15

- T5341 (feature): Improve CLI for high-availability virtual-server to work with multiple ports

### 3.2.216 2023-07-14

- T5358 (bug): 99-ipsec-dhclient-hook prevents DHCP stateless routes from being installed in VRF table
- T4376 (bug): DNAT with multiwan and policy routing, incoming connections only work on primary interface
- T305 (default): loadbalancing does not work with one pppoe connection and another connection of either dhcp or static

### 3.2.217 2023-07-13

- T4713 (bug): `vyos@vyos:~$ show nat destination rules | doesn't work`
- T2315 (feature): Ability to have right address-family for BGP peers.

### 3.2.218 2023-07-12

- T5347 (bug): Compare commit revision bug
- T5161 (default): BFD Static Route Monitoring
- T5105 (bug): DHCP Server - Wrong error message
- T4927 (bug): Need to change restart to reload-or-restart in Webproxy module
- T3835 (bug): `vyos router 1.2.7 snmp Dos bug`
- T5352 (default): Fix missing dependency for netavark
- T4959 (feature): Add container registry authentication config for containers

### 3.2.219 2023-07-11

- T5314 (bug): QOS Default classes are not configured with correct qdisc
- T4862 (bug): `webproxy domain-block` does not work
- T4844 (bug): Incorrect permissions of the safeguard DB directory
- T4815 (bug): Fix various name server config issues
- T4810 (bug): `Op-mode show/monitor log pppoe` interface does not show any logs
- T4758 (feature): Rewrite `show dhcp server` to `vyos.opmode` format
- T4262 (bug): `install image` doesn't respect chosen root partition size
- T3810 (bug): `webproxy squidguard rules` don't work properly after rewriting to `python`.
- T1928 (bug): Is the 'Welcome to VyOS' message when using SSH an information leak?
- T1877 (default): Feature Request: Allow NAT to use network and address groups
- T4813 (feature): L3VPN over GRE Tunnels
- T4943 (bug): Radius SSH login displays "permission denied" on 1.4 rolling release
- T4542 (default): `route-map: "match prefix-len"` incorrect behavior
- T4392 (default): Multiline login banner text reports error on commit

### 3.2.220 2023-07-10

- T5345 (bug): Error incorrectly raised in revised multi\_to\_list when tag node value name == tag node name
- T3578 (bug): Prefix-List(6) update cause empty prefix-list(6)
- T762 (feature): Include rulset in firewall

### 3.2.221 2023-07-06

- T5336 (feature): Add Swedish keyboard-layout

### 3.2.222 2023-07-04

- T5333 (bug): Policy base routing PBR generetes incorrect rules with name POSTROUTING
- T5081 (feature): ISIS and OSPF synchronization with IGP-LDP sync

### 3.2.223 2023-07-03

- T5295 (bug): QoS shaper incorrect rate limit the traffic
- T5334 (feature): ospf: add support for External Route Summarisation Type-5 and Type-7

### 3.2.224 2023-07-02

- T5332 (bug): Show policy route not working when no interface is configured

### 3.2.225 2023-07-01

- T5304 (feature): Containers add bind-propagation option rshared
- T5296 (bug): QoS class cannot calculate correctly the default bandwidth auto
- T5210 (bug): IPSec cosmetic bug for Warning vti inrerface
- T5277 (bug): Dhcpv6-relay does not start on boot

### 3.2.226 2023-06-30

- T5315 (feature): vrrp: add support for version 3
- T5283 (bug): IPoE server assigns network address
- T5313 (bug): UDP broadcast relay - missing verify() that relay interfaces have an IP address assigned

### 3.2.227 2023-06-29

- T5320 (enhancement): Add warning when entering config mode after a boot configuration error

### 3.2.228 2023-06-28

- T1237 (feature): Static Route Path Monitoring, failover

### 3.2.229 2023-06-26

- T5159 (bug): DHCPv6-server leases op-command shows warning message even if configured

### 3.2.230 2023-06-25

- T5240 (bug): Service router-advert failed to start radvd with more than 3 name-servers
- T5312 (bug): Nonescaped special character in help text

### 3.2.231 2023-06-24

- T5303 (bug): Rsyslog.service is not working
- T5298 (bug): Add RFKILL support into kernel.
- T5308 (enhancement): Remove workarounds for incorrect defaults in get\_interface\_dict
- T5228 (enhancement): Simplify get\_config\_dict and add argument with\_defaults
- T5310 (bug): Need some help troubleshooting NIC detection.

### 3.2.232 2023-06-22

- T5297 (default): Utility function to check if config under node has been changed between revisions

### 3.2.233 2023-06-20

- T5300 (bug): verification of port availability can return false negative on boot
- T5248 (feature): Ability to load config via API in JSON format

### 3.2.234 2023-06-19

- T5281 (feature): Add kernel options for vhost-net
- T5072 (default): QoS-Rewrite: protocol name used literally
- T4969 (bug): QoS Policy - Unable to set class match mark number

### 3.2.235 2023-06-18

- T5256 (bug): QoS expects protocol number but not protocol name

### 3.2.236 2023-06-13

- T5258 (bug): git Actions use ubuntu-22.04 instead of deprecated ubuntu-18.04 for PR conflicts checker
- T5222 (feature): Add load-balancing reverse-proxy based on haproxy
- T5213 (feature): Accel-ppp sending accounting interim updates acct-interim-interval option
- T5171 (feature): Use XML for conf-mode "load-balancing wan" instead of legacy templates

### 3.2.237 2023-06-12

- T5282 (bug): Poweroff now does not work
- T5264 (feature): Add Mellanox Technologies firmware flash module mlxfw to kernel
- T5286 (feature): Remove XDP support

### 3.2.238 2023-06-10

- T5231 (feature): Add op-mode for load-balancing reverse-proxy

### 3.2.239 2023-06-09

- T5253 (bug): MPLS config removed at boot when wireguard interfaces present

### 3.2.240 2023-06-05

- T5259 (bug): Openconnect cannot pass migration 1-to-2

### 3.2.241 2023-06-02

- T5252 (bug): Route distinguisher and route targets changing upon adding interface to new VRF
- T5251 (bug): Uncaught errors for functions delete/delete\_value in Python module configtree.py

### 3.2.242 2023-06-01

- T5127 (bug): VPNv4/VPNv6 routes are not reinstalled following link flap

### 3.2.243 2023-05-28

- T5244 (feature): dropbear: update to 2022.83
- T5242 (feature): interfaces: smoketest: automatically detect "capabilities"
- T5234 (feature): Add bash identifier for given VRF instance

### 3.2.244 2023-05-25

- T5237 (feature): interfaces virtual-ethernet - Extend capability of Vlans/QinQ
- T4686 (feature): Provides support for veth

### 3.2.245 2023-05-24

- T4605 (feature): Firewall change default table names
- T4550 (feature): router-advert: Add deprecate-prefix & decrement-lifetimes options

### 3.2.246 2023-05-23

- T4916 (feature): Rewrite IPsec authentication

### 3.2.247 2023-05-22

- T5214 (bug): PPPoE-server incorrect warning if a named pool is defined
- T4977 (feature): Babel routing protocol support

### 3.2.248 2023-05-21

- T4733 (default): Feature Request: dhcp server: add VRF support
- T5218 (enhancement): Revise vyos xml lib for bug fixes and extensions

### 3.2.249 2023-05-17

- T5226 (default): Deduplicate and standardize validators and constraints for hostname and IP address
- T5225 (bug): BGP allowas-in unusable
- T5208 (bug): Failed to start nvmf-autoconnect.service during the boot

### 3.2.250 2023-05-16

- T5194 (default): Add reference tree to vyos1x-config

### 3.2.251 2023-05-15

- T3896 (feature): Extend ocserv support to allow for per-group configs

### 3.2.252 2023-05-12

- T2778 (feature): Migrate "system syslog" to get\_config\_dict() to support new features
- T2769 (feature): Add VRF support for syslog

### 3.2.253 2023-05-10

- T5209 (bug): dhclient load-balancing exit hook 04-dhcp-wanlb returned non-zero exit status
- T5065 (bug): Mixing `destination port xxx` and `destination group port-group yyy` in firewall rules doesn't work, but can be committed
- T5060 (feature): add a VRRP 'maintenance mode'

### 3.2.254 2023-05-09

- T5202 (bug): After removal load-balancing a pid remained which used in dhclient-exit-hooks

### 3.2.255 2023-05-06

- T5206 (bug): `ethtool.py:Ethtool.__init__` has always true conditional due to typo

### 3.2.256 2023-05-05

- T5082 (feature): `container:` switch to netavark network stack

### 3.2.257 2023-05-04

- T5193 (feature): Ability to specify NS records to specify NS servers for subdomains
- T3891 (bug): X550-T2/Possibly other X550/X540 cards no link on VyOS
- T5010 (bug): `bgp:` EVPN route-target not honored
- T5196 (feature): `wwan:` op-mode should inform user if there is no WWAN interface

### 3.2.258 2023-05-03

- T5163 (feature): Policy route-map add match source-protocol

### 3.2.259 2023-05-02

- T5042 (bug): Command `'show vpn ipsec remote-access'` does not work

### 3.2.260 2023-04-27

- T5185 (bug): Static IPv6 route with blackhole fails
- T5175 (bug): `http-api:` error in MultiPart parser for FastAPI version `>= 0.91.0`
- T5183 (bug): IPv6 route6 problem
- T5181 (bug): Wrong dependencies or priorities for zebra vni vrf interfaces and bgpd
- T5128 (feature): Policy route - Allow wildcard interfaces
- T5055 (feature): Firewall - Add packet type matcher (`pkttype`)
- T5050 (feature): Firewall - Add options for logging packets
- T5037 (feature): Firewall - Add queue action
- T5176 (bug): `http-api:` update `vyos-http-api-tools` for FastAPI security vulnerability
- T5174 (bug): `vrf:` ensure no duplicate VNIs can be created
- T5123 (default): Display route originator in `show ospf table` command

### 3.2.261 2023-04-25

- T5179 (bug): multi nodes defined in XML are not properly represented as list in `get_config_dict()`

### 3.2.262 2023-04-17

- T5052 (bug): Error displaying dhcpv6 prefix delegation leases
- T5150 (feature): Rework CLI definitions to apply route-maps between routing daemons and zebra/kernel
- T3734 (bug): Move EVPN VRF up in FRR config

### 3.2.263 2023-04-13

- T5152 (bug): Telegraf agent hostname isn't qualified
- T4727 (feature): Add RADIUS rate limit support to PPTP server
- T4939 (bug): VRRP command no-preempt not work as expected
- T4791 (default): Consistent normalization of 'raw' output of op-mode scripts for CLI and API
- T3608 (default): Standardize warnings from configure scripts

### 3.2.264 2023-04-11

- T4924 (bug): Systemctl strongswan.service for some reason is not disabled
- T4197 (bug): Vyos arm64-latest build issue with telegraf pkg
- T4051 (bug): Connected routes strange / not working

### 3.2.265 2023-04-10

- T5151 (bug): EAP-TLS TLSv1.0/1.1 regression after T5003
- T5148 (bug): OpenVPN cannot start due to could not load plugin shared object / `openvpn-otp.so`
- T5110 (bug): Show frr op-mode vtysh\_pam: Failed in account validation
- T5078 (feature): VyOS BGP does not support 'show bgp neighbors \$NB filtered-routes'
- T5070 (feature): show bgp nexthop unavailable in VRF
- T5061 (bug): All containers restart on config change

### 3.2.266 2023-04-07

- T5149 (bug): op-mode openvpn should not raise error in case interface is disabled

### 3.2.267 2023-04-06

- T5147 (bug): Can't Commit with Container Network
- T5142 (feature): One of the requirements is to use a system auditing tool to monitor and log all security-relevant events.
- T5125 (feature): Add op-mode commands for hsflowd based sflow

### 3.2.268 2023-04-05

- T5145 (feature): Add maxsyslogins maximum number of all logins on system
- T5135 (default): Rewrite opennhrp script using vyos.ipsec library
- T4975 (bug): CLI does not work after cutting off the power or reset
- T5136 (bug): Possible config corruption on upgrade

### 3.2.269 2023-04-04

- T5141 (feature): Add numbers for dhclient-exit-hooks.d to enforce script order execution
- T5093 (bug): Command 'reset vpn ipsec-profile' doesn't work
- T4362 (bug): Wan Load Balancing - Can't create routing tables

### 3.2.270 2023-04-03

- T5139 (feature): IKE life-time should start from 0 for disable rekey
- T4173 (bug): Wan Load Balancing - Error on firewall NAT rules

### 3.2.271 2023-04-02

- T5134 (feature): Try if netavark networks can be moved to a VRF instance

### 3.2.272 2023-04-01

- T5047 (bug): Recreate only a specific container
- T5132 (default): Operational command "show isis vrf XXX route | neighbord" aren't working

### 3.2.273 2023-03-31

- T5129 (feature): Add AWS build flavour
- T5126 (feature): http-api: add 'allow-client' to restrict IP address of client connections

### 3.2.274 2023-03-30

- T5130 (bug): op-mode: drop remaining reference to obsoleted 'show\_interfaces.py'
- T4866 (feature): Rewrite show\_interfaces to standardized form
- T366 (bug): SNMP Query for BGP Tunnels Returns IPv4 Tunnels Only

### 3.2.275 2023-03-29

- T5100 (feature): Update FRR to 8.5
- T5094 (bug): FRR systemd logs unknow key LimitNOFILESoft
- T5085 (bug): ospfv3 route-map not applied in FRR configuration
- T5056 (bug): IPoE server vlan-mon is not working
- T5033 (bug): generate-public-key command fails for address with multiple public keys like GitHub
- T4876 (bug): mpls - LSP broken on FRR 8.4.1
- T5097 (bug): the operational command "show interfaces ethernet ethx" doesn't reflect a call to 'clear counters'
- T5089 (enhancement): Add unit test of config\_diff
- T5088 (enhancement): Add lexicographical-numeric compare function for vytree/configtree
- T5087 (enhancement): Add support for lexical ordering of nodes in config\_tree
- T4885 (feature): Rewrite 'clear interfaces counters' from Perl to Python
- T4846 (bug): L3VPN- network command doesn't install direct connected prefix

### 3.2.276 2023-03-28

- T5043 (feature): Need to create reset command for IKEv2 remote-access vpn connections

### 3.2.277 2023-03-27

- T5099 (feature): IPoE server add option 'next-pool' for named ip pools
- T5106 (feature): Extend generation of API client requests to configsession native functions and composite requests
- T5104 (bug): DHCP default route issues with static routes in VRFs
- T5079 (feature): xml: schema extension to support defaultValues on tagNodes
- T5114 (feature): bgp: implement new CLI commands introduced in FRR 8.5

### 3.2.278 2023-03-23

- T5108 (feature): Get rate limit for L2TP/PPTP/SSTP/IPoE in raw format
- T5086 (feature): Integrate hsflowd for sflow accounting
- T5107 (bug): Raise error in op-mode dns.py instead of calling exit

### 3.2.279 2023-03-22

- T5068 (feature): Generate op-mode API client requests along with schema generation

### 3.2.280 2023-03-21

- T5098 (feature): PPPoE client holdoff configuration
- T3694 (bug): Static routes not installed into kernel nor frr
- T5102 (feature): ospf: "redistribute babel" is always set

### 3.2.281 2023-03-20

- T5057 (bug): IPoE server incorrect interface regex
- T5095 (feature): Return list instead of dict for 'raw' output of op-mode openvpn

### 3.2.282 2023-03-19

- T4925 (feature): Need to add the possibility to configure Pseudo-Random Functions (PRF) in IKEv2

### 3.2.283 2023-03-17

- T5092 (bug): IPoE-server named pool must not rely on the authentication type
- T5091 (bug): IPoE server with RADIUS authentication does not verify radius configuration

### 3.2.284 2023-03-16

- T5073 (bug): IPoE-server interface option failed to parse
- T5063 (bug): IPoE-server ethX vlan must not be used with client-subnet
- T5058 (feature): Extend template filter range\_to\_regex
- T3083 (feature): Add feature event-handler
- T2516 (bug): vyos-container: cannot configure ethernet interface

### 3.2.285 2023-03-13

- T5074 (bug): Show IPSEC SA failed if remote access IKEv2 vpn is used.
- T4973 (bug): show dhcp server leases error for lease time 4294967295

### 3.2.286 2023-03-11

- T5076 (feature): CI/CD: Docker container is bloated by legacy and conflicting dependencies

### 3.2.287 2023-03-09

- T5066 (bug): Different GRE tunnel but same tunnel keys error
- T4952 (feature): Improve interface completion helper CLI experience

### 3.2.288 2023-03-08

- T4381 (default): OpenVPN: Add "Tunnel IP" column in "show openvpn server" operational command
- T4872 (bug): Op-mode show openvpn misses a case when parsing for tunnel IP

### 3.2.289 2023-03-07

- T2838 (bug): Ethernet device names changing, multiple hw-id being added
- T5051 (feature): Use Literal types to provide op-mode CLI choices and API enums
- T4900 (default): Cache intermediary results of get\_config\_diff in Config instance

### 3.2.290 2023-03-05

- T5040 (default): Generate API GraphQL schema on installation, rather than dynamically

### 3.2.291 2023-03-03

- T4625 (enhancement): Update ocserv to current revision (1.1.6)

### 3.2.292 2023-03-02

- T4967 (feature): Ability to set hostname for the container

### 3.2.293 2023-03-01

- T5015 (bug): Invalid format character error at hfsc class settings help text

### 3.2.294 2023-02-28

- T5029 (feature): Nginx change default root directory and fix regex
- T5025 (bug): Time-zone validation failed
- T4955 (bug): Openconnect radiusclient.conf generating with extra authserver
- T4843 (feature): Command-line arguments in container config
- T4219 (feature): support incoming-interface (iif) in local PBR
- T3903 (bug): Containers: after command "reboot" the host system will reboot after 1.5 minutes

### 3.2.295 2023-02-27

- T5028 (feature): Add package exfatprogs to VyOS
- T4985 (bug): reset vpn ipsec-peer command with peer name does not work

### 3.2.296 2023-02-26

- T4979 (feature): Add API request 'show\_user\_info' for UI

### 3.2.297 2023-02-25

- T5008 (bug): MACsec CKN of 32 chars is not allowed in CLI, but works fine
- T5007 (bug): Interface multicast setting is invalid
- T5027 (bug): OpenVPN options and site-to-site cannot pass smoketest
- T4978 (bug): KeyError: 'memory' container\_config['memory'] on upgrading to 1.4-rolling-202302041536
- T5034 (bug): Migrate multicast CLI node to valueLess
- T4948 (feature): pppoe: add CLI option to allow definition of host-uniq flag

### 3.2.298 2023-02-24

- T5030 (bug): HTTPS-API delete key without id error

### 3.2.299 2023-02-23

- T5013 (feature): Extend accelppp.py op-mode to get subnet start stop info from config
- T5002 (feature): Add uk (United Kingdom) keymap

### 3.2.300 2023-02-22

- T5024 (bug): check-qemu-install VM is not shutdown the first time
- T5011 (bug): Some interface drivers don't support min\_mtu and max\_mtu and verify\_mtu check should be skipped

### 3.2.301 2023-02-21

- T5021 (bug): IPsec SA is closed before negotiating a new one or it is negotiated on every second if big life-time is set in swanctl.conf
- T5020 (feature): Extend openvpn.py op-mode to get a list of configured clients

### 3.2.302 2023-02-20

- T5005 (feature): Skip user authentication for PPPoE Server with noauth option

### 3.2.303 2023-02-16

- T4971 (feature): Radius attribute "Framed-Pool" for PPPoE

### 3.2.304 2023-02-15

- T4991 (bug): Restore path level information to compare output

### 3.2.305 2023-02-14

- T4968 (bug): VPN IPsec check dpd and close action for empty values
- T1993 (feature): Extended pppoe rate-limiter

### 3.2.306 2023-02-13

- T4905 (feature): Convert show nhrp tunnel to tabulate format
- T4153 (bug): Monitor bandwidth-test initiate not working

### 3.2.307 2023-02-12

- T4998 (bug): pppoe username validation too restrictive (regression)

### 3.2.308 2023-02-11

- T2603 (feature): pppoe-server: reduce min MTU

### 3.2.309 2023-02-10

- T4857 (feature): SNMP - Implement FRR SNMP recommendations
- T4995 (feature): pppoe, wwan and sstp-client - rename user -> username on authentication

### 3.2.310 2023-02-07

- T4980 (bug): chrony not listening as a server
- T4868 (bug): L2TP ppp-options ipv6 does not work without ipv6 pool but should
- T4117 (bug): Does not possible to configure PoD/CoA for L2TP vpn

### 3.2.311 2023-02-01

- T4970 (default): pin OCaml pcre package to avoid JIT support

### 3.2.312 2023-01-31

- T4964 (bug): FRR bgp address-family l2vpn-evpn route-target export/import not working
- T4780 (feature): Firewall - Add interface group
- T4157 (default): Add jinja2 to pip test requirements

### 3.2.313 2023-01-30

- T4958 (feature): Add OpenConnect RADIUS Accounting support
- T4954 (bug): DNS cannot be configured via Network-Config v1 received from ConfigDrive / Cloud-Init
- T4118 (default): IPsec syntax overhaul

### 3.2.314 2023-01-29

- T4965 (default): empty description in firewall group causes configuration error on migration

### 3.2.315 2023-01-28

- T4961 (bug): Uncaught configtree error allows ntp migration 1-to-2 to fail silently on config.boot.default

### 3.2.316 2023-01-27

- T4960 (bug): Bugs in `cc\_vyos.py` code (Cloud-Init)

### 3.2.317 2023-01-26

- T4886 (feature): Firewall and Policy - Add connection mark
- T4957 (bug): config-mgmt should not attempt to archive config at boot
- T4962 (bug): Fix typo in regex in vyos.config\_mgmt compare function
- T4912 (default): Rewrite the IGMP op mode in the new style

### 3.2.318 2023-01-25

- T4941 (bug): Accel-ppp IPoE incompatibility with kernel 6.1

### 3.2.319 2023-01-24

- T4947 (feature): Support mounting container volumes as ro or rw

### 3.2.320 2023-01-23

- T4798 (default): Migrate the file-exists validator away from Python
- T4683 (enhancement): Add kitty-terminfo package to build
- T4953 (bug): Remove convert\_kwargs\_to\_snake\_case decorator in dynamic generation of GraphQL resolvers
- T4875 (default): Replace Python validator 'interface-name' to avoid Python startup cost
- T4664 (bug): Add validation to reject whitespace in tag node value names

### 3.2.321 2023-01-22

- T4906 (bug): ipsec connections shows only one connection as up

### 3.2.322 2023-01-21

- T4799 (bug): PowerDNS >= 4.7 does not get reloaded by vyos-hostsd
- T4878 (bug): Any interface bonding changes cause interface flapping
- T4387 (default): Create additional smoketests for multiwan PBR & load-balanced configurations

### 3.2.323 2023-01-20

- T4551 (bug): IPsec rekeying collisions bug
- T4942 (feature): Rewrite vyatta-config-mgmt to Python/XML

### 3.2.324 2023-01-17

- T4938 (bug): Interface input ifb does not work
- T4902 (bug): snmpd: exclude container storage from monitoring
- T4140 (bug): Lack of SNMP IANA mibs

### 3.2.325 2023-01-15

- T4832 (feature): dhcp: Add IPv6-only dhcp option support (RFC 8925)
- T4937 (feature): ocserv: upgrade package to version 1.1.6
- T4918 (bug): Odd show interface behavior
- T3008 (feature): Migrate from ntpd to chronyd

### 3.2.326 2023-01-13

- T4911 (default): Rewrite the LLDP op mode in the new format
- T4928 (feature): Upgrade Linux Kernel to 6.1.y (2022 LTS edition)

### 3.2.327 2023-01-12

- T4934 (bug): ospf: Fix inter-area route summarization
- T4929 (feature): Update Intel QAT drivers to 4.20.0-00001

### 3.2.328 2023-01-10

- T4880 (feature): Expose 'add/delete container image' in HTTP-API

### 3.2.329 2023-01-09

- T4922 (feature): Add ssh-client source-interface CLI option
- T4524 (bug): Squid webproxy not working properly

### 3.2.330 2023-01-08

- T4920 (bug): ospf: Fix `passive-interface default` option

### 3.2.331 2023-01-07

- T4884 (bug): Missing a community6 in snmpd config

### 3.2.332 2023-01-05

- T4904 (feature): Allow multiple ports for high-availability virtual-server
- T4789 (feature): Ability to get L2TP/PPTP/SSTP sessions info in a machine readable format
- T3937 (default): Rewrite "show system memory" in Python to make it usable as a library function

### 3.2.333 2023-01-04

- T4848 (bug): Minor bug in OpenConnect server with default route
- T4656 (feature): Support the listen-host config field of openconnect server

### 3.2.334 2023-01-03

- T4907 (bug): nat source translations couldn't show metrics

### 3.2.335 2023-01-02

- T4893 (feature): l2tp add ppp-options IPv6 interface identifier
- T4717 (feature): Connect to console server by name
- T725 (feature): Cake and FQ-PIE

### 3.2.336 2022-12-31

- T4898 (feature): Add mtu config option for dummy interfaces

### 3.2.337 2022-12-30

- T4834 (bug): Limit container network name to 15 characters
- T4901 (bug): Update Podman to v4.3.1
- T4899 (bug): Podman systemd services not being installed correctly

### 3.2.338 2022-12-28

- T4593 (feature): Upgrade strongswan to 5.9.8

### 3.2.339 2022-12-26

- T4511 (bug): IPv6 DNS lookup
- T4809 (feature): radvd: Allow use of AdvRASrcAddress

### 3.2.340 2022-12-25

- T3579 (feature): Rewrite vyatta-contrack in new XML and Python flavour

### 3.2.341 2022-12-24

- T4890 (bug): `show conntrack table ipv4 fail`
- T4879 (bug): IPsec migration failed with missing remote-id
- T4870 (feature): Containers switch to using overlay driver for podman storage

### 3.2.342 2022-12-23

- T4792 (feature): Add SSTP VPN client

### 3.2.343 2022-12-21

- T4887 (bug): Schema generation from op-mode functions should set default 'false' on boolean arguments

### 3.2.344 2022-12-18

- T4882 (bug): Missing ICMPv6 type names in firewall configuration

### 3.2.345 2022-12-15

- T4671 (bug): `linux-firmware` package is missing symlinks defined in `WHENCE` file

### 3.2.346 2022-12-14

- T4881 (bug): Return `opmode.Error` on `openconnect.py show_sessions`

### 3.2.347 2022-12-12

- T4861 (feature): Openconnect restart on adding users - Aborts all active connections

### 3.2.348 2022-12-09

- T4865 (bug): container impossible to generate local image from a file if it requires install some pkgs

### 3.2.349 2022-12-05

- T4860 (bug): Openconnect server incorrect unconfigured check
- T4804 (bug): PPPoE server incorrect unconfigured check
- T4854 (feature): BGP-route reflector allows to apply route-maps

### 3.2.350 2022-12-04

- T4825 (feature): interfaces veth/veth-pairs -standalone used
- T4805 (bug): PPPoE server does not restart service if pool was changed

### 3.2.351 2022-12-02

- T4830 (bug): nat66 - Error in port translation rules
- T4859 (bug): Correct calling of config mode script dependencies from http-api.py
- T4820 (enhancement): Support for inter-config-mode script dependencies
- T4858 (bug): L3VPN- Route Distinguisher notations
- T1024 (feature): Policy Based Routing by DSCP

### 3.2.352 2022-12-01

- T4841 (feature): add fan control
- T4847 (bug): Correct calling of config mode script dependencies from pki.py

### 3.2.353 2022-11-29

- T4842 (bug): Routing config broken if mpls config exists
- T4845 (default): Add smoketest to detect cycles in config-mode script dependency calls

### 3.2.354 2022-11-27

- T4739 (feature): ISIS and OSPF segment routing being refactored

### 3.2.355 2022-11-24

- T4794 (bug): show firewall name <name> - Can't use .items() on a list
- T4714 (feature): Delete unused ipset from the filecaps
- T3541 (bug): Route Map large community set additive is missing

### 3.2.356 2022-11-23

- T4836 (feature): Kernel: enable new features like switchdev, ESP in TCP and HSR
- T4835 (bug): SNMPD configuration incorrect for IPv6
- T4819 (feature): Allow printing Warning messages in multiple lines with \n
- T4807 (feature): Need to fix traceroute help completion
- T4660 (feature): Reorganize route map set community CLI
- T4526 (bug): keepalived-fifo.py unable to load config

- T4793 (feature): Create warning message about disable-route-autoinstall when ipsec vti is used
- T4492 (bug): Incorrect list of neighbors in help for "show bgp vrf VRF neighbors"
- T4496 (feature): ping vrf help does not list VRFs

### 3.2.357 2022-11-22

- T4823 (bug): swanctl.conf is broken when ipsec site-to-site peer set.
- T4706 (bug): NAT and NAT66 issues
- T4670 (feature): policy route - Update matching criteria

### 3.2.358 2022-11-21

- T4812 (feature): IPsec ability to show all configured connections
- T4829 (default): Tunnel argument to 'reset\_peer' in ipsec.py should have type hint Optional

### 3.2.359 2022-11-20

- T4827 (bug): route-map issues , not load configuration FRR

### 3.2.360 2022-11-19

- T4826 (bug): Wrong key type is used for SSH SK public keys
- T4720 (feature): Ability to configure SSH HostKeyAlgorithms
- T4828 (default): Raise appropriate op-mode errors in ipsec.py 'reset\_peer'

### 3.2.361 2022-11-18

- T4821 (bug): Correct calling of config mode script dependencies from firewall.py

### 3.2.362 2022-11-17

- T4750 (feature): Support of higher level SSH keys (sk-ssh-ed25519)

### 3.2.363 2022-11-15

- T4808 (feature): Add details of configtree operations to migration log

### 3.2.364 2022-11-12

- T4814 (bug): Regression in bundled powerdns version

### 3.2.365 2022-11-09

- T4800 (bug): undefined var includes\_chroot\_dir in build-vyos-image

### 3.2.366 2022-11-08

- T4771 (feature): Rewrite protocol BGP op-mode to vyos.opmode format
- T4806 (default): Update FRR to 8.4 in 1.4 version

### 3.2.367 2022-11-06

- T4803 (bug): The header 'Authorization' needs to be explicitly allowed in http-api CORS middleware

### 3.2.368 2022-11-05

- T4802 (feature): Ability to define per container shared-memory size

### 3.2.369 2022-11-01

- T4764 (bug): NAT tables vyos\_nat and vyos\_static\_nat not deleting after deleting nat
- T4177 (bug): Strip-private doesn't work for service monitoring

### 3.2.370 2022-10-31

- T4786 (feature): Add package python3-pyhumps
- T1875 (feature): Add the ability to use network address as BGP neighbor (bgp listen range)
- T4785 (feature): snmp: Allow !, @, \* and # in community name
- T4787 (feature): ipsec: add support for road-warrior/remote-access RADIUS timeout

### 3.2.371 2022-10-29

- T4783 (default): Add support for stunnel
- T4784 (feature): Add description node for static route/route6 tagNodes

### 3.2.372 2022-10-28

- T4291 (default): Consolidate component version read/write functions

### 3.2.373 2022-10-27

- T4763 (feature): Change XML for Show nat destination statistics
- T4762 (bug): Show nat rules with empty rules incorrect error
- T4778 (bug): Raise error UnconfiguredSubsystem if op-mode ipsec.py fails initialization

### 3.2.374 2022-10-26

- T4773 (default): Add camel\_case to snake\_case conversion utility

### 3.2.375 2022-10-25

- T4574 (default): Add token based authentication to GraphQL API

### 3.2.376 2022-10-24

- T4772 (default): Return list of dicts in 'raw' output of route.py instead of dict with redundant information

### 3.2.377 2022-10-23

- T3723 (bug): op-mode IPsec show vpn ipsec sa output with underscores

### 3.2.378 2022-10-21

- T4768 (default): Change name of api child node from 'gql' to 'graphql'

### 3.2.379 2022-10-18

- T4684 (feature): Rewrite show ip route by protocol to vyos.opmode format
- T4533 (bug): Radius clients don't have simple permissions
- T4753 (enhancement): Extend automatic generation of schema to query SystemStatus

### 3.2.380 2022-10-17

- T4725 (bug): Unable to reset vpn IPsec peer

### 3.2.381 2022-10-14

- T4672 (bug): RADIUS server disable does not work
- T4749 (enhancement): Use config\_dict for conf\_mode http-api.py

### 3.2.382 2022-10-13

- T4746 (bug): Monitoring nft. table vyos\_filter by default does not exist but telegraf checks this table
- T4744 (bug): BGP directly connected neighbors don't compatible with ebgp-multihop
- T4716 (feature): SSH ability to configure RekeyLimit
- T4343 (default): Expose powerdns network-timeout for service dns forwarding
- T4312 (bug): Telegraf configuration doesn't accept IPs for URL
- T4274 (default): Extend OpenConnect RADIUS Timeout to Permit 2FA Entry

### 3.2.383 2022-10-12

- T4747 (bug): Monitoring influxdb template input exec plugin does not work
- T4740 (bug): Show conntrack table ipv6 fail
- T4730 (bug): Conntrack-sync error - listen-address is not the correct type in config as it should be

### 3.2.384 2022-10-11

- T4742 (bug): Autocomplete in policy route rule x set table / does not show the tables created in the static protocols
- T4741 (bug): set firewall zone Local local-zone failed
- T4680 (bug): Telegraf prometheus-client listen-address invalid format

### 3.2.385 2022-10-10

- T538 (feature): Support for network mapping in NAT

### 3.2.386 2022-10-09

- T4738 (enhancement): Extend automatic generation of schema definition files to native configsession functions; use single resolver/directive

### 3.2.387 2022-10-08

- T4707 (feature): Enable OSPF segment routing

### 3.2.388 2022-10-07

- T4736 (bug): Error on JSON output of API query ShowConfig

### 3.2.389 2022-10-04

- T4708 (bug): 'show nat destination rules' throwing an error
- T4700 (feature): Firewall - Add interface match criteria
- T4699 (feature): Firewall - Add jump action - Add return action
- T4651 (feature): Firewall - Add options to match packet size
- T4702 (bug): Wireguard peers configuration is not synchronized with CLI
- T4685 (bug): Interface does not exist on boot when used as inbound-interface for local policy route
- T4652 (feature): Upgrade PowerDNS recursor to 4.7 series
- T4582 (default): Router-advert: Preferred lifetime cannot equal valid lifetime in PIOs

### 3.2.390 2022-09-29

- T4715 (feature): Auto logout user after a period of inactivity
- T4697 (bug): policy route: Generating ConfigError failes when tcp flag is missing on set tcp-mss rule commit

### 3.2.391 2022-09-27

- T4711 (feature): Ability to terminate user TTY and PTS sessions
- T4557 (feature): fastnetmon: allow configure limits per protocol (tcp, udp, icmp)

### 3.2.392 2022-09-21

- T4678 (feature): Rewrite service ipoe-server to get\_config\_dict
- T4703 (feature): accel-ppp: combine vlan-id and vlan-range into single CLI node

### 3.2.393 2022-09-20

- T4693 (bug): ISIS segment routing was broken...

### 3.2.394 2022-09-17

- T4666 (bug): EAP-TLS no longer allows TLSv1.0 after T4537, T4584
- T4665 (bug): Keepalived cannot use same VRID for VRRPv2 and VRRPv3

### 3.2.395 2022-09-16

- T4698 (enhancement): Drop validator name="range" and replace it with numeric
- T4695 (feature): Add 'es' and 'jp106' keymap option keyboard-layout
- T4669 (enhancement): Extend numeric.ml for inversion of values and range values

### 3.2.396 2022-09-15

- T4679 (bug): OpenVPN site-to-site incorrect check for IPv6 local and remote address
- T4691 (feature): Upgrade Linux Kernel to latest 5.15.y train
- T4630 (bug): Prevent attempts to use the same interface as a source interface for pseudo-ethernet and MACsec at the same time
- T4696 (default): Extend bgp parameters for bgp bestpath peer-type multipath-relax

### 3.2.397 2022-09-12

- T4617 (feature): VRF specification is needed for telegraf prometheus-client listen-address <address>
- T4690 (bug): Update GraphQL resolver for 'SystemStatus' following changes to 'show\_uptime' op-mode script
- T4647 (feature): Add Google Virtual NIC (gVNIC) support
- T4170 (feature): Rename "policy ipv6-route" -> "policy route6"

### 3.2.398 2022-09-09

- T4682 (feature): Rewrite 'show system storage' in standardized format
- T4681 (feature): Complete standardization of show\_uptime.py

### 3.2.399 2022-09-06

- T4640 (enhancement): Integrate op-mode exception hierarchy into API
- T4597 (bug): Check bind port before assign service HTTPS API and openconnect
- T4674 (bug): API should show op-mode error message, if present
- T4673 (bug): op-mode bridge.py should raise error on show\_fdb for nonexistent bridge interface

### 3.2.400 2022-09-05

- T4668 (bug): Adding/removing members from bond doesn't work/results in incorrect interface state
- T4663 (bug): Interface pseudo-ethernet does not change mode
- T4655 (bug): Firewall in 1.4 sets the default action 'accept' instead of 'drop'
- T4628 (bug): ConfigTree() throws ValueError() if tagNode contains whitespaces

### 3.2.401 2022-09-01

- T4606 (bug): monitor nat destination translation shows missing script
- T4435 (bug): Policy route and firewall - error when using undefined group
- T4147 (bug): New Firewall Implementation - proposed changes on group implementation

### 3.2.402 2022-08-31

- T4650 (feature): Rewire show nat translation to vyos.opmode format
- T4644 (bug): Check bind port before assign vpn sstp
- T4643 (bug): Smoketest exclude either sstp or openconnect from pki-misc default listen port
- T4569 (feature): Rewrite show bridge to new format
- T4547 (bug): Show vpn ipsec sa show unexpected prefix 'B' in packets
- T4367 (bug): NAT - Config tmp file not available

### 3.2.403 2022-08-29

- T4645 (bug): show nat source statistics lack argument --family
- T4634 (bug): Bgp neighbor disable-connected-check does not work
- T4631 (feature): Add port and protocol to nat66
- T4623 (feature): Add show contrack statistics
- T4595 (bug): DPD interval and timeout do not work in DMVPN
- T4594 (feature): Rewrite op-mode IPsec to vyos.opmode format
- T4508 (bug): Problem with values of the same environment in different event handlers
- T4653 (bug): Interface offload options are not applied correctly
- T4546 (bug): Does not connect Cisco spoke to VyOS hub.
- T4061 (default): Add util function to check for completion of boot config
- T4654 (bug): RPKI cache incorrect description
- T4572 (bug): Add an option to force interface MTU to the value received from DHCP

### 3.2.404 2022-08-26

- T4642 (bug): proxy: hyphen not allowed in proxy URL

### 3.2.405 2022-08-25

- T4626 (bug): Error showing nat66 source and destination
- T4622 (feature): Firewall allow drop packets by TCP MSS size

### 3.2.406 2022-08-24

- T4641 (bug): prefix-list allows ipv6 prefix as input
- T4633 (feature): Change keepalived to v2.2.7

### 3.2.407 2022-08-23

- T4618 (bug): Traffic policy not set on virtual interfaces
- T4538 (bug): Macsec does not work correctly when the interface status changes.

### 3.2.408 2022-08-22

- T4089 (bug): Show nat destination rules shows ip address instead of interface 'any'
- T4632 (bug): VLAN-aware bridge not working
- T4637 (feature): Upgrade to podman 4.2.0

### 3.2.409 2022-08-20

- T4596 (bug): "show openconnect-server sessions" command does not work in the openconnect module

### 3.2.410 2022-08-19

- T4620 (bug): UPnP does not work due to incorrect template
- T4619 (bug): Static arp is not set if another entry is present
- T4611 (bug): UPnP rule IP should be a prefix instead of an address
- T4614 (feature): OpenConnect split-dns directive

### 3.2.411 2022-08-18

- T4613 (bug): UPnP configuration without listen option fail
- T4570 (bug): Exception when trying to set up VXLAN over Wireguard

### 3.2.412 2022-08-17

- T4598 (feature): nat66 - Add exclude options
- T4480 (default): add an ability to configure squid acl safe ports and acl ssl safe ports

### 3.2.413 2022-08-16

- T4592 (bug): macsec: can not create two interfaces using the same source-interface
- T4584 (bug): hostap: create custom package build
- T4413 (default): Add an API endpoint with basic system stats
- T4537 (bug): MACsec not working with cipher gcm-aes-256

### 3.2.414 2022-08-15

- T4609 (bug): Unable to Restart Container VyOS 1.4
- T4565 (bug): vlan aware bridge not working with - Kernel: T3318: update Linux Kernel to v5.4.205 #249
- T3988 (default): Feature Request: IPsec Multiple local/remote prefix for the tunnel
- T2763 (feature): New SNMP resource request - SNMP over TCP

### 3.2.415 2022-08-14

- T4579 (bug): bridge: can not delete member interface CLI option when VLAN is enabled
- T4421 (default): Add support for floating point numbers in the numeric validator
- T3507 (bug): Bond with mode LACP show u/u in show interfaces even if peer is not configured

### 3.2.416 2022-08-12

- T4603 (feature): Need a config option to specify NAS-IP-Address for vpn l2tp

### 3.2.417 2022-08-10

- T4408 (feature): Add sshguard to protect against brut-forces

### 3.2.418 2022-08-08

- T4586 (feature): Add to NAT66: SNAT destination address and DNAT source address.

### 3.2.419 2022-08-04

- T4257 (feature): Discussion on changing BGP autonomous system number syntax

### 3.2.420 2022-08-02

- T4585 (feature): Rewrite op-mode containers to vyos.opmode
- T4515 (default): Reduce telegraf binary size

### 3.2.421 2022-08-01

- T4581 (bug): 'show system cpu' not working
- T4578 (feature): Rewrite show dns forwarding statistics to new format

### 3.2.422 2022-07-31

- T4580 (bug): Handle the case of op-mode file names with hyphens in GraphQL schema/resolver generation

### 3.2.423 2022-07-30

- T4575 (feature): vyos.util add new wrapper "rc\_cmd" to get the return code and output
- T4562 (feature): Rewrite show vrf to new format
- T4545 (feature): Rewrite show nat source rules
- T4543 (bug): Show source nat statistics shows incorrect interface
- T4503 (default): Prevent op mode scripts from restarting services if there's a commit in progress
- T4411 (feature): Add migration for service monitoring telegraf influxdb

### 3.2.424 2022-07-29

- T4554 (enhancement): Implement GraphQL resolvers for standardized op-mode scripts
- T4518 (feature): Add XML for CLI conf mode load-balancing wan
- T4544 (enhancement): Generate schema definitions from standardized op-mode scripts

### 3.2.425 2022-07-28

- T4531 (bug): NAT op-mode errors with exclude rules
- T3435 (bug): NAT rules show corruption

### 3.2.426 2022-07-27

- T4571 (bug): Sflow with vrf configured does not use vrf to validate agent-address IP from vrf-configured interfaces
- T4552 (bug): Unable to reset IPsec IPv6 peer

### 3.2.427 2022-07-26

- T4568 (bug): show vpn debug peer doesn't work
- T4556 (feature): fastnetmon: Allow configure white\_list\_path and populate with hosts/networks that should be ignored.
- T4495 (feature): Combine BGP reset op commands

### 3.2.428 2022-07-25

- T4567 (default): Merge experimental branch of GraphQL development
- T4560 (bug): VRF and BGP neighbor local-as error
- T4493 (bug): Incorrect help for "show bgp neighbors"
- T1233 (bug): ipsec vpn sa showing down

### 3.2.429 2022-07-22

- T4145 (bug): Contrack table not showing after firewall rewriting

### 3.2.430 2022-07-21

- T4555 (feature): fastnetmon: add IPv6 support
- T4553 (default): Allow to set ban time on ddos-protection configuration

### 3.2.431 2022-07-20

- T4056 (bug): Traffic policy not set in live configuration

### 3.2.432 2022-07-18

- T4523 (feature): OP-mode Extend contrack output to get marks, zones and directions
- T4228 (bug): bond: OS error thrown when two bonds use the same member
- T4539 (feature): qat: update Intel QuickAssist release version 1.7.L.4.16.0-00017
- T4534 (bug): bond: bridge: error out if member interface is assigned to a VRF instance
- T4525 (bug): Delete interface from VRF and add it to bonding error
- T4522 (feature): bond: add ability to specify mii monitor interval via CLI
- T4535 (feature): FRR: upgrade to stable/8.3 version
- T4521 (bug): bond: ARP monitor interval is not configured despite set via CLI
- T4540 (feature): firmware: update to Linux release 20220708

### 3.2.433 2022-07-17

- T4028 (bug): FRR 8.1 routes not being applied to routing table after reboot if an interface has 2 ip addresses

### 3.2.434 2022-07-15

- T4494 (bug): Cannot reset BGP peer within VRF
- T4536 (feature): FRR: move to systemd for daemon control

### 3.2.435 2022-07-14

- T4491 (bug): Use empty string for internal name of root node of config\_tree

### 3.2.436 2022-07-13

- T1375 (feature): Add clear dhcp server lease function

### 3.2.437 2022-07-12

- T4527 (bug): Prevent to create VRF name default
- T4084 (default): Dehardcode the default login banner
- T3948 (feature): IPSec VPN: Add a new option "none" for the connection-type
- T235 (feature): Ability to configure manual IP Rules

### 3.2.438 2022-07-10

- T3836 (bug): Setting a default IPv6 route while getting IPv4 gateway via DHCP removes the IPv4 gateway

### 3.2.439 2022-07-09

- T4507 (feature): IPoE-server add multiplier option for shaper
- T4499 (bug): NAT source translation not showing a single output
- T4468 (bug): web-proxy source group cannot start with a number bug
- T4373 (feature): PPPoE-server add multiplier option for shaper
- T3353 (bug): PPPoE server wrong vlan-range generating config
- T3648 (bug): op-mode: nat rules broken
- T4517 (feature): ip: Add options to enable directed broadcast forwarding

### 3.2.440 2022-07-07

- T4456 (bug): NTP client in VRF tries to bind to interfaces outside VRF, logs many messages
- T4509 (feature): Feature Request: DNS64

### 3.2.441 2022-07-06

- T4513 (bug): Webproxy monitor commands do not work
- T4299 (feature): Firewall - GeoIP filtering

### 3.2.442 2022-07-05

- T4378 (bug): Unable to submit wildcard ("\*.example.com") A or AAAA records in dns forwarder
- T2683 (default): no dual stack in system static-host-mapping host-name
- T478 (feature): Firewall address group (multi and nesting)

### 3.2.443 2022-07-04

- T4501 (bug): Syslog-identifier does not work in event handler
- T3600 (bug): DHCP Interface static route breaks PBR
- T4498 (feature): bridge: Add option to enable/disable IGMP/MLD snooping

### 3.2.444 2022-07-01

- T2455 (bug): No support for the IPv6 VTI
- T4490 (feature): BGP- warning message that AFI/SAFI is needed to establish the neighborhood
- T4489 (bug): MPLS sysctl not persistent for tunnel interfaces

### 3.2.445 2022-06-29

- T4477 (feature): router-advert: support RDNSS lifetime option

### 3.2.446 2022-06-28

- T4486 (bug): Container can't be deleted
- T4473 (bug): Use container network without network declaration error
- T4458 (feature): Firewall - add support for matching ip ttl in firewall rules
- T3907 (feature): Firewall - Set log levels

### 3.2.447 2022-06-27

- T4484 (default): Firewall op-mode summary doesn't correctly handle address group containing ranges

### 3.2.448 2022-06-25

- T4482 (bug): dhcp: toggle of "dhcp-options no-default-route" has no effect
- T4483 (feature): Upgrade fastnetmon to v1.2.2 community edition

### 3.2.449 2022-06-22

- T1748 (feature): vbash: beautify tab completion output/line breaks

### 3.2.450 2022-06-20

- T1856 (feature): Support configuring IPSec SA bytes

### 3.2.451 2022-06-18

- T4467 (bug): Validator Does Not Accept Signed Numbers

### 3.2.452 2022-06-17

- T4209 (bug): Firewall incorrect handler for recent count and time

### 3.2.453 2022-06-16

- T4352 (bug): wan-load balance - priority traffic rule doesn't work

### 3.2.454 2022-06-15

- T4450 (feature): Route-map - Extend options for ip|ipv6 address match
- T4449 (feature): Route-map - Extend options for ip next-hop match
- T990 (feature): Make DNAT/SNAT a valid state in firewall rules.

### 3.2.455 2022-06-12

- T4420 (feature): Feature Request: ocserv: show configured 2FA OTP key
- T4380 (default): Feature Request: ocserv: 2FA OTP key generator in VyOS CLI

### 3.2.456 2022-06-10

- T4365 (bug): NAT - Error on setting up tables
- T4465 (feature): node.def generation misses whitespace on multiple use of <path>

### 3.2.457 2022-06-09

- T4444 (default): sstp: Feature request. Port number changing support
- T2580 (feature): Support for ip pools for ippoe

### 3.2.458 2022-06-08

- T4447 (bug): DHCPv6 prefix delegation `sla-id` limited to 128

### 3.2.459 2022-05-31

- T4212 (default): PermissionError when generating/installing server Certificate (generate pki certificate sign ...)
- T4199 (bug): Commit failed when setting icmpv6 type any
- T4148 (bug): Firewall - Error messages not that clear as it were in old firewall
- T3659 (bug): Configuration won't accept IPv6 addresses for site-to-site VPN tunnel prefixes/traffic selectors

### 3.2.460 2022-05-30

- T4315 (feature): Telegraf - Output to prometheus

### 3.2.461 2022-05-29

- T2473 (feature): Xml for EIGRP [conf\_mode]

### 3.2.462 2022-05-28

- T4448 (feature): rip: add support for explicit version selection

### 3.2.463 2022-05-26

- T4442 (feature): HTTP API add action "reset"

### 3.2.464 2022-05-25

- T4410 (feature): Telegraf - Output to Splunk
- T4382 (bug): Replacing legacy loadFile exposes missing steps in migration scripts and other errors

### 3.2.465 2022-05-21

- T4437 (bug): flow-accounting: support IPv6 flow collectors

### 3.2.466 2022-05-20

- T4418 (feature): Telegraf - output Plugin azure-data-explorer

### 3.2.467 2022-05-19

- T4434 (bug): DMVPN: cisco-authentication password length is 8 characters
- T3938 (default): Rewrite the uptime script in Python to allow using it as a library
- T4334 (default): Make the config lexer reentrant

### 3.2.468 2022-05-17

- T4424 (bug): policy local-route6 shows ipv4 format

### 3.2.469 2022-05-16

- T4377 (default): generate tech-support archive includes previous archives

### 3.2.470 2022-05-12

- T4417 (bug): VRRP doesn't start with contrack-sync
- T4100 (feature): Firewall increase maximum number of rules

### 3.2.471 2022-05-11

- T4405 (bug): DHCP client sometimes ignores `no-default-route` option of an interface

### 3.2.472 2022-05-10

- T4156 (default): Adding DHCP Option 13 (bootfile-size)
- T1972 (feature): Allow setting interface name for virtual\_ipaddress in VRRP VRID

### 3.2.473 2022-05-07

- T4361 (bug): ``vyos.config.exists()`` does not work for nodes with multiple values
- T4354 (bug): Slave interfaces fall out from bonding during configuration change
- T4419 (feature): vrf: support to disable IP forwarding within a given VRF

### 3.2.474 2022-05-06

- T4385 (bug): bgp: peer-group member cannot override remote-as of peer-group

### 3.2.475 2022-05-05

- T4414 (feature): Add route-map "as-path prepend last-as x" option

### 3.2.476 2022-05-03

- T4395 (feature): Extend show vpn debug

### 3.2.477 2022-05-01

- T4369 (bug): OpenVPN: daemon not restarted on changes to "openvpn-option" CLI node
- T4363 (bug): salt-minion: default mine\_interval option is not set
- T4353 (feature): Add Jinja2 linter to vyos-1x build process

### 3.2.478 2022-04-29

- T4388 (bug): dhcp-server: missing constraint on tftp-server-name option
- T4366 (bug): geneve: interface is removed on changes to e.g. description

### 3.2.479 2022-04-28

- T4400 (bug): Container OP mode has delete where show and update should be

### 3.2.480 2022-04-27

- T4398 (bug): IPsec site-to-site generates unexpected passthrough option
- T4397 (feature): arp: migrate static ARP entry configuration to get\_config\_dict() and make it VRF aware
- T4357 (feature): Allow free-form setting of DHCPv6 server options

### 3.2.481 2022-04-26

- T4210 (bug): NAT source/destination negated ports throws an error
- T4235 (default): Add config tree diff algorithm

### 3.2.482 2022-04-25

- T4390 (feature): op-mode: extend "show log" and "monitor log" with additional daemons/subsystems to read journalctl logs
- T4391 (bug): PPPoE: IPv6 not working after system boot

### 3.2.483 2022-04-24

- T4342 (bug): "show ip ospf neighbor address x.x.x.x" gives "unknown command" error

### 3.2.484 2022-04-23

- T4386 (default): Applying limiter on traffic-policy "in" fails, incorrectly reports mirror or redirect policy in use

### 3.2.485 2022-04-22

- T4389 (feature): dhcp: add vendor option support for Ubiquiti Unifi controller

### 3.2.486 2022-04-21

- T4384 (feature): pppoe: replace default-route CLI option with common CLI nodes already present for DHCP

### 3.2.487 2022-04-20

- T4345 (bug): New firewall code does not accept "rate/time interval" syntax used in old config
- T4231 (feature): Feature Request: ocserv: 2FA (password+OTP) support in Openconnect

### 3.2.488 2022-04-19

- T4379 (bug): PPPoE: default-route lost after applying additional static routes
- T4344 (bug): DHCP statistics not matching, conf-mode generates incorrect pool name with dash
- T4268 (bug): Elevated LA while using VyOS monitoring feature

### 3.2.489 2022-04-18

- T4351 (bug): Openvpn conf-mode "openvpn-option" is not respected
- T4278 (default): vyos-vm-images: fix vagrant libvirt box
- T4368 (bug): bgp: AS specified for local as is the same as the remote as and this is not allowed.
- T4370 (feature): vxlan: geneve: support configuration of df bit option

### 3.2.490 2022-04-15

- T4327 (default): Ethernet interface configuration fails on Hyper-V due to speed/duplex/autoneg ethtool command error
- T4364 (feature): salt-minion: Upgrade to 3004 and migrate to get\_config\_dict()

### 3.2.491 2022-04-13

- T4333 (feature): Jinja2: add plugin to test if a variable is defined and not none to reduce template complexity

### 3.2.492 2022-04-08

- T4331 (bug): IPv6 link local addresses are not configured when an interface is in a VRF
- T4347 (default): Return complete and consistent error codes from HTTP API
- T4339 (bug): wwan: tab-completion results in "No such file or directory" if there is no WWAN interface
- T4338 (bug): wwan: changing interface description should not trigger reconnect
- T4324 (bug): wwan: check alive script should only be run via cron if a wwan interface is configured at all

### 3.2.493 2022-04-07

- T4330 (bug): MTU settings cannot be applied when IPv6 is disabled
- T4346 (feature): Deprecate "system ipv6 disable" option to disable address family within OS kernel
- T4319 (bug): The command "set system ipv6 disable" doesn't work as expected.
- T4341 (feature): login: disable user-account prior to deletion and wait until deletion is complete
- T4336 (feature): isis: add support for MD5 authentication password on a circuit

### 3.2.494 2022-04-06

- T4308 (feature): Op-comm "Show log frr" to view specific protocol logs

### 3.2.495 2022-04-04

- T4329 (bug): Bgp policy route-map bug with set several extcommunity rt

### 3.2.496 2022-04-02

- T4335 (bug): open-vmkd fails to build under gcc-10.+

### 3.2.497 2022-04-01

- T4332 (bug): bgp: deterministic-med cannot be disabled while addpath-tx-bestpath-per-AS is in use

### 3.2.498 2022-03-31

- T4326 (feature): Add bgp option no-suppress-duplicates
- T4323 (default): ospf6d crashes on latest vyos nightly

### 3.2.499 2022-03-29

- T3686 (bug): Bridging OpenVPN tap with no local-address breaks
- T3635 (default): Add ability to use mDNS repeater with VRRP

### 3.2.500 2022-03-26

- T4321 (default): Allow BGP neighbors between different VIFs on the same VyOS

### 3.2.501 2022-03-24

- T4301 (bug): The "arp-monitor" option in bonding interface settings does not work
- T4294 (bug): Adding a new openvpn-option does not restart the OpenVPN process
- T4290 (bug): BGP source-interface fails to commit
- T4230 (bug): OpenVPN server configuration deleted after reboot when using a VRRP virtual-address

### 3.2.502 2022-03-23

- T4314 (bug): Latest 1.4 Rolling release config migration error

### 3.2.503 2022-03-21

- T4304 (feature): [OSPF]import/export filter inter-area prefix

### 3.2.504 2022-03-20

- T4298 (default): vyos-vm-images: fix ansible group name and remove obsolete empty command

### 3.2.505 2022-03-18

- T4286 (bug): Fix for firewall ipv6 name address validator

### 3.2.506 2022-03-15

- T4302 (feature): FRRouting upgrade to release 8.2.2
- T4293 (default): Add "set ip-next-hop unchanged" in route-map

### 3.2.507 2022-03-14

- T4275 (default): Incorrect val\_help for local/remote prefix in ipsec vpn

### 3.2.508 2022-03-12

- T4296 (bug): Interface config injected by Cloud-Init may interfere with VyOS native
- T4265 (feature): Add op-mode for bgp flowspec state and routes

### 3.2.509 2022-03-11

- T4297 (bug): Interface configuration saving fails for ice/iavf based interfaces because they can't change speed/duplex settings

### 3.2.510 2022-03-09

- T3981 (feature): VRF support for flow-accounting

### 3.2.511 2022-03-05

- T4259 (bug): The contrackd daemon can be started wrongly

### 3.2.512 2022-03-03

- T4283 (feature): Add support to "reject" routes - emit an ICMP unreachable when matched

### 3.2.513 2022-03-01

- T4277 (feature): flow-accounting: support sending flow-data via VRF interface

### 3.2.514 2022-02-28

- T4273 (bug): ssh: Upgrade from 1.2.X to 1.3.0 breaks config
- T4115 (bug): reboot in <x> not working as expected
- T3656 (bug): IPSec 1.4 : "show vpn ike sa" does not show the correct default ike version

### 3.2.515 2022-02-26

- T4272 (feature): lldp: migrate Python script to use get\_config\_dict()

### 3.2.516 2022-02-24

- T4267 (bug): Error - Missing required "ip key" parameter

### 3.2.517 2022-02-23

- T4194 (bug): prefix-list no check for duplicate entries
- T4264 (bug): vxlan: interface is destroyed and rebuild on description change
- T4263 (bug): vyos.util.leaf\_node\_changed() dos not honor valueLess nodes

### 3.2.518 2022-02-21

- T4120 (feature): [VXLAN] add ability to set multiple unicast-remotes

### 3.2.519 2022-02-20

- T4254 (feature): VPN IPSec charon add options cisco\_flexvpn and install\_virtual\_ip\_on
- T4249 (feature): Add support for device mapping in containers
- T3617 (bug): IPSec 1.4 generate invalid configuration
- T4261 (feature): MACsec: add DHCP client support
- T4203 (bug): Reconfigure DHCP client interface causes brief outages

### 3.2.520 2022-02-19

- T4258 (bug): [DHCP-SERVER] error parameter on Failover

### 3.2.521 2022-02-17

- T4255 (bug): Unexpected print of dict bridge on delete
- T4240 (bug): Cannot add wlan0 to bridge via configure
- T4154 (bug): Error add second gre tunnel with the same source interface

### 3.2.522 2022-02-16

- T4237 (bug): Conntrack-sync error - error adding listen-address command

### 3.2.523 2022-02-15

- T4160 (bug): Firewall - Error in rules that matches everything except something
- T3006 (bug): Accel-PPP & vlan-mon config get invalid VLAN
- T3494 (bug): DHCPv6 leases traceback when PD using
- T1292 (bug): Issues while deleting all rules from a firewall

### 3.2.524 2022-02-13

- T4242 (bug): ethernet speed/duplex can never be switched back to auto/auto
- T4191 (bug): Lost access to host after VRF re-creating

### 3.2.525 2022-02-11

- T3872 (feature): Add configurable telegraf monitoring service

### 3.2.526 2022-02-08

- T4227 (bug): Typo in help completion of hello-time option of bridge interface

### 3.2.527 2022-02-07

- T4233 (bug): ssh: sync regex for allow/deny usernames to "system login"

### 3.2.528 2022-02-06

- T4223 (bug): policy route cannot have several entries with the same table
- T4216 (bug): Firewall: can't use negated groups in firewall rules
- T4178 (bug): policy based routing tcp flags issue
- T4164 (bug): PBR: network groups (as well as address and port groups) don't resolve in `nftables\_policy.conf`
- T3970 (feature): Add support for op-mode PKI direct install into an active config session
- T3828 (bug): ipsec: Subtle change in "pfs enable" behavior from equuleus -> sagitta

### 3.2.529 2022-02-05

- T4226 (bug): VRRP transition-script does not work for groups name which contains -(minus) sign

### 3.2.530 2022-02-04

- T4196 (bug): DHCP server client-prefix-length parameter results in non-functional leases

### 3.2.531 2022-02-03

- T4218 (bug): firewall: rule name is not allowed to start with a number
- T3643 (bug): show vpn ipsec sa doesn't show tunnels in "down" state

### 3.2.532 2022-02-01

- T4224 (bug): Ethernet interfaces configured for DHCP not working on latest rolling snapshot (vyos-1.4-rolling-202201291849-amd64.iso)
- T4225 (bug): Performance degradation with latest rolling release
- T4220 (bug): Commit broke dhclient 78b247b724f74bdabab0706aaa7f5b00e5809bc1
- T4138 (bug): NAT configuration allows to set incorrect port range and invalid port

### 3.2.533 2022-01-28

- T4184 (bug): NTP allow-clients address doesn't work it allows to use ntp server for all addresses
- T4217 (bug): firewall: port-group requires protocol to be set - but not in VyOS 1.3

### 3.2.534 2022-01-27

- T4213 (default): ipv6 policy routing not working anymore
- T4188 (bug): Firewall does not correctly handle conntracking
- T3762 (feature): Support network and address groups for policy ipv6-route
- T3560 (feature): Ability to create groups of MAC addresses
- T3495 (feature): Modernising port/protocol definitions

### 3.2.535 2022-01-25

- T4205 (feature): Disable Debian Version in SSH (DebianBanner->no)
- T4131 (bug): Show firewall group incorrect format members

### 3.2.536 2022-01-24

- T4204 (feature): Update Accel-PPP to a newer revision
- T1795 (default): Commit rollback by timeout

### 3.2.537 2022-01-23

- T4186 (bug): Firewall icmp type - Offered options not supported
- T4181 (bug): Firewall ipv6-network-group - incorrect description on helper

### 3.2.538 2022-01-21

- T4200 (bug): Assigning ipv6-name to interface is not generating nftables rules
- T4144 (bug): Firewall address-group - Improve error messages
- T4137 (bug): Firewall group configuration allows to set incorrect port range and invalid port
- T4133 (bug): Firewall network group error with zone-based firewall rules

### 3.2.539 2022-01-20

- T4171 (bug): Interface config migration error on 1.2.8 -> 1.4 upgrade

### 3.2.540 2022-01-19

- T4195 (feature): [OSPF-ECMP]enable set maximum-path

### 3.2.541 2022-01-18

- T4159 (bug): Empty firewall group (address, network & port) generates invalid nftables config, commit fails
- T4155 (bug): PBR: `set table main` fails in `firewall.py` with newer rolling releases
- T3873 (feature): Zone based Firewall - Filter traffic in same zone
- T3286 (feature): Switch the firewall from iptables to nftables
- T292 (feature): [ZBF] Allow filtering intra zone traffic

### 3.2.542 2022-01-17

- T3164 (bug): console-server ssh does not work with RADIUS PAM auth

### 3.2.543 2022-01-15

- T4183 (feature): IPv6 link-local address not accepted as wireguard peer
- T4150 (bug): VRRP with contrack-sync does not work
- T4110 (feature): [IPV6-SSH/DNS} enable IPv6 link local addresses as listen-address %eth0

### 3.2.544 2022-01-14

- T4182 (bug): Show vrrp if vrrp not configured bug
- T4179 (feature): Add op-mode CLI for show high-availability virtual-server

### 3.2.545 2022-01-13

- T4175 (bug): BGP configuration failed
- T4109 (feature): Extend high-availability/keepalived for support virtual-server lb

### 3.2.546 2022-01-12

- T4174 (bug): Validation fails when entering port range with upper port 65535
- T4162 (bug): VPN ipsec ike-group - Incorrect value help for ikev2-reauth
- T4161 (bug): Policy route-map - Incorrect value help for local preference
- T4152 (bug): NHRP shortcut-target holding-time does not work

### 3.2.547 2022-01-11

- T4149 (bug): [Firewall-IPV6] Error delete Fw rules on VIF/INT
- T3950 (bug): CLI backtrace on update if DNS not defined
- T4166 (bug): Debug output missing when frr.py called under vyos-configd

### 3.2.548 2022-01-10

- T3299 (bug): Allow the web proxy service to listen on all IP addresses
- T3115 (feature): Add support for firewall on L3 VIF bridge interface

### 3.2.549 2022-01-09

- T4142 (bug): Input ifbX interfaces not displayed in op-mode
- T3914 (bug): VRRP rfc3768-compatibility doesn't work with unicast peers

### 3.2.550 2022-01-08

- T4116 (bug): Webproxy/Squid not working with IPv6 listen-address

### 3.2.551 2022-01-07

- T3924 (bug): VRRP stops working with VRF

### 3.2.552 2022-01-06

- T4135 (bug): Declare zone policy firewall without local zone errors
- T4130 (bug): Firewall state policy errors chain
- T4141 (bug): Set high-availability vrrp sync-group without members error

### 3.2.553 2022-01-04

- T4134 (bug): Incorrect firewall protocol completion help uppercase and duplicates
- T4132 (bug): Impossible to show a specific firewall group

### 3.2.554 2022-01-03

- T4126 (feature): Ability to set priority to site to site IPSec vpn tunnels
- T4052 (bug): Validator return traceback on VRRP configuration with the script path not in config dir
- T4128 (bug): keepalived: Upgrade package to add VRF support

### 3.2.555 2021-12-31

- T4081 (bug): VRRP health-check script stops working when setting up a sync group

### 3.2.556 2021-12-30

- T4124 (feature): snmp: migrate to get\_config\_dict()

### 3.2.557 2021-12-29

- T4111 (bug): IPsec generates wrong configuration colons for IPv6 peers
- T4023 (feature): Add grepcidr or similar functionality
- T4086 (default): system login banner is not removed on deletion.

### 3.2.558 2021-12-28

- T3380 (bug): "show vpn ike sa" does not display IPv6 peers

### 3.2.559 2021-12-27

- T3979 (bug): vyos-hostd unable to hostfile-update
- T2566 (bug): sstp not able to run tunnels ipv6 only
- T4093 (bug): SNMPv3 snmpd.conf generation bug
- T2764 (enhancement): Increase maximum number of NAT rules

### 3.2.560 2021-12-26

- T4104 (bug): RAID1: "add raid md0 member sda1" does not restore boot sector
- T4108 (default): OSPFv3: add support for auto-cost parameter
- T4107 (default): OSPFv3: add support for "default-information originate"

### 3.2.561 2021-12-25

- T4101 (bug): commit-archive: Use of uninitialized value \$source\_address in concatenation
- T4099 (feature): flow-accounting: sync "source-ip" and "source-address" between netflow and sflow ion CLI
- T4097 (feature): flow-accounting: migrate implementation to get\_config\_dict()
- T4105 (feature): flow-accounting: drop "sflow agent-address auto"
- T4106 (feature): flow-accounting: support specification of capture packet length
- T4102 (feature): OSPFv3: add support for NSSA area-type
- T4055 (feature): Add VRF support for HTTP(S) API service

### 3.2.562 2021-12-24

- T3854 (bug): Missing op-mode commands for conntrack-sync

### 3.2.563 2021-12-23

- T3354 (default): Convert strip-private script from Perl to Python

### 3.2.564 2021-12-22

- T3678 (bug): VyOS 1.4: Invalid error message while deleting ipsec vpn configuration
- T3356 (feature): Script for remote file transfers

### 3.2.565 2021-12-21

- T4083 (bug): Cluster heartbeat doesn't start b.c lack of directory /run/heartbeat/
- T4070 (bug): NATv4 : inbound-interface type "any" is missing.
- T4053 (bug): VRRP impossible to set scripts out of the /config directory
- T3931 (bug): SSTP doesn't work after rewriting to PKI

### 3.2.566 2021-12-20

- T4088 (default): Fix typo in login banner

### 3.2.567 2021-12-19

- T3912 (default): Use a more informative default post-login banner

### 3.2.568 2021-12-17

- T4059 (bug): VRRP sync-group transition script does not persist after reboot

### 3.2.569 2021-12-16

- T4046 (feature): Sflow - Add Source address parameter
- T3556 (bug): Commit-archive via scp causes 100% CPU on boot
- T4076 (enhancement): Allow setting CORS options in HTTP API
- T4037 (default): HTTP transfers do not follow redirects
- T4029 (default): Broken SFTP uploads

### 3.2.570 2021-12-15

- T4077 (bug): op-mode: bfd: drop "show protocols bfd" in favour of "show bfd"
- T4073 (bug): "show protocols bfd peer <>" shows incorrect peer information.

### 3.2.571 2021-12-14

- T4071 (feature): Allow HTTP API to bind to unix domain socket

### 3.2.572 2021-12-12

- T4069 (feature): BGP: add additional available parameters to VyOS CLI
- T4036 (bug): VXLAN incorrect raiseError if set multicast network instead of single address

### 3.2.573 2021-12-10

- T4068 (feature): Python: ConfigError should insert line breaks into the error message

### 3.2.574 2021-12-09

- T4033 (bug): VRRP - Error security when setting scripts
- T4064 (bug): IP address for vif is not removed from the system when deleted in configuration
- T4060 (enhancement): Extend configquery for use before boot configuration is complete
- T4058 (bug): BFD: add BGP and OSPF "bfd profile" support
- T4054 (bug): BFD profiles configuration incorrect behavior.

### 3.2.575 2021-12-07

- T4041 (servicerequest): "transition-script" doesn't work on "sync-group"

### 3.2.576 2021-12-06

- T4012 (feature): Add VRF support for TFTP

### 3.2.577 2021-12-04

- T4049 (feature): support command-style output with compare command
- T4047 (bug): Wrong regex validation in XML definitions
- T4042 (bug): BGP L2VPN / EVPN and RD type 0 set
- T4048 (bug): BGP: L2VPN/EVPN and individual RD and RT settings for each VNI
- T4045 (bug): Unable to "format disk <new> like <old>"
- T4044 (feature): BFD: add vrf support
- T4043 (feature): BFD: add support for passive mode

### 3.2.578 2021-12-02

- T4035 (bug): Geneve interfaces aren't displayed by operational mode commands

### 3.2.579 2021-12-01

- T3695 (bug): OpenConnect reports commit success when ocserv fails to start due to SSL cert/key file issues

### 3.2.580 2021-11-30

- T4010 (bug): DMVPN generates incorrect configuration life\_time for swanctl.conf
- T3725 (feature): show configuration in json format

### 3.2.581 2021-11-29

- T3946 (enhancement): Automatically resize the root partition if the drive has extra space

### 3.2.582 2021-11-28

- T3999 (bug): show lldp neighbor Traceback error
- T3928 (feature): Add OSPFv3 VRF support

### 3.2.583 2021-11-27

- T3755 (feature): ospf: adjust to new FRR 8 syntax where "no passive-interface " moved to interface section
- T3753 (feature): frr: upgrade to stable/8.1 release train

### 3.2.584 2021-11-26

- T3978 (bug): containers add network without declaring prefix raise ConfigError

### 3.2.585 2021-11-25

- T4006 (default): Add additional Linux capabilities to container configuration
- T3986 (bug): Incorrect description for vpn ipsec site-to-site authentication and connection

### 3.2.586 2021-11-24

- T4015 (feature): Update Accel-PPP to a newer revision
- T3865 (bug): loadkey command help text missing escape sequence
- T1083 (feature): Implement persistent/random address and port mapping options for NAT rules

### 3.2.587 2021-11-23

- T3990 (bug): WATCHFRR: crashlog and per-thread log buffering unavailable (due to files left behind in /var/tmp/frr/ after reboot)

### 3.2.588 2021-11-20

- T3998 (bug): route-target completion incorrect description

### 3.2.589 2021-11-19

- T4003 (bug): API for "show interfaces ethernet" does not include the interface description
- T4011 (bug): ethernet: deleting interface should place interface in admin down state

### 3.2.590 2021-11-18

- T3612 (bug): IPoE Server address pool issues.
- T3995 (feature): OpenVPN: do not stop/start service on configuration change
- T4008 (feature): dhcp: change client retry interval form 300 -> 60 seconds
- T3795 (bug): WWAN: issues with non connected interface / no signal
- T3510 (bug): RADIUS username is not shown on CLI

### 3.2.591 2021-11-17

- T3350 (bug): OpenVPN config file generation broken
- T3996 (bug): SNMP service error in log

### 3.2.592 2021-11-15

- T3994 (bug): VRF: unable to delete vrf when name contains numbers, hyphen or underscore
- T3960 (bug): FRR Misconfig when using multiple VRF VNI
- T3724 (feature): Allow setting host-name in l2tp section of accel-ppp
- T645 (feature): Allow multiple prefixes in ipsec tunnel

### 3.2.593 2021-11-10

- T3966 (default): OpenVPN fix the smoketests
- T3834 (default): [OPENVPN] Support for Two Factor Authentication totp.
- T3982 (bug): DHCP server commit fails if static-mapping contains + or .

### 3.2.594 2021-11-09

- T3962 (bug): Image cannot be built without open-vm-tools

### 3.2.595 2021-11-07

- T3626 (bug): Configuring and disabling DHCP Server

### 3.2.596 2021-11-06

- T3514 (bug): NIC flap at any interface change

### 3.2.597 2021-11-05

- T3972 (bug): Removing vif-c interface raises KeyError

### 3.2.598 2021-11-04

- T3969 (bug): Container incorrect raiseError format if network doesn't exist
- T3662 (bug): Container configuration upgrade destroys system
- T3964 (bug): SSTP: local-user static-ip CLI node accepts invalid IPv4 addresses

### 3.2.599 2021-11-03

- T3952 (default): Add sh bgp ipv4/ipv6 vpn command
- T3610 (bug): DHCP-Server creation for not primary IP address fails

### 3.2.600 2021-11-01

- T3958 (default): OpenVPN breaks the smoketests
- T3956 (bug): GRE tunnel - unable to move from source-interface to source-address, commit error

### 3.2.601 2021-10-31

- T3945 (feature): Add route-map for bgp aggregate-address
- T3954 (bug): FTDI cable makes VyOS sagitta latest hang, /dev/serial unpopulated, config system error
- T3943 (bug): "netflow source-ip" prevents image upgrades if IP address does not exist locally

### 3.2.602 2021-10-29

- T3942 (feature): Generate IPsec debug archive from op-mode

### 3.2.603 2021-10-28

- T3951 (bug): After resetting vti ipsec tunnel old child SA still active
- T3941 (bug): "show vpn ipsec sa" shows established time of parent SA not child SA's
- T3916 (feature): Add additional Linux capabilities to container configuration

### 3.2.604 2021-10-27

- T3944 (bug): VRRP fails over when adding new group to master

### 3.2.605 2021-10-22

- T3897 (feature): Dynamic DNS doesn't work with IPv6 addresses
- T3832 (feature): Allow to set DHCP client-id in hexadecimal format
- T3188 (bug): Tunnel local-ip to dhcp-interface Change Fails to Update
- T3917 (default): Use Avahi as mDNS repeater for IPv6 support

### 3.2.606 2021-10-21

- T3926 (bug): strip-private does not sanitize "cisco-authentication" from NHRP configuration
- T3925 (feature): Tunnel: dhcp-interface not implemented - use source-interface instead
- T3923 (feature): Kernel: Enable TLS/IPSec offload support for Mellanox ConnectX NICs
- T3927 (feature): Kernel: Enable kernel support for HW offload of the TLS protocol

### 3.2.607 2021-10-20

- T3918 (bug): DHCPv6 prefix delegation incorrect verify error
- T3921 (bug): tunnel: KeyError when using dhcp-interface

### 3.2.608 2021-10-19

- T3396 (bug): syslog can't be configured with an ipv6 literal destination in 1.2.x

### 3.2.609 2021-10-18

- T3002 (default): VRRP change on IPSec interface causes packet routing issues

### 3.2.610 2021-10-17

- T3786 (bug): GRE tunnel source address 0.0.0.0 error
- T3217 (default): Save FRR configuration on each commit
- T3381 (bug): Change GRE tunnel failed
- T3254 (bug): Dynamic DNS status shows incorrect last update time
- T1243 (bug): BGP local-as accept wrong values
- T697 (bug): Clean up and sanitize package dependencies
- T578 (feature): Support Linux Container

### 3.2.611 2021-10-16

- T3879 (bug): GPG key verification fails when upgrading from a 1.3 beta version

### 3.2.612 2021-10-15

- T3748 (bug): Container deletion bug
- T3693 (feature): ISIS Route redistribution ipv6 support missing
- T3676 (feature): Container option to add Linux capabilities
- T3613 (feature): Selectors for route-based IPsec tunnel (vti)
- T3692 (bug): VyOS build failing due to repo.saltstack.com
- T3673 (feature): BGP large-community del operation missing

### 3.2.613 2021-10-14

- T3811 (bug): NAT (op\_mode): NAT op\_mode command fails.
- T3801 (feature): containers: do not use podman CLI to create container networks

### 3.2.614 2021-10-13

- T3904 (bug): NTP pool associations silently fail
- T3277 (feature): DNS Forwarding - reverse zones

### 3.2.615 2021-10-12

- T3216 (bug): Removal of restricted-shell broke configure mode for RADIUS users
- T3881 (bug): Wrong description for container section restart
- T3868 (bug): Regex and/or wildcard not accepted with large-community-list
- T3701 (bug): ipoe server fails to start when configuring radius dynamic-author on ipoe

### 3.2.616 2021-10-10

- T3750 (bug): pdns-recursor 4.4 issue with dont-query and private DNS servers
- T3885 (default): dhcpv6-pd: randomly generated DUID is not persisted
- T3899 (enhancement): Add support for hd44780 LCD displays

### 3.2.617 2021-10-09

- T3894 (bug): Tunnel Commit Failed if system does not have `eth0`

### 3.2.618 2021-10-08

- T3893 (bug): MGRE Tunnel commit crash If sit tunnel available

### 3.2.619 2021-10-05

- T3741 (feature): [BGP] default no-ipv4-unicast - by default

### 3.2.620 2021-10-04

- T3888 (bug): Incorrect warning when poweroff command executed from configure mode.
- T3890 (feature): dhcp(v6): provide op-mode commands to retrieve both server and client logfiles
- T3889 (feature): Migrate to journalctl when reading daemon logs

### 3.2.621 2021-10-03

- T3880 (bug): EFI boot shows error on display

### 3.2.622 2021-10-02

- T3882 (feature): Upgrade PowerDNS recursor to 4.5 series
- T3883 (bug): VRF - Delete vrf config on interface

### 3.2.623 2021-09-30

- T3874 (bug): D-Link Ethernet Interface not working.
- T3869 (default): Rewrite vyatta\_net\_name/vyatta\_interface\_rescan in Python

### 3.2.624 2021-09-28

- T3853 (default): nat66 rules gets deleted on reboot in 1.4-rolling-202109240217

### 3.2.625 2021-09-27

- T3863 (default): nat66: commit fails/hangs on non existing interface

### 3.2.626 2021-09-26

- T3860 (bug): Error on pppoe, tunnel and wireguard interfaces for IPv6 EUI64 addresses
- T3857 (feature): reboot: send wall message to all users for information
- T3867 (bug): vxlan: multicast group address is not validated
- T3859 (bug): Add "log-adjacency-changes" to ospfv3 process
- T3826 (bug): PKI: op-mode - do input validation when listing certificates

### 3.2.627 2021-09-25

- T3657 (default): BGP neighbors ipv6 not able to establish with IPv6 link-local addresses

### 3.2.628 2021-09-23

- T3850 (bug): Dots are no longer allowed in SSH public key names

### 3.2.629 2021-09-21

- T3847 (feature): keepalived/vrrp: migrate to get\_config\_dict() - cleanup

### 3.2.630 2021-09-20

- T3823 (bug): strip-private does not filter public IPv6 addresses

### 3.2.631 2021-09-19

- T3841 (feature): dhcp-server: add ping-check option to CLI
- T2738 (bug): Modifying configuration in the "interfaces" section from VRRP transition scripts causes configuration lockup and high CPU utilization
- T3840 (feature): dns forwarding: Cache size should allow values > 10k
- T3672 (bug): DHCP-FO with multiple subnets results in invalid/non-functioning dhcpd.conf configuration file output

### 3.2.632 2021-09-18

- T3831 (bug): External traffic stops routing when IPSEC tunnel comes up with interface vti0
- T1968 (default): Allow multiple static routes in dhcp-server
- T3838 (feature): dhcp-server - sync cli for name-servers to other subsystems
- T3839 (feature): dhcp-server: Allow configuration of a DNS server and domain name on the shared-network level

### 3.2.633 2021-09-17

- T3830 (bug): ipsec: remote-id no longer included in IKE AUTH if not explicitly specified

### 3.2.634 2021-09-11

- T3402 (feature): Add VyOS programming library for operational level commands

### 3.2.635 2021-09-10

- T3802 (bug): Commit fails if ethernet interface doesn't support flow control
- T3819 (bug): Upgrade Salt Stack 3002.3 -> 3003 release train
- T915 (feature): MPLS Support

### 3.2.636 2021-09-09

- T3812 (bug): Vyos and frr route-map config out of sync
- T3814 (bug): wireguard: commit error showing incorrect peer name from the configured name
- T3805 (bug): OpenVPN insufficient privileges for rtnetlink when closing TUN/TAP interface
- T3815 (bug): pki : the file command 'generate pki wireguard key-pair file' is not working

### 3.2.637 2021-09-07

- T1894 (bug): FRR config not loaded after daemons segfault or restart
- T3807 (bug): Op Command "show interfaces wireguard" does not show the output

### 3.2.638 2021-09-06

- T3806 (bug): Don't set link local ipv6 address if MTU less then 1280
- T3803 (default): Add source-address option to the ping CLI
- T3431 (bug): Show version all bug
- T2920 (bug): Commit crash when adding the second mGRE tunnel with the same key

### 3.2.639 2021-09-05

- T3804 (feature): cli: Migrate and merge "system name-servers-dhcp" into "system name-server"

### 3.2.640 2021-09-04

- T3619 (bug): Performance Degradation 1.2 --> 1.3 | High ksoftirqd CPU usage

### 3.2.641 2021-09-03

- T3788 (bug): Keys are not allowed with ipip and sit tunnels
- T3634 (feature): Add op command option for ping for do not fragment bit to be set
- T3798 (feature): bgp: add support for "neighbor <X> local-as replace-as" option

### 3.2.642 2021-09-02

- T3792 (bug): login: A hyphen present in a username from "system login user" is replaced by an underscore
- T3790 (bug): Does not possible to configure PPTP static ip-address to users
- T2947 (bug): Nat translation many-many with prefix does not map 1-1.

### 3.2.643 2021-08-31

- T3789 (feature): Add custom validator for base64 encoded CLI data
- T3782 (default): Ingress Shaping with IFB No Longer Functional with 1.3

### 3.2.644 2021-08-30

- T3768 (default): Remove early syntaxVersion implementation
- T2941 (default): Using a non-ASCII character in the description field causes UnicodeDecodeError in configsource.py
- T3787 (bug): Remove deprecated UDP fragmentation offloading option

### 3.2.645 2021-08-29

- T3708 (bug): isisd and gre-bridge commit error
- T3783 (bug): "set protocols isis spf-delay-ietf" is not working
- T2750 (default): Use m4 as a template processor

### 3.2.646 2021-08-28

- T3743 (bug): l2tp doesn't work after reboot if outside-address not 0.0.0.0

### 3.2.647 2021-08-27

- T3182 (bug): Main blocker Task for FRR 7.4/7.5 series update
- T3568 (feature): Add XML for firewall conf-mode
- T2108 (default): Use minisign/signify instead of GPG for release signing

### 3.2.648 2021-08-26

- T3776 (default): Rename FRR daemon restart op-mode commands
- T3739 (feature): policy: route-map: add EVPN match support

### 3.2.649 2021-08-25

- T3773 (bug): Delete the "show system integrity" command (to prepare for a re-implementation)
- T3775 (bug): Typo in generated Strongswan VPN-config

### 3.2.650 2021-08-24

- T3772 (bug): VRRP virtual interfaces are not shown in show interfaces

### 3.2.651 2021-08-23

- T3769 (feature): Containers: Network Bridging

### 3.2.652 2021-08-22

- T3090 (feature): Move 'adjust-mss' firewall options to the interface section.
- T3765 (default): container: additional op-mode commands

### 3.2.653 2021-08-20

- T1950 (default): Store VyOS configuration syntax version data in JSON file

### 3.2.654 2021-08-19

- T3751 (bug): pki generate ca add new line after passphrase
- T3764 (bug): Unconfigurable IKE and ESP lifetime
- T3234 (bug): multi\_to\_list fails in certain cases, with root cause an element redundancy in XML interface-definitions
- T3732 (feature): override-default helper should support adding defaultValues to default less nodes
- T3759 (default): [L3VPN] VPNv4/VPNv6 add commands

### 3.2.655 2021-08-18

- T3752 (bug): generate pki certificate file xxx doesn't touch file

### 3.2.656 2021-08-16

- T3738 (default): openvpn fails if server and authentication are configured
- T1594 (bug): l2tpv3 error on IPv6 local-ip

### 3.2.657 2021-08-15

- T3756 (default): VyOS generates invalid QR code for wireguard clients
- T3757 (default): OSPF: add support to configure the area at an interface level

### 3.2.658 2021-08-14

- T3745 (feature): op-mode IPsec show vpn ipse sa sorting

### 3.2.659 2021-08-13

- T3749 (bug): V4/V6 Counters in network container validation aren't being reset
- T3728 (bug): FRR not respect configured RD and RT for L3VNI
- T3727 (bug): VPN IPsec ESP proposal and ESP presented in config mismatch
- T3740 (bug): HTTPs API breaks when the address is IPv6

### 3.2.660 2021-08-12

- T3731 (bug): `verify_accel_ppp_base_service` return wrong config error for SSP
- T3405 (feature): PPPoE server unit-cache
- T2432 (default): `dhcpd`: Can't create new lease file: Permission denied
- T3746 (feature): Inform users logging into the system about a pending reboot
- T3744 (default): Dns forwarding statistics formatting missing a new line

### 3.2.661 2021-08-11

- T3709 (feature): `Snmp`: Allow enable MIDs/OIDs `ipCidrRouteTable`

### 3.2.662 2021-08-09

- T3720 (bug): IPsec set vti secondary address cause interface disable

### 3.2.663 2021-08-08

- T3705 (bug): IPsec: VTI interface does not honor `default-esp-group`
- T2027 (bug): `get_config_dict` is failing when the configuration section is empty/missing

### 3.2.664 2021-08-05

- T3719 (bug): Restart vpn shows some missed files

### 3.2.665 2021-08-04

- T3704 (feature): Add ability to interact with Areca RAID adapters
- T3718 (bug): VPN IPsec IKE group by default not use `DH-group 2`

### 3.2.666 2021-08-02

- T3601 (default): Error in ssh keys for vmware cloud-init if ssh keys is left empty.

### 3.2.667 2021-08-01

- T3707 (bug): Ping incorrect ip host checks

### 3.2.668 2021-07-31

- T3716 (feature): Linux kernel parameters ignore\_routes\_with\_link\_down- ignore disconnected routing connections

### 3.2.669 2021-07-30

- T1176 (default): FRR - BGP replicating routes
- T1210 (feature): About IKEv2 IPSec VPN remote access

### 3.2.670 2021-07-23

- T3699 (bug): login: verify selected "system login user" name is not already used by the base system.
- T3698 (default): Support bridge monitoring

### 3.2.671 2021-07-13

- T3679 (default): Point the unexpected exception message link to the new rolling release location

### 3.2.672 2021-07-11

- T3665 (bug): Missing VRF support for VxLAN but already documented

### 3.2.673 2021-07-10

- T3636 (feature): SSTP / L2TP ipv6 support broken

### 3.2.674 2021-07-09

- T3667 (bug): brctl is damaged

### 3.2.675 2021-07-06

- T3660 (feature): Conntrack-Sync configuration command to specify destination udp port for peer

### 3.2.676 2021-07-03

- T57 (enhancement): Make it possible to disable the entire IPsec peer

### 3.2.677 2021-07-01

- T3658 (feature): Add support for dhcpdv6 fixed-prefix6
- T2035 (bug): Executing vyos-smoketest multiple times makes ssh test fail on execution

### 3.2.678 2021-06-29

- T3593 (bug): PPPoE server called-sid format does not work
- T1441 (feature): Add support for IPsec XFRM interfaces

### 3.2.679 2021-06-25

- T3641 (feature): Upgrade base system from Debian Buster -> Debian Bullseye
- T3649 (feature): Add bonding additional hash-policy

### 3.2.680 2021-06-23

- T3647 (feature): Bullseye: gcc defaults to passing --as-needed to linker

### 3.2.681 2021-06-22

- T3629 (bug): IPoE server shifting address in the range
- T3645 (feature): Bullseye: ethtool changed output for ring-buffer information

### 3.2.682 2021-06-21

- T3563 (default): commit-archive breaks with IPv6 source addresses

### 3.2.683 2021-06-20

- T3637 (bug): vrf: bind-to-all didn't work properly
- T3639 (default): GCC preprocessor clobbers C comments

### 3.2.684 2021-06-19

- T3633 (feature): Add LRO offload for interface ethernet

### 3.2.685 2021-06-18

- T3599 (default): Migrate NHRP to XML/Python

### 3.2.686 2021-06-17

- T3624 (feature): BGP: add support for extended community bandwidth definition

### 3.2.687 2021-06-16

- T3623 (default): Fix for dummy interface option in the operational command "clear interfaces dummy"
- T3630 (feature): op-mode: add "show version kernel" command

### 3.2.688 2021-06-13

- T3620 (feature): Rename WWAN interface from wirelessmodem to wwan to use QMI interface
- T2173 (feature): Add the ability to use VRF on VTI interfaces
- T3622 (feature): WWAN: add support for APN authentication
- T3606 (bug): SNMP unknown notification OID
- T3621 (bug): PPPoE interface does not validate if password is supplied when username is set

### 3.2.689 2021-06-12

- T3611 (bug): WWAN interface (MC7710) no longer works on Kernel 5.10
- T1534 (bug): IPSec w/ IKEv2 Invalid local-address "any"
- T3616 (bug): Update to FastAPI causes regression in vyos-http-api-server

### 3.2.690 2021-06-11

- T3614 (bug): Container network name with hyphen fail

### 3.2.691 2021-06-10

- T3250 (bug): PPPoE server: wrong local usernames
- T3138 (bug): ddclient improperly updated when apply rfc2136 config
- T2645 (default): Editing route-map action requires adding a new rule

### 3.2.692 2021-06-08

- T3605 (default): Allow to set prefer-global for ipv6-next-hop
- T3607 (feature): [route-map] set ipv6 next-hop prefer-global
- T3289 (bug): No description for node "service" conf-mode

### 3.2.693 2021-06-07

- T3461 (bug): OpenConnect Server redundancy check
- T3455 (bug): system users can not be added in "edit"
- T3588 (default): IPSec: migrate no longer available options from CLI which are now hardcoded/enabled in strongSwan

### 3.2.694 2021-06-06

- T842 (feature): Adopt VyOS CLI to latest StrongSwan options and deprecated Keywords

### 3.2.695 2021-06-04

- T3595 (default): Cannot create new VTI interface
- T3592 (feature): Set default TTL 64 for tunnels

### 3.2.696 2021-06-03

- T3384 (feature): Support UDP bandwidth testing

### 3.2.697 2021-06-02

- T3233 (bug): Interface redirect to dum0

### 3.2.698 2021-06-01

- T3585 (default): Fix NHRP module for updated interfaces tunnel syntax
- T3594 (bug): Disable by default service strongswan-starter

### 3.2.699 2021-05-30

- T3518 (bug): Warning messages when using SCP commit-archive
- T3093 (default): Add xml for vpn ipsec
- T1866 (bug): Commit archive over SFTP doesn't work with non-standard ports
- T3590 (feature): bgp: add option for limiting maximum number of prefixes to be sent to a peer
- T3589 (feature): op-mode: support clearing out logfiles from CLI
- T2641 (feature): Rewrite vpn ipsec OP commands in new style XML syntax
- T3351 (feature): Installer checking MD5 checksums on the ISO image

### 3.2.700 2021-05-29

- T1944 (bug): FRR: Invalid route in BGP causes update storm, memory leak, and failure of Zebra
- T1888 (feature): Update to StrongSwan 5.9.1

### 3.2.701 2021-05-27

- T3561 (feature): router-advert: support advertising specific routes
- T2669 (bug): DHCP-server overlapping ranges.

### 3.2.702 2021-05-26

- T3540 (bug): Keepalived memory utilisation issue when constantly getting its state in JSON format

### 3.2.703 2021-05-24

- T3575 (bug): pseudo-ethernet: must check source-interface MTU
- T3571 (bug): Broken Show Tab Complete
- T3555 (bug): GRE TAP tunnel does not silent fragment packets / kernel fix available
- T3576 (bug): ISIS does not support IPV6

### 3.2.704 2021-05-23

- T3570 (default): Prevent setting of a larger MTU on child interfaces
- T3573 (bug): as-path-prepend Description Invalid
- T3572 (feature): Basic Drive Diagnostic Tools

### 3.2.705 2021-05-22

- T3564 (default): Multiple BGP Confederation Peers Not Allowed

### 3.2.706 2021-05-21

- T3551 (bug): QoS control failure of VLAN sub interface

### 3.2.707 2021-05-20

- T3554 (feature): Add area-type stub for ospfv3
- T3565 (feature): sysctl: rewrite in XML and Python and drop from vyatta-cfg-system

### 3.2.708 2021-05-19

- T3562 (feature): Update Accel-PPP to a newer revision
- T3559 (feature): Add restart op-command for OpenConnect Server

### 3.2.709 2021-05-18

- T3525 (default): VMWare resume script syntax errors

### 3.2.710 2021-05-15

- T3549 (bug): DHCPv6 "service dhcpv6-server global-parameters name-server" is not correctly exported to dhcpdv6.conf when multiple name-server entries are present
- T3532 (bug): Not possible to change ethertype after interface creation
- T3550 (bug): Router-advert completion typo
- T3547 (feature): contrackd: remove deprecated config options
- T3535 (feature): Rewrite vyatta-contrack-sync in new XML and Python flavor

### 3.2.711 2021-05-14

- T3346 (bug): nat 4-to-5 migration script fails when a 'source' or 'destination' node exists but there are no rules
- T3248 (default): Deal with VRRP mode-force command that exists in 1.2 but not in 1.3
- T3426 (default): add support for script arguments to vyos-configd

### 3.2.712 2021-05-13

- T3539 (bug): Typo in RPKI interface definition
- T439 (feature): local PBR support
- T3544 (feature): DHCP server should validate configuration before applying it
- T3543 (feature): Support for setting lacp\_rate on LACP bonded interfaces

### 3.2.713 2021-05-12

- T3302 (default): Make vyos-configd relay stdout from scripts to the user's console
- T3542 (bug): udev net.rules not installed in image since may 2nd

### 3.2.714 2021-05-10

- T3374 (bug): IPv6 GRE Tunnel issues

### 3.2.715 2021-05-09

- T3530 (bug): BGP peer-group can't contain a hyphen

### 3.2.716 2021-05-06

- T3523 (bug): VRF BGP daemon route-map command missing
- T3519 (bug): Cannot add / assign L2TPv3 to vrf

### 3.2.717 2021-05-05

- T3520 (bug): Cannot add tunnel interface to isis within vrf
- T3335 (bug): Some OSPFv3 show commands do not work

### 3.2.718 2021-05-04

- T3504 (feature): BGP Per Peer Graceful Restart

### 3.2.719 2021-05-02

- T3511 (bug): Update libnss-mapuser and libpam-radius packages from CUMULUS Linux

### 3.2.720 2021-05-01

- T3379 (feature): Add global-parameters name-server for dhcpv6-server
- T3491 (default): Change Kernel HZ to 1000

### 3.2.721 2021-04-29

- T3503 (bug): "route-reflector-client" fails when "remote-as" is "internal"
- T3502 (bug): "system ip multipath layer4-hashing" doesn't work

### 3.2.722 2021-04-28

- T3473 (bug): IPsec op-mode show sa error

### 3.2.723 2021-04-27

- T2946 (bug): Calling 'stty\_size' causes show interfaces API to fail

### 3.2.724 2021-04-25

- T3490 (bug): priority inversion on PBR "policy route" create, breaks default route from dhcp (live iso)
- T3468 (bug): Tunnel interfaces aren't suggested as being available for bridging (regression)
- T3497 (bug): Prefix list with rule containing only action is not detected as error during parse
- T3492 (bug): BGP Configuration Migration failed (badly!) from rolling 202102240218 to rolling 202104221210
- T1802 (feature): Wireguard QR code in cli for mobile devices

### 3.2.725 2021-04-24

- T3472 (bug): commit-confirm script not found
- T3439 (bug): Commit-archive location not working for scp

### 3.2.726 2021-04-23

- T3395 (bug): WAN load-balancing fails with nexthop dhcp
- T3290 (bug): Disabling GRE contrack module fails

### 3.2.727 2021-04-20

- T3488 (bug): Specifying an invalid "interface address" like dhcp leads to commit error

### 3.2.728 2021-04-18

- T3481 (default): Exclude tag node values from key mangling
- T3475 (bug): XML dictionary cache unable to process syntaxVersion elements

### 3.2.729 2021-04-17

- T3470 (bug): as-override isn't applied to frr

### 3.2.730 2021-04-15

- T3386 (bug): PPPoE-server don't start with local authentication
- T3190 (feature): Unable to subtract value from local-preference in route-map

### 3.2.731 2021-04-14

- T3398 (bug): Can't commit
- T3055 (bug): op-mode incorrect naming for ipsec policy-based tunnels

### 3.2.732 2021-04-13

- T3436 (feature): Refactoring ospf op-mode for support vrf
- T3434 (feature): Refactoring bgp op-mode for support vrf

### 3.2.733 2021-04-12

- T3454 (enhancement): dhclient reject option
- T3328 (bug): Bgp not possible to delete bgp route-map

### 3.2.734 2021-04-10

- T3460 (bug): bgp, Configuration FRR failed while committing code

### 3.2.735 2021-04-09

- T3464 (bug): OSPF: route-map names containing a hyphen are not "found"

### 3.2.736 2021-04-08

- T3462 (default): show ipv6 bgp -- missing
- T3463 (bug): Prevent IPv4 Route exchange with IPv6 neighbors

### 3.2.737 2021-04-05

- T3438 (bug): VRF: removing vif which belongs to a vrf, will delete the entire vrf from the operating system
- T3418 (bug): BGP: system wide known interface can not be used as neighbor

### 3.2.738 2021-04-04

- T3457 (feature): Output the "monitor log" command in a colorful way

### 3.2.739 2021-03-31

- T3445 (bug): vyos-1x build include not all nodes

### 3.2.740 2021-03-30

- T3448 (bug): Loading vyos on a system without xdp installed fails

### 3.2.741 2021-03-29

- T3415 (feature): bridge: add support for isolated interfaces (private-vlan)
- T1711 (feature): BGP - migrate from tagNode to node (remove ASN from tagNode)

### 3.2.742 2021-03-28

- T3440 (bug): HTTP API: give uvicorn time to initialize before restarting Nginx proxy

### 3.2.743 2021-03-27

- T3423 (bug): Cannot create ipv4 static route for default gateway in vrf

### 3.2.744 2021-03-26

- T3412 (default): HTTP API: move to FastAPI as web framework
- T2397 (feature): HTTP API: export OpenAPI definition

### 3.2.745 2021-03-24

- T3419 (bug): show interfaces | strip-private fails

### 3.2.746 2021-03-22

- T3284 (bug): merge/load fail silently if unable to resolve host

### 3.2.747 2021-03-21

- T3417 (default): ISIS: provide per VRF instance support
- T3416 (bug): NTP: when running inside a VRF op-mode commands do not work

### 3.2.748 2021-03-20

- T3392 (bug): vrrp over dhcp default route bug (unexpected vrf)
- T3373 (feature): Upgrade to SaltStack version 3002.5
- T3329 (default): "system comtrack ignore" rules can no longer be created due to an iptables syntax change
- T3300 (feature): Add DHCP default route distance
- T3306 (feature): Extend set route-map aggregator as to 4 Bytes

### 3.2.749 2021-03-18

- T3411 (default): Extend the redirect\_stdout context manager in vyos-configd to redirect stdout from subprocesses
- T3271 (bug): qemu-kvm grub issue

### 3.2.750 2021-03-17

- T3413 (bug): Configuring invalid IPv6 EUI64 address results in "OSError: illegal IP address string passed to inet\_pton"

### 3.2.751 2021-03-14

- T3345 (default): BGP: add per VRF instance support
- T3344 (default): Per VRF dynamic routing support
- T3325 (bug): Bgp listen-range wrong commit message
- T1513 (default): Move OSPF and RIP interface configuration under protocols

### 3.2.752 2021-03-13

- T3406 (bug): tunnel: interface no longer supports specifying encaps limit none - or migrator is missing
- T3407 (bug): console-server: do not allow to spawn a console-server session on serial port used by "system console"

### 3.2.753 2021-03-11

- T3305 (bug): Ingress qdisc does not work anymore in 1.3-rolling-202101 snapshot
- T2927 (bug): isc-dhcpd release and expiry events never execute

### 3.2.754 2021-03-09

- T3382 (bug): Error creating Console Server

### 3.2.755 2021-03-08

- T3387 (bug): Command "Monitor vpn ipsec" is not working

### 3.2.756 2021-03-07

- T3388 (bug): show interfaces doesn't display pppoeX
- T3211 (feature): ability to redistribute ISIS into other routing protocols

### 3.2.757 2021-03-04

- T3377 (bug): show interfaces throws error

### 3.2.758 2021-03-02

- T3375 (bug): Interface becomes up at boot even when disabled

### 3.2.759 2021-02-28

- T3370 (bug): dhcp: Invalid domain name "private"
- T3369 (feature): VXLAN: add IPv6 underlay support
- T3363 (bug): VyOS-Build interactive prompt when using Podman
- T3320 (bug): Bgp neighbor peer-group without peer-group fail

### 3.2.760 2021-02-27

- T3365 (bug): Bgp neighbor interface ordering for remote-as
- T3225 (bug): Adding a BGP neighbor with an address on a local interface throws a `vyos.frr.CommitError: Configuration FRR failed while committing code: ''`
- T3368 (feature): macsec: add support for gcm-aes-256 cipher
- T3173 (feature): Need 'nopmtudisc' option for tunnel interface

### 3.2.761 2021-02-26

- T3324 (bug): Bgp space in the password
- T3357 (default): HTTP-API redirect from http correct https port
- T3323 (bug): Bgp ttl-security and ebgp-multihop fail

### 3.2.762 2021-02-24

- T3303 (feature): Change welcome message on boot

### 3.2.763 2021-02-22

- T3322 (bug): Bgp neighbor timers not applied to FRR config
- T3327 (bug): OSPFv3: Cannot add dummy interface

### 3.2.764 2021-02-21

- T3331 (bug): Bgp unsuppress-map should be as "value leafNode"
- T3330 (bug): Bgp capability orf prefix-list fail
- T3163 (feature): ethernet ring-buffer can be set with an invalid value

### 3.2.765 2021-02-19

- T3326 (bug): OSPFv3: Cannot add L2TPv3 interface
- T3332 (bug): BGP unnumbered - UnboundLocalError: local variable 'peer\_group' referenced before assignment

### 3.2.766 2021-02-18

- T3259 (default): many dnat rules makes the vyos http api crash, even showConfig op timeouts

### 3.2.767 2021-02-17

- T3312 (feature): SolarFlare NICs support

### 3.2.768 2021-02-16

- T3313 (bug): ospfv3 interface missing options
- T3318 (feature): Update Linux Kernel to v5.4.208 / 5.10.142

### 3.2.769 2021-02-15

- T3311 (bug): BGP Error: Remote AS must be set for neighbor or peer-group

### 3.2.770 2021-02-14

- T2848 (feature): bgp-add-path configuration options

### 3.2.771 2021-02-12

- T3301 (bug): Wrong format and valueHelp for policy as-path-list regex

### 3.2.772 2021-02-11

- T3281 (default): Rewrite protocol RIPng [conf-mode] to new XML/Python style
- T3282 (default): Add XML for [conf-mode] RIPng
- T3279 (default): Rewrite protocol STATIC [op-mode] to new XML/Python style
- T3297 (bug): Optimize irrelevant error stack hints

### 3.2.773 2021-02-08

- T3295 (feature): Update Linux Kernel to v5.4.96 / 5.10.14

### 3.2.774 2021-02-05

- T3030 (feature): Support ERSPAN Tunnel Protocol

### 3.2.775 2021-02-04

- T3283 (feature): Support for IPv4 neigh tables
- T3280 (default): Add XML for [conf-mode] STATIC

### 3.2.776 2021-02-03

- T3278 (feature): Add XML for "protocols vrf" [conf-mode]
- T3239 (default): XML: override 'defaultValue' for mtu of certain interfaces; remove workarounds
- T2910 (feature): XML: generator should support override of variables

### 3.2.777 2021-02-02

- T3018 (bug): Unclear behaviour when configuring vif and vif-s interfaces
- T3255 (default): Rewrite protocol RPKI to new XML/Python style
- T3263 (feature): OSPF Hello subsecond timer

### 3.2.778 2021-01-31

- T3276 (feature): Update Linux Kernel to v5.4.94 / 5.10.12

### 3.2.779 2021-01-30

- T3240 (feature): Support per-interface DHCPv6 DUIDs
- T3273 (default): PPPoE static default-routes deleted on interface down when not added by interface up

### 3.2.780 2021-01-29

- T3261 (bug): Does not possible to disable pppoe client interface.
- T3272 (default): OSPF: interface config is not removed

### 3.2.781 2021-01-27

- T3257 (feature): tcpdump supporting complete protocol
- T3244 (default): Rewrite protocol OSPFv3 to new XML/Python style

### 3.2.782 2021-01-26

- T3251 (bug): PPPoE client trying to authorize with the wrong username
- T3256 (default): Add XML for protocol RPKI [conf-mode]

### 3.2.783 2021-01-25

- T3249 (feature): Support operation mode forwarding table output

### 3.2.784 2021-01-24

- T3227 (bug): Latest releases don't work with RPKI (crash)
- T3230 (bug): RPKI can't be deleted
- T3221 (bug): FRR config
- T3245 (default): Add XML for protocol ospfv3 [conf-mode]

### 3.2.785 2021-01-23

- T3236 (default): Add XML for [conf-mode] OSPF

### 3.2.786 2021-01-17

- T3222 (bug): Typo in BGP dampening description
- T3226 (bug): Repair bridge smoke test damage

### 3.2.787 2021-01-16

- T3215 (bug): Operational command "show ipv6 route" is broken
- T3157 (bug): salt-minion fails to start due to permission error accessing /root/.salt/minion.log
- T3137 (feature): Let VLAN aware bridge approach the behavior of professional equipment

### 3.2.788 2021-01-15

- T3210 (feature): ISIS three-way-handshake
- T3184 (feature): Add correct descriptions for BGP neighbors

### 3.2.789 2021-01-14

- T3213 (bug): show interface command python error

### 3.2.790 2021-01-12

- T3205 (bug): Does not possible to configure tunnel mode gre-bridge

### 3.2.791 2020-12-20

- T3132 (feature): Enable egress flow accounting

### 3.2.792 2020-11-29

- T2297 (feature): NTP add support for pool configuration

## 3.3 1.3 Equuleus

### 3.3.1 2024-04-25

- T6249 (default): ISO builder fails because of changed buster-backport repository

### 3.3.2 2024-04-23

- T6261 (default): Typo in op\_mode connect\_disconnect print statement for check\_ppp\_running

### 3.3.3 2024-04-17

- T6243 (bug): Update vyos-http-api-tools for package idna security advisory

### 3.3.4 2024-04-12

- T3437 (bug): BGP Confederation Addition Causes Error

### 3.3.5 2024-04-10

- T6124 (bug): Docker equuleus build image doesn't build due to fpm

### 3.3.6 2024-04-08

- T6196 (bug): Route-map and summary-only do not work in BGP aggregation at the same time

### 3.3.7 2024-04-07

- T1244 (default): Support for StartupResync in contrackd

### 3.3.8 2024-04-05

- T2590 (bug): DHCPv6 not updating nameservers and search domains since replacing isc-dhcp-client with WIDE dhcp6c

### 3.3.9 2024-04-04

- T4146 (bug): Nginx should not listen on port 80
- T1976 (default): deleting address-family under neighbor will disable neighbor
- T5625 (default): "restart vpn" does not work if ipsec-interfaces is not set
- T3020 (bug): The "scp" example is wrong in the bash-completion for "set system config-management commit-archive location"
- T2250 (default): vyos-build "make iso" error if configure was ran outside of the docker container
- T2139 (default): openvpn: allow "dh-file none" to disable DH for ECDH keys
- T2014 (default): Use vendor specific NTP Pool hostname
- T1118 (bug): Obsolete "utc" option in time selector in firewall
- T948 (feature): integrate aws cloud watch scripts into AMI

### 3.3.10 2024-04-02

- T6150 (bug): Impossible to set a static IP address via Radius in IPoE

### 3.3.11 2024-04-01

- T6193 (bug): dhcp-client: invalid warning "is not a DHCP interface but uses DHCP name-server option" for VLAN interfaces

### 3.3.12 2024-03-22

- T6110 (bug): dhcp server - If failover is defined, range is required
- T5624 (default): Remove /etc/debian\_version from the image

### 3.3.13 2024-03-11

- T2998 (bug): SNMP v3 oid "exclude" option doesn't work
- T6096 (bug): Config commits are not synced properly because @vyos-sync is deleted by vyos-router
- T6057 (feature): Add ability to disable syslog for contrackd
- T5504 (feature): Keepalived VRRP ability to set more than one peer-address

### 3.3.14 2024-03-07

- T3992 (bug): Traceback on adding interface to bridge with configured ip address

### 3.3.15 2024-03-06

- T6088 (bug): Configuration corrupted after saving and powercut or force reboot

### 3.3.16 2024-02-16

- T2113 (bug): OpenVPN Options error: you cannot use --verify-x509-name with --compat-names or --no-name-remapping
- T5418 (bug): PPPoE-Server Client IP pool Subnet

### 3.3.17 2024-02-15

- T2612 (bug): HTTPS API, changing API key fails but goes through
- T656 (enhancement): Rewrite wirelessmodem in new style XML interface definition

### 3.3.18 2024-02-14

- T2044 (bug): RPKI doesn't boot properly

### 3.3.19 2024-02-08

- T6014 (feature): Bump keepalived version

### 3.3.20 2024-02-07

- T6017 (bug): Update vyos-http-api-tools for security advisory

### 3.3.21 2024-02-02

- T5914 (bug): CVE-2023-48795 - Terrapin vulnerability
- T5739 (bug): Password recovery does not work if public keys are configured

### 3.3.22 2024-02-01

- T5967 (bug): Multi-hop BFD connections can't be established; please add minimum-ttl option.

### 3.3.23 2024-01-22

- T4721 (feature): Static IPv6 Route Tags Missing

### 3.3.24 2024-01-20

- T5187 (bug): Update Realtek r8152 driver
- T5182 (bug): Update Intel ice driver
- T5180 (bug): initramfs-tools ignores firmware from updates directory
- T4990 (bug): Commit results may not be properly saved if power is cut immediately after a successful commit
- T4039 (feature): Rsyslog to use 'protocol23format' for protocol UDP
- T3813 (bug): Some custom sysctl parameters can't be applied bug
- T2579 (feature): The root task for VRF features
- T2546 (feature): The root task for rewriting [op-mode] to XML
- T2452 (default): Serial console related issues

### 3.3.25 2024-01-19

- T5543 (bug): Fix source address handling in static joins

### 3.3.26 2024-01-14

- T5715 (bug): IPSec VPN: restart vpn is not working

### 3.3.27 2024-01-13

- T5924 (bug): Build cannot pass the smoketest dialup-router-medium-vpn

### 3.3.28 2024-01-11

- T5275 (default): Add op mode commands for exporting certificates to PEM files with correct headers
- T5274 (default): Add a deprecation warning for OpenVPN site-to-site with pre-shared secret
- T3191 (bug): PAM RADIUS freezing when accounting does not configured on RADIUS server

### 3.3.29 2024-01-10

- T4646 (bug): USB serial output console does not work
- T4466 (bug): intel i225-v nic does not detect link after boot
- T4222 (feature): Support for TWAMP as round-trip metric
- T1369 (bug): GCP Networking Failure

### 3.3.30 2024-01-09

- T3242 (bug): PPPoE Server overhead on virtual interfaces creation
- T2755 (default): Requirements for partial interface setup
- T2494 (bug): systemd dependencies issues
- T2343 (feature): Disable memory ballooning in VM templates
- T2254 (default): Provide more information on the build branch in the version data
- T2223 (feature): convert operational show interfaces to python/XML
- T1925 (bug): DMVPN is always listed as down in "show vpn ipsec sa"
- T1297 (feature): Add GARP settings to VRRP/keepalived

### 3.3.31 2024-01-08

- T5318 (bug): Security Vulnerabilities for VyOS 1.3.3
- T3980 (bug): vrrp transition-script validator makes warning fatal and also causes a python NameError exception
- T2799 (feature): VyOS Certificates Manager

### 3.3.32 2023-12-29

- T5852 (bug): Reboots fail with eapol WAN interface

### 3.3.33 2023-12-22

- T4760 (bug): VyOS does not support running multiple instances of DHCPv6 clients

### 3.3.34 2023-12-21

- T5714 (bug): IPSec VPN: op-mode: "show log vpn" does not show results
- T3039 (feature): Resize a root partition and filesystem automatically during deployment in virtual environments
- T2404 (bug): Cannot change MTU
- T2353 (bug): Interface [conf\_mode] errors parent task
- T5796 (bug): Openconnect - HTTPS security headers are missing

### 3.3.35 2023-12-19

- T2116 (feature): Processing configuration via Cloud-init User-Data

### 3.3.36 2023-12-18

- T2191 (feature): Using tallow to block sshd probes

### 3.3.37 2023-12-15

- T5824 (bug): busybox cannot connect some websites from initramfs

### 3.3.38 2023-12-12

- T5817 (bug): Show openvpn server fails in some cases
- T5413 (default): Deny the opportunity to use one public/private key pair on both wireguard peers.

### 3.3.39 2023-11-30

- T4601 (bug): dhcp : relay agent IP address issue.

### 3.3.40 2023-11-28

- T5777 (bug): frr: backport and upstream recent bgpd daemon crashes

### 3.3.41 2023-11-27

- T5763 (bug): Fix imprecise check for remote file name in vyos-load-config.py

### 3.3.42 2023-11-25

- T5655 (bug): commit-archive: Ctrl+C should not error out with stack trace, signal should be caught

### 3.3.43 2023-11-24

- T5402 (bug): VRRP router with rfc3768-compatibility sends multiple ARP replies

### 3.3.44 2023-11-22

- T5578 (bug): "ikev2-reauth" description contains outdated information

### 3.3.45 2023-11-15

- T5661 (enhancement): Add show show ssh dynamic-protection attacker and show log ssh dynamic-protection
- T1276 (bug): dhcp relay + VLAN fails

### 3.3.46 2023-11-07

- T5586 (feature): Disable by default SNMP for Keepalived VRRP

### 3.3.47 2023-11-06

- T4269 (feature): node.def generator should automatically add default values

### 3.3.48 2023-10-26

- T5684 (bug): services using VRF generates the error "Failed to load BPF prog: 'Operation not permitted'" when the system boots.
- T5594 (bug): VRRP - Error if using IPv6 Link Local as hello source address

### 3.3.49 2023-10-21

- T5670 (bug): bridge: missing member interface validator
- T5191 (default): Replace underscores with hyphens in command-line options generated by vyos.opmode
- T4402 (bug): OpenVPN client-ip-pool option is broken
- T2719 (feature): Standardized op mode script structure

### 3.3.50 2023-10-19

- T5669 (bug): VXLAN interface changing port does not work

### 3.3.51 2023-10-17

- T5235 (bug): SSH keys with special characters cannot be applied via Cloud-init

### 3.3.52 2023-10-08

- T5630 (feature): pppoe: allow to specify MRU in addition to already configurable MTU

### 3.3.53 2023-10-06

- T5576 (feature): Add bgp remove-private-as all option

### 3.3.54 2023-10-04

- T5632 (feature): Add jq package to parse JSON files

### 3.3.55 2023-09-25

- T5533 (bug): Keepalived VRRP IPv6 group enters in FAULT state

### 3.3.56 2023-09-20

- T5271 (default): Add support for peer-fingerprint to OpenVPN

### 3.3.57 2023-09-11

- T5557 (bug): bgp: Use treat-as-withdraw for tunnel encapsulation attribute  
CVE-2023-38802
- T3424 (default): PPPoE IA-PD doesn't work in VRF

### 3.3.58 2023-09-10

- T5555 (bug): Fix timezone migrator (system 13-to-14)
- T5545 (bug): sflow is not working

### 3.3.59 2023-09-08

- T4426 (default): Add arptwatch to the image

### 3.3.60 2023-09-05

- T5524 (feature): Add config directory to liveCD
- T2958 (bug): DHCP server doesn't work from a live CD
- T5428 (bug): dhcp: client renewal fails when running inside VRF

### 3.3.61 2023-09-04

- T5506 (bug): Container bridge interfaces do not have a link-local address

### 3.3.62 2023-08-31

- T5190 (feature): Cloud-Init cannot fetch Meta-data on machines where the main Ethernet interface is not eth0
- T5140 (bug): Firewall network-group problems
- T4895 (bug): Tag nodes are overwritten when configured by Cloud-Init from User-Data
- T4874 (default): Add Warning message to Equuleus
- T4855 (bug): Trying to create more than one tunnel of the same type to the same address causes unhandled exception
- T4776 (bug): NVME storage is not detected properly during installation
- T3546 (feature): Add support for running scripts on PPPoE server session events
- T738 (feature): Add local-port and resolver port options for powerdns in CLI configuration tree

### 3.3.63 2023-08-30

- T5221 (bug): BGP as-override behavior differs from new FRR and other vendors
- T4933 (default): Malformed lines cause vyos.util.colon\_separated\_to\_dict fail with a nondescript error
- T4790 (bug): RADIUS login does not work if sum of timeouts more than 50s
- T4475 (bug): route-map does not support ipv6 peer
- T4459 (bug): API service with VRF doesn't work in 1.3.1
- T4407 (bug): Network-config v2 is broken in Cloud-init 22.1 and VyOS 1.3
- T4113 (bug): Incorrect GRUB configuration parsing
- T1764 (bug): Use lists instead of whitespace-separated strings in vyos.config
- T4121 (bug): Nameservers from DHCP client cannot be used in specific cases
- T4151 (feature): IPV6 local PBR Support
- T4306 (default): Do not check for dirty repository when building release images

### 3.3.64 2023-08-29

- T3940 (bug): DHCP client does not remove IP address when stopped by the 02-vyos-stopdhclient hook
- T3713 (default): Create a meta-package for user utilities
- T3339 (bug): Cloud-Init domain search setting not applied
- T2640 (feature): Running VyOS inside Docker containers
- T3577 (bug): Generating vpn x509 key pair fails with command not found

### 3.3.65 2023-08-28

- T4745 (bug): CLI TAB issue with values with '-' at the beginning in conf mode
- T2611 (bug): Prefix list names are shared between ipv4 and ipv6
- T2296 (default): Upgrade WALinux to 2.2.41
- T2123 (default): Configure 3 NTP servers
- T469 (bug): Problem after commit with errors

### 3.3.66 2023-08-25

- T4412 (bug): commit archive: reboot not working with sftp
- T3702 (feature): Policy: Allow routing by fwmark
- T3536 (default): Unable to list all available routes

### 3.3.67 2023-08-24

- T5006 (bug): Http api segfault with concurrent requests
- T5305 (bug): REST API configure operation should not be defined as async

### 3.3.68 2023-08-23

- T5387 (feature): dhcp6c: add a no release option

### 3.3.69 2023-08-20

- T5470 (bug): wlan: can not disable interface if SSID is not configured

### 3.3.70 2023-08-17

- T5486 (bug): Service dns dynamic cannot pass the smoketest
- T5223 (bug): tunnel key doesn't clear

### 3.3.71 2023-08-15

- T5273 (default): Add op mode commands for displaying certificate details and fingerprints
- T5270 (default): Make OpenVPN `tls dh-params` optional

### 3.3.72 2023-08-10

- T5329 (bug): Wireguard interface as GRE tunnel source causes configuration error on boot

### 3.3.73 2023-07-24

- T5354 (feature): Add sshguard to protect against brut-forces for 1.3

### 3.3.74 2023-07-17

- T2051 (bug): Throughput anomalies

### 3.3.75 2023-07-14

- T305 (default): loadbalancing does not work with one pppoe connection and another connection of either dhcp or static

### 3.3.76 2023-07-13

- T3045 (bug): Changes to Conntrack-Sync don't apply correctly (Multicast->UDP)
- T971 (bug): authentication public-keys options quoting issue

### 3.3.77 2023-07-12

- T5009 (bug): op-mode command: restart dhcp relay-agent not working
- T4927 (bug): Need to change restart to reload-or-restart in Webproxy module
- T3835 (bug): vyos router 1.2.7 snmp Dos bug
- T4959 (feature): Add container registry authentication config for containers
- T425 (feature): AWS CloudWatch monitoring scripts

### 3.3.78 2023-07-11

- T4862 (bug): webproxy domain-block does not work
- T4844 (bug): Incorrect permissions of the safeguard DB directory
- T4262 (bug): install image doesn't respect chosen root partition size
- T3810 (bug): webproxy squidguard rules don't work properly after rewriting to python.
- T1928 (bug): Is the 'Welcome to VyOS' message when using SSH an information leak?
- T4737 (bug): FRRouting/zebra 7.5.1 does not redistribute routes to other protocols
- T3852 (bug): DHCP client issue - interface has two dhclient processes when link is unplugged and then plug again

- T2118 (bug): Failure to boot after power outage due to dirty filesystem and no fsck in initramfs

### 3.3.79 2023-07-05

- T5331 (bug): ath10k\_pci not functioning

### 3.3.80 2023-06-30

- T5315 (feature): vrrp: add support for version 3
- T5313 (bug): UDP broadcast relay - missing verify() that relay interfaces have an IP address assigned

### 3.3.81 2023-06-26

- T5272 (default): Upgrade OpenVPN to 2.6 in Equuleus
- T5265 (bug): WAN load-balancing: missing completion helpers

### 3.3.82 2023-06-25

- T5240 (bug): Service router-advert failed to start radvd with more than 3 name-servers

### 3.3.83 2023-06-21

- T5280 (bug): Update Expired keys (2023-06-08) for PowerDNS

### 3.3.84 2023-06-13

- T5213 (feature): Accel-ppp sending accounting interim updates acct-interim-interval option

### 3.3.85 2023-05-29

- T5243 (bug): Default route is inactive if an interface has multiple ip addresses of the same subnet in 1.3.2 Equuleus

### 3.3.86 2023-05-19

- T5186 (bug): QoS test cannot pass for 1.3

### 3.3.87 2023-05-12

- T2769 (feature): Add VRF support for syslog

### 3.3.88 2023-05-08

- T5212 (bug): snmp community name -error with special carracter

### 3.3.89 2023-04-27

- T5175 (bug): http-api: error in MultiPart parser for FastAPI version  $\geq 0.91.0$
- T5176 (bug): http-api: update vyos-http-api-tools for FastAPI security vulnerability

### 3.3.90 2023-04-13

- T5152 (bug): Telegraf agent hostname isn't qualified
- T4727 (feature): Add RADIUS rate limit support to PPTP server
- T4939 (bug): VRRP command no-preempt not work as expected
- T3608 (default): Standardize warnings from configure scripts

### 3.3.91 2023-04-05

- T4975 (bug): CLI does not work after cutting off the power or reset
- T5136 (bug): Possible config corruption on upgrade

### 3.3.92 2023-04-01

- T5047 (bug): Recreate only a specific container

### 3.3.93 2023-03-31

- T5111 (bug): pppd-dns.service startup failed

### 3.3.94 2023-03-29

- T5033 (bug): generate-public-key command fails for address with multiple public keys like GitHub
- T5097 (bug): the operational command "show interfaces ethernet ethx" doesn't reflect a call to 'clear counters'

### 3.3.95 2023-03-21

- T5098 (feature): PPPoE client holdoff configuration

### 3.3.96 2023-03-19

- T4925 (feature): Need to add the possibility to configure Pseudo-Random Functions (PRF) in IKEv2

### 3.3.97 2023-03-16

- T3083 (feature): Add feature event-handler
- T2516 (bug): vyos-container: cannot configure ethernet interface

### 3.3.98 2023-03-09

- T5066 (bug): Different GRE tunnel but same tunnel keys error

### 3.3.99 2023-03-08

- T4381 (default): OpenVPN: Add "Tunnel IP" column in "show openvpn server" operational command
- T4872 (bug): Op-mode show openvpn misses a case when parsing for tunnel IP

### 3.3.100 2023-03-07

- T2838 (bug): Ethernet device names changing, multiple hw-id being added
- T2649 (default): Ensure configuration mode scripts conform to coding guidelines
- T4900 (default): Cache intermediary results of get\_config\_diff in Config instance

### 3.3.101 2023-03-03

- T4625 (enhancement): Update ocserv to current revision (1.1.6)

### 3.3.102 2023-02-28

- T4955 (bug): Openconnect radiusclient.conf generating with extra authserver
- T4219 (feature): support incoming-interface (iif) in local PBR

### 3.3.103 2023-02-25

- T5008 (bug): MACsec CKN of 32 chars is not allowed in CLI, but works fine
- T5007 (bug): Interface multicast setting is invalid
- T5017 (bug): Bug with validator interface-name
- T4992 (bug): Incorrect check is\_local\_address for bgp neighbor with option ip\_nonlocal\_bind set
- T4978 (bug): KeyError: 'memory' container\_config['memory'] on upgrading to 1.4-rolling-202302041536
- T4948 (feature): pppoe: add CLI option to allow definition of host-uniq flag

### 3.3.104 2023-02-22

- T5011 (bug): Some interface drivers don't support min\_mtu and max\_mtu and verify\_mtu check should be skipped

### 3.3.105 2023-02-18

- T4743 (feature): Enable IPv6 address for Dynamic DNS

### 3.3.106 2023-02-16

- T4971 (feature): Radius attribute "Framed-Pool" for PPPoE

### 3.3.107 2023-02-15

- T4993 (bug): Can't delete conntrack ignore rule

### 3.3.108 2023-02-14

- T4999 (feature): `vyos.util` backport `dict_search_recursive`
- T1993 (feature): Extended `pppoe` `rate-limiter`

### 3.3.109 2023-02-13

- T4153 (bug): `Monitor bandwidth-test` `initiate` not working

### 3.3.110 2023-02-11

- T2603 (feature): `pppoe-server`: reduce min MTU

### 3.3.111 2023-02-08

- T1288 (feature): FRR: rewrite `staticd` backend (`/opt/vyatta/share/vyatta-cfg/templates/protocols/static/*`)

### 3.3.112 2023-02-07

- T4117 (bug): Does not possible to configure PoD/CoA for L2TP vpn

### 3.3.113 2023-02-01

- T4970 (default): pin OCaml `pcre` package to avoid JIT support

### 3.3.114 2023-01-30

- T4954 (bug): DNS cannot be configured via `Network-Config v1` received from `ConfigDrive / Cloud-Init`

### 3.3.115 2023-01-24

- T4949 (feature): Backport `"monitor log"` and `"show log"` op-mode definitions from current to `equuleus`
- T4947 (feature): Support mounting container volumes as `ro` or `rw`

### 3.3.116 2023-01-23

- T4798 (default): Migrate the file-exists validator away from Python
- T4683 (enhancement): Add kitty-terminfo package to build
- T4875 (default): Replace Python validator 'interface-name' to avoid Python startup cost
- T4664 (bug): Add validation to reject whitespace in tag node value names

### 3.3.117 2023-01-22

- T4906 (bug): ipsec connections shows only one connection as up

### 3.3.118 2023-01-21

- T4896 (bug): ospfv3: Fix broken not-advertise option
- T4799 (bug): PowerDNS >= 4.7 does not get reloaded by vyos-hostsd

### 3.3.119 2023-01-17

- T4902 (bug): snmpd: exclude container storage from monitoring

### 3.3.120 2023-01-15

- T4832 (feature): dhcp: Add IPv6-only dhcp option support (RFC 8925)
- T4918 (bug): Odd show interface behavior

### 3.3.121 2023-01-09

- T4922 (feature): Add ssh-client source-interface CLI option

### 3.3.122 2023-01-07

- T4884 (bug): Missing a community6 in snmpd config

### 3.3.123 2023-01-05

- T3937 (default): Rewrite "show system memory" in Python to make it usable as a library function

### 3.3.124 2023-01-03

- T4869 (bug): A network with `/32` or `/128` mask cannot be removed from a network-group

### 3.3.125 2022-12-31

- T4898 (feature): Add mtu config option for dummy interfaces

### 3.3.126 2022-12-26

- T4511 (bug): IPv6 DNS lookup
- T4809 (feature): radvd: Allow use of AdvRASrcAddress

### 3.3.127 2022-12-18

- T4709 (bug): TCP MSS clamping broken in equuleus

### 3.3.128 2022-12-15

- T4671 (bug): linux-firmware package is missing symlinks defined in WHENCE file

### 3.3.129 2022-12-04

- T4825 (feature): interfaces veth/veth-pairs -standalone used

### 3.3.130 2022-12-02

- T4122 (bug): interface ip address config missing after upgrade from 1.2.8 to 1.3.0 (when redirect is configured?)
- T1024 (feature): Policy Based Routing by DSCP

### 3.3.131 2022-11-23

- T4793 (feature): Create warning message about disable-route-autoinstall when ipsec vti is used

### 3.3.132 2022-11-21

- T4812 (feature): IPsec ability to show all configured connections

### 3.3.133 2022-11-06

- T2913 (bug): Failure to install fpm while building builder docker image

### 3.3.134 2022-11-04

- T2417 (feature): Python validator cleanup

### 3.3.135 2022-11-01

- T4177 (bug): Strip-private doesn't work for service monitoring

### 3.3.136 2022-10-31

- T1875 (feature): Add the ability to use network address as BGP neighbor (bgp listen range)
- T4785 (feature): snmp: Allow !, @, \* and # in community name

### 3.3.137 2022-10-21

- T2189 (bug): Adding a large port-range will take ~ 20 minutes to commit

### 3.3.138 2022-10-18

- T4533 (bug): Radius clients don't have simple permissions

### 3.3.139 2022-10-13

- T4312 (bug): Telegraf configuration doesn't accept IPs for URL

### 3.3.140 2022-10-12

- T4730 (bug): Contrack-sync error - listen-address is not the correct type in config as it should be

### 3.3.141 2022-10-11

- T4680 (bug): Telegraf prometheus-client listen-address invalid format

### 3.3.142 2022-10-04

- T4702 (bug): Wireguard peers configuration is not synchronized with CLI
- T4652 (feature): Upgrade PowerDNS recursor to 4.7 series
- T4648 (default): PPPoE: Ignore default router from RA when PPPoE default-route is set to none
- T4582 (default): Router-advert: Preferred lifetime cannot equal valid lifetime in PIOs

### 3.3.143 2022-09-17

- T4666 (bug): EAP-TLS no longer allows TLSv1.0 after T4537, T4584

### 3.3.144 2022-09-15

- T4679 (bug): OpenVPN site-to-site incorrect check for IPv6 local and remote address
- T4630 (bug): Prevent attempts to use the same interface as a source interface for pseudo-ethernet and MACsec at the same time

### 3.3.145 2022-09-12

- T4647 (feature): Add Google Virtual NIC (gVNIC) support

### 3.3.146 2022-09-05

- T4668 (bug): Adding/removing members from bond doesn't work/results in incorrect interface state
- T4628 (bug): ConfigTree() throws ValueError() if tagNode contains whitespaces

### 3.3.147 2022-08-29

- T4653 (bug): Interface offload options are not applied correctly
- T4061 (default): Add util function to check for completion of boot config
- T4654 (bug): RPKI cache incorrect description
- T4572 (bug): Add an option to force interface MTU to the value received from DHCP

### 3.3.148 2022-08-26

- T4642 (bug): proxy: hyphen not allowed in proxy URL

### 3.3.149 2022-08-23

- T4618 (bug): Traffic policy not set on virtual interfaces
- T4538 (bug): Macsec does not work correctly when the interface status changes.

### 3.3.150 2022-08-22

- T4629 (bug): Raised ConfigErrors contain dict instead of only the dict key
- T4632 (bug): VLAN-aware bridge not working

### 3.3.151 2022-08-19

- T4616 (bug): openconnect: KeyError: 'local\_users'
- T4614 (feature): OpenConnect split-dns directive

### 3.3.152 2022-08-16

- T4592 (bug): macsec: can not create two interfaces using the same source-interface
- T4584 (bug): hostap: create custom package build
- T4537 (bug): MACsec not working with cipher gcm-aes-256

### 3.3.153 2022-08-15

- T4565 (bug): vlan aware bridge not working with - Kernel: T3318: update Linux Kernel to v5.4.205 #249
- T4206 (bug): Policy Based Routing with DHCP Interface Issue
- T2763 (feature): New SNMP resource request - SNMP over TCP

### 3.3.154 2022-08-14

- T4579 (bug): bridge: can not delete member interface CLI option when VLAN is enabled
- T4421 (default): Add support for floating point numbers in the numeric validator
- T4415 (bug): Include license/copyright files in the image but remove user documentation from /usr/share/doc to reduce its size
- T4313 (bug): "generate public-key-command" throws unhandled exceptions when it cannot retrieve the key
- T4082 (bug): Add op mode command to restart ldpd
- T3714 (bug): Some sysctl custom parameters disappear after reboot

- T4260 (bug): Extend `vyos.configdict.node_changed()` to support recursiveness
- T3785 (default): Add unicode support to configtree backend
- T3507 (bug): Bond with mode LACP show u/u in show interfaces even if peer is not configured

### 3.3.155 2022-08-11

- T4476 (default): Next steps after installation is not communicated properly to new users

### 3.3.156 2022-08-02

- T4515 (default): Reduce telegraf binary size

### 3.3.157 2022-07-30

- T4575 (feature): `vyos.util` add new wrapper "rc\_cmd" to get the return code and output
- T4532 (bug): Flow-accounting IPv6 server/receiver bug

### 3.3.158 2022-07-27

- T4571 (bug): Sflow with vrf configured does not use vrf to validate agent-address IP from vrf-configured interfaces

### 3.3.159 2022-07-18

- T4228 (bug): bond: OS error thrown when two bonds use the same member
- T4534 (bug): bond: bridge: error out if member interface is assigned to a VRF instance
- T4525 (bug): Delete interface from VRF and add it to bonding error
- T4522 (feature): bond: add ability to specify mii monitor interval via CLI
- T4521 (bug): bond: ARP monitor interval is not configured despite set via CLI

### 3.3.160 2022-07-14

- T4491 (bug): Use empty string for internal name of root node of `config_tree`

### 3.3.161 2022-07-13

- T1375 (feature): Add clear dhcp server lease function

### 3.3.162 2022-07-12

- T4527 (bug): Prevent to create VRF name default
- T4084 (default): Dehardcode the default login banner
- T3864 (enhancement): Add Edgecore build to VyOS 1.3 Equuleus

### 3.3.163 2022-07-09

- T4507 (feature): IPoE-server add multiplier option for shaper
- T4468 (bug): web-proxy source group cannot start with a number bug
- T4373 (feature): PPPoE-server add multiplier option for shaper

### 3.3.164 2022-07-07

- T4456 (bug): NTP client in VRF tries to bind to interfaces outside VRF, logs many messages
- T4509 (feature): Feature Request: DNS64

### 3.3.165 2022-07-06

- T4513 (bug): Webproxy monitor commands do not work

### 3.3.166 2022-07-05

- T4510 (bug): set system static-host-mapping doesn't allow IPv4 and IPv6 for same name.
- T2654 (bug): Multiple names unable to be assigned to the same static mapping
- T2683 (default): no dual stack in system static-host-mapping host-name

### 3.3.167 2022-07-01

- T4489 (bug): MPLS sysctl not persistent for tunnel interfaces

### 3.3.168 2022-06-20

- T1856 (feature): Support configuring IPsec SA bytes

### 3.3.169 2022-06-16

- T3866 (bug): Configs with DNS forwarding listening on OpenVPN interfaces or interfaces without a fixed address cannot be migrated to the new syntax

### 3.3.170 2022-06-15

- T1890 (feature): Metatask: rewrite flow-accounting to XML and Python

### 3.3.171 2022-06-09

- T2580 (feature): Support for ip pools for ippoe

### 3.3.172 2022-06-08

- T4447 (bug): DHCPv6 prefix delegation `sla-id` limited to 128
- T4350 (bug): DMVPN opennhrp spokes dont work behind NAT

### 3.3.173 2022-05-30

- T4315 (feature): Telegraf - Output to prometheus

### 3.3.174 2022-05-27

- T4441 (bug): wwan: connection not possible after a change added after 1.3.1-S1 release

### 3.3.175 2022-05-26

- T4442 (feature): HTTP API add action "reset"

### 3.3.176 2022-05-25

- T2194 (default): "show firewall" garbled output

### 3.3.177 2022-05-19

- T4430 (bug): Show firewall output with visual shift default rule

### 3.3.178 2022-05-16

- T4377 (default): generate tech-support archive includes previous archives

### 3.3.179 2022-05-12

- T4100 (feature): Firewall increase maximum number of rules

### 3.3.180 2022-05-11

- T4405 (bug): DHCP client sometimes ignores `no-default-route` option of an interface

### 3.3.181 2022-05-10

- T1972 (feature): Allow setting interface name for virtual\_ipaddress in VRRP VRID

### 3.3.182 2022-05-07

- T4361 (bug): `vyos.config.exists()` does not work for nodes with multiple values
- T4354 (bug): Slave interfaces fall out from bonding during configuration change

### 3.3.183 2022-05-03

- T4395 (feature): Extend show vpn debug

### 3.3.184 2022-05-01

- T4369 (bug): OpenVPN: daemon not restarted on changes to "openvpn-option" CLI node
- T4363 (bug): salt-minion: default mine\_interval option is not set

### 3.3.185 2022-04-29

- T4388 (bug): dhcp-server: missing constraint on tftp-server-name option
- T4366 (bug): geneve: interface is removed on changes to e.g. description

### 3.3.186 2022-04-26

- T4235 (default): Add config tree diff algorithm

### 3.3.187 2022-04-19

- T4344 (bug): DHCP statistics not matching, conf-mode generates incorrect pool name with dash
- T4268 (bug): Elevated LA while using VyOS monitoring feature

### 3.3.188 2022-04-08

- T4331 (bug): IPv6 link local addresses are not configured when an interface is in a VRF
- T4339 (bug): wwan: tab-completion results in "No such file or directory" if there is no WWAN interface
- T4338 (bug): wwan: changing interface description should not trigger reconnect
- T4324 (bug): wwan: check alive script should only be run via cron if a wwan interface is configured at all

### 3.3.189 2022-04-07

- T4330 (bug): MTU settings cannot be applied when IPv6 is disabled
- T4346 (feature): Deprecate "system ipv6 disable" option to disable address family within OS kernel
- T4337 (bug): isis: IETF SPF delay algorithm can not be configured - results in vyos.frr.CommitError
- T4319 (bug): The command "set system ipv6 disable" doesn't work as expected.
- T4341 (feature): login: disable user-account prior to deletion and wait until deletion is complete
- T4336 (feature): isis: add support for MD5 authentication password on a circuit

### 3.3.190 2022-04-06

- T4308 (feature): Op-comm "Show log frr" to view specific protocol logs

### 3.3.191 2022-03-29

- T3686 (bug): Bridging OpenVPN tap with no local-address breaks

### 3.3.192 2022-03-24

- T4294 (bug): Adding a new openvpn-option does not restart the OpenVPN process
- T4230 (bug): OpenVPN server configuration deleted after reboot when using a VRRP virtual-address

### 3.3.193 2022-03-21

- T4311 (bug): CVE-2021-4034: local privilege escalation in PolKit
- T4310 (bug): CVE-2022-0778: infinite loop in OpenSSL certificate parsing

### 3.3.194 2022-03-12

- T4296 (bug): Interface config injected by Cloud-Init may interfere with VyOS native
- T4002 (default): firewall group network-group long names restriction incorrect behavior

### 3.3.195 2022-03-11

- T4297 (bug): Interface configuration saving fails for ice/iavf based interfaces because they can't change speed/duplex settings

### 3.3.196 2022-03-05

- T4259 (bug): The conntrackd daemon can be started wrongly

### 3.3.197 2022-02-28

- T4273 (bug): ssh: Upgrade from 1.2.X to 1.3.0 breaks config
- T4115 (bug): reboot in <x> not working as expected

### 3.3.198 2022-02-24

- T4267 (bug): Error - Missing required "ip key" parameter

### 3.3.199 2022-02-23

- T4264 (bug): vxlan: interface is destroyed and rebuild on description change
- T4263 (bug): vyos.util.leaf\_node\_changed() dos not honor valueLess nodes

### 3.3.200 2022-02-21

- T4120 (feature): [VXLAN] add ability to set multiple unicast-remotes

### 3.3.201 2022-02-20

- T4261 (feature): MACsec: add DHCP client support
- T4203 (bug): Reconfigure DHCP client interface causes brief outages

### 3.3.202 2022-02-19

- T4258 (bug): [DHCP-SERVER] error parameter on Failover

### 3.3.203 2022-02-17

- T4241 (bug): ocserv openconnect looks broken in recent bulds of 1.3 Equuleus
- T4255 (bug): Unexpected print of dict bridge on delete
- T4240 (bug): Cannot add wlan0 to bridge via configure
- T4154 (bug): Error add second gre tunnel with the same source interface

### 3.3.204 2022-02-16

- T4237 (bug): Contrack-sync error - error adding listen-address command

### 3.3.205 2022-02-15

- T4201 (bug): Firewall - ICMPv6 matches not working as expected on 1.3.0
- T3006 (bug): Accel-PPP & vlan-mon config get invalid VLAN
- T3494 (bug): DHCPv6 leases traceback when PD using

### 3.3.206 2022-02-13

- T4242 (bug): ethernet speed/duplex can never be switched back to auto/auto
- T4191 (bug): Lost access to host after VRF re-creating

### 3.3.207 2022-02-11

- T3872 (feature): Add configurable telegraf monitoring service
- T4234 (bug): Show firewall partly broken in 1.3.x

### 3.3.208 2022-02-10

- T4165 (bug): Custom conntrack rules cannot be deleted

### 3.3.209 2022-02-08

- T4227 (bug): Typo in help completion of hello-time option of bridge interface

### 3.3.210 2022-02-07

- T4233 (bug): ssh: sync regex for allow/deny usernames to "system login"
- T4087 (feature): IPsec IKE-group proposals limit of 10 pieces

### 3.3.211 2022-02-05

- T4226 (bug): VRRP transition-script does not work for groups name which contains -(minus) sign

### 3.3.212 2022-02-04

- T4196 (bug): DHCP server client-prefix-length parameter results in non-functional leases

### 3.3.213 2022-02-03

- T3643 (bug): show vpn ipsec sa doesn't show tunnels in "down" state

### 3.3.214 2022-02-01

- T4198 (bug): Error shown on commit

### 3.3.215 2022-01-28

- T4184 (bug): NTP allow-clients address doesn't work it allows to use ntp server for all addresses

### 3.3.216 2022-01-24

- T4204 (feature): Update Accel-PPP to a newer revision

### 3.3.217 2022-01-17

- T3164 (bug): console-server ssh does not work with RADIUS PAM auth

### 3.3.218 2022-01-15

- T4183 (feature): IPv6 link-local address not accepted as wireguard peer
- T4110 (feature): [IPV6-SSH/DNS} enable IPv6 link local addresses as listen-address %eth0

### 3.3.219 2022-01-12

- T4168 (bug): IPsec VPN is impossible to restart when DMVPN is configured
- T4167 (bug): DMVPN apply wrong param on the first configuration
- T4152 (bug): NHRP shortcut-target holding-time does not work

### 3.3.220 2022-01-10

- T3299 (bug): Allow the web proxy service to listen on all IP addresses
- T3115 (feature): Add support for firewall on L3 VIF bridge interface

### 3.3.221 2022-01-09

- T3822 (bug): OpenVPN processes do not have permission to read key files generated with `run generate openvpn key`
- T4142 (bug): Input ifbX interfaces not displayed in op-mode
- T3914 (bug): VRRP rfc3768-compatibility doesn't work with unicast peers

### 3.3.222 2022-01-07

- T3924 (bug): VRRP stops working with VRF

### 3.3.223 2022-01-06

- T4141 (bug): Set high-availability vrrp sync-group without members error

### 3.3.224 2022-01-03

- T4065 (bug): IPSEC configuration error: connection to unix:///var/run/charon.ctl failed: No such file or directory
- T4052 (bug): Validator return traceback on VRRP configuration with the script path not in config dir
- T4128 (bug): keepalived: Upgrade package to add VRF support

### 3.3.225 2021-12-31

- T4081 (bug): VRRP health-check script stops working when setting up a sync group

### 3.3.226 2021-12-29

- T2922 (bug): The `vpn ipsec logging log-modes` miss the IPsec daemons state check
- T2695 (bug): Flow-accounting bug with subinterfaces
- T2400 (default): OpenVPN: dont restart server if no need
- T4086 (default): system login banner is not removed on deletion.

### 3.3.227 2021-12-28

- T3380 (bug): "show vpn ike sa" does not display IPv6 peers
- T2933 (feature): VRRP add option virtual\_ipaddress\_excluded

### 3.3.228 2021-12-27

- T2566 (bug): sstp not able to run tunnels ipv6 only
- T4093 (bug): SNMPv3 snmpd.conf generation bug
- T2764 (enhancement): Increase maximum number of NAT rules

### 3.3.229 2021-12-26

- T4104 (bug): RAID1: "add raid md0 member sda1" does not restore boot sector

### 3.3.230 2021-12-25

- T4101 (bug): commit-archive: Use of uninitialized value \$source\_address in concatenation
- T4055 (feature): Add VRF support for HTTP(S) API service

### 3.3.231 2021-12-24

- T3854 (bug): Missing op-mode commands for contrack-sync

### 3.3.232 2021-12-23

- T4092 (bug): IKEv2 mobike commit failed with DMVPN nhrp
- T3354 (default): Convert strip-private script from Perl to Python

### 3.3.233 2021-12-22

- T3356 (feature): Script for remote file transfers

### 3.3.234 2021-12-21

- T4053 (bug): VRRP impossible to set scripts out of the /config directory
- T4013 (bug): Add pkg cloudwatch for AWS images
- T3913 (bug): VRF traffic fails after upgrade from 1.3.0-RC6 to 1.3.0-EPA1/2

### 3.3.235 2021-12-20

- T4088 (default): Fix typo in login banner

### 3.3.236 2021-12-19

- T3912 (default): Use a more informative default post-login banner

### 3.3.237 2021-12-17

- T3176 (bug): Ordering of ports on EdgeCore SAF51015I is mixed up?
- T4059 (bug): VRRP sync-group transition script does not persist after reboot

### 3.3.238 2021-12-16

- T4046 (feature): Sflow - Add Source address parameter
- T2615 (default): Provide an explicit option for server fingerprint in commit archive, and make insecure the default
- T4076 (enhancement): Allow setting CORS options in HTTP API
- T3378 (bug): commit-archive source-address broken for IPv6 addresses

### 3.3.239 2021-12-15

- T4077 (bug): op-mode: bfd: drop "show protocols bfd" in favour of "show bfd"
- T4073 (bug): "show protocols bfd peer <>" shows incorrect peer information.

### 3.3.240 2021-12-14

- T4071 (feature): Allow HTTP API to bind to unix domain socket

### 3.3.241 2021-12-12

- T4036 (bug): VXLAN incorrect raiseError if set multicast network instead of single address

### 3.3.242 2021-12-10

- T4068 (feature): Python: ConfigError should insert line breaks into the error message

### 3.3.243 2021-12-09

- T4033 (bug): VRRP - Error security when setting scripts
- T4064 (bug): IP address for vif is not removed from the system when deleted in configuration
- T4063 (bug): VRRP log error - /usr/libexec/vyos/vyos-vrrp-contracksync.sh - No such file or directory
- T4060 (enhancement): Extend configquery for use before boot configuration is complete

### 3.3.244 2021-12-08

- T4024 (bug): Access-lists and prefix-lists disappear when setting `ldp hello-ipv4-interval`

### 3.3.245 2021-12-07

- T4041 (servicerequest): "transition-script" doesn't work on "sync-group"

### 3.3.246 2021-12-06

- T4012 (feature): Add VRF support for TFTP

### 3.3.247 2021-12-05

- T4034 (bug): "make xcp-ng-iso" still includes `vyos-xe-guest-utilities`
- T2076 (feature): RAID install: `sfdisk change-id` is deprecated in favor of `--part-type`
- T1126 (bug): Reusing a RAID from a BIOS install in an EFI install causes a failure to boot

### 3.3.248 2021-12-04

- T4049 (feature): support command-style output with `compare` command
- T4047 (bug): Wrong regex validation in XML definitions
- T4045 (bug): Unable to "format disk <new> like <old>"

### 3.3.249 2021-12-02

- T4035 (bug): Geneve interfaces aren't displayed by operational mode commands

### 3.3.250 2021-12-01

- T3695 (bug): OpenConnect reports `commit` success when `ocserv` fails to start due to SSL cert/key file issues

### 3.3.251 2021-11-30

- T3725 (feature): show configuration in json format

### 3.3.252 2021-11-29

- T2661 (bug): SSTP wrong certificates check
- T3946 (enhancement): Automatically resize the root partition if the drive has extra space

### 3.3.253 2021-11-28

- T3999 (bug): show lldp neighbor Traceback error

### 3.3.254 2021-11-26

- T4019 (bug): Smoketests for SSTP and openconnect fails

### 3.3.255 2021-11-25

- T4005 (feature): Feature Request: IPsec IKEv1 + IKEv2 for one peer

### 3.3.256 2021-11-24

- T4015 (feature): Update Accel-PPP to a newer revision
- T1083 (feature): Implement persistent/random address and port mapping options for NAT rules

### 3.3.257 2021-11-23

- T3990 (bug): WATCHFRR: crashlog and per-thread log buffering unavailable (due to files left behind in /var/tmp/frr/ after reboot)

### 3.3.258 2021-11-20

- T4004 (bug): IPsec ike-group parameters are not saved correctly (after reboot)

### 3.3.259 2021-11-19

- T4003 (bug): API for "show interfaces ethernet" does not include the interface description
- T4011 (bug): ethernet: deleting interface should place interface in admin down state

### 3.3.260 2021-11-18

- T3995 (feature): OpenVPN: do not stop/start service on configuration change
- T4008 (feature): dhcp: change client retry interval from 300 -> 60 seconds
- T3795 (bug): WWAN: issues with non connected interface / no signal

### 3.3.261 2021-11-17

- T3350 (bug): OpenVPN config file generation broken
- T3996 (bug): SNMP service error in log

### 3.3.262 2021-11-15

- T3934 (bug): Openconnect VPN broken: ocserv-worker general protection fault on client connect
- T3724 (feature): Allow setting host-name in l2tp section of accel-ppp

### 3.3.263 2021-11-14

- T3974 (bug): route-map commit fails if interface does not exist

### 3.3.264 2021-11-11

- T1349 (bug): L2TP remote-access vpn terminated and not showing as connected
- T1058 (default): hw-id is ignored when naming interfaces
- T914 (feature): Extend list\_interfaces.py to support multiple interface types
- T688 (enhancement): Move component versions used for config migration purposes into vyos-1x

### 3.3.265 2021-11-10

- T3982 (bug): DHCP server commit fails if static-mapping contains + or .

### 3.3.266 2021-11-09

- T3962 (bug): Image cannot be built without open-vm-tools
- T2088 (bug): Increased boot time from 1.2.4 -> 1.3 rolling by 100%
- T2136 (bug): XML command definition convertor doesn't disallow tag nodes with multi flag on

### 3.3.267 2021-11-07

- T2874 (feature): Add MTU and TCP-MSS discovery tool
- T3626 (bug): Configuring and disabling DHCP Server

### 3.3.268 2021-11-06

- T3971 (feature): Ability to build ISO images for XCP-NG hypervisor
- T3514 (bug): NIC flap at any interface change

### 3.3.269 2021-11-05

- T3972 (bug): Removing vif-c interface raises KeyError

### 3.3.270 2021-11-04

- T3964 (bug): SSTP: local-user static-ip CLI node accepts invalid IPv4 addresses

### 3.3.271 2021-11-03

- T3610 (bug): DHCP-Server creation for not primary IP address fails

### 3.3.272 2021-11-01

- T3846 (bug): dmvpn configuration not reapplied after "restart vpn"
- T3956 (bug): GRE tunnel - unable to move from source-interface to source-address, commit error

### 3.3.273 2021-10-31

- T3945 (feature): Add route-map for bgp aggregate-address
- T3341 (bug): Wrong behavior of the "reset vpn ipsec-peer XXX tunnel XXX" command
- T3954 (bug): FTDI cable makes VyOS sagitta latest hang, /dev/serial unpopulated, config system error
- T3943 (bug): "netflow source-ip" prevents image upgrades if IP address does not exist locally

### 3.3.274 2021-10-29

- T3942 (feature): Generate IPsec debug archive from op-mode

### 3.3.275 2021-10-28

- T3941 (bug): "show vpn ipsec sa" shows established time of parent SA not child SA's

### 3.3.276 2021-10-27

- T3944 (bug): VRRP fails over when adding new group to master

### 3.3.277 2021-10-25

- T3935 (bug): Update from rc5 to EPA2 failed

### 3.3.278 2021-10-22

- T3188 (bug): Tunnel local-ip to dhcp-interface Change Fails to Update

### 3.3.279 2021-10-21

- T3920 (bug): dhclient exit hook script 01-vyos-cleanup causes too many arguments error
- T3926 (bug): strip-private does not sanitize "cisco-authentication" from NHRP configuration
- T3925 (feature): Tunnel: dhcp-interface not implemented - use source-interface instead
- T3927 (feature): Kernel: Enable kernel support for HW offload of the TLS protocol

### 3.3.280 2021-10-20

- T3922 (bug): NHRP: delete fails
- T3918 (bug): DHCPv6 prefix delegation incorrect verify error
- T3921 (bug): tunnel: KeyError when using dhcp-interface

### 3.3.281 2021-10-19

- T3396 (bug): syslog can't be configured with an ipv6 literal destination in 1.2.x
- T690 (feature): Allow OpenVPN servers to push routes with custom metric values

### 3.3.282 2021-10-17

- T3786 (bug): GRE tunnel source address 0.0.0.0 error
- T3425 (bug): Scripts from the /config/scripts/ folder do not run on live system
- T3217 (default): Save FRR configuration on each commit
- T3076 (bug): Router reboot adds unwanted 'contrack-sync mcast-group '225.0.0.50'' line to configuration
- T2800 (bug): Pseudo-Ethernet: source-interface must not be member of a bridge
- T3422 (bug): Dynamic DNS doesn't allow zone field with cloudflare protocol
- T3381 (bug): Change GRE tunnel failed
- T3254 (bug): Dynamic DNS status shows incorrect last update time
- T3253 (bug): rpki: multiple peers cannot be configured
- T3219 (default): Typo in openvpn server client config for IPv6 iroute
- T2100 (feature): BGP route advertisement wih checks rib
- T1663 (enhancement): T1656 equuleus: buster: arm64/aarch64: ipaddrcheck does not complete testing
- T1243 (bug): BGP local-as accept wrong values
- T770 (bug): Bonded interfaces get updated with incorrect hw-id in config.
- T697 (bug): Clean up and sanitize package dependencies
- T3837 (default): OpenConnect: Fix typo in help property
- T1440 (bug): Creating two DHCPv6 shared-network-names with the same subnet is allowed, causes dhcpd to fail to start.
- T578 (feature): Support Linux Container

### 3.3.283 2021-10-16

- T3879 (bug): GPG key verification fails when upgrading from a 1.3 beta version
- T3851 (bug): Missing ospf and rip options for bridge vifs

### 3.3.284 2021-10-13

- T3904 (bug): NTP pool associations silently fail
- T3277 (feature): DNS Forwarding - reverse zones

### 3.3.285 2021-10-11

- T2607 (feature): Support for pppoe-server radius mode auth and config radius accounting port

### 3.3.286 2021-10-10

- T3750 (bug): pdns-recursor 4.4 issue with dont-query and private DNS servers
- T3885 (default): dhcpv6-pd: randomly generated DUID is not persisted
- T3899 (enhancement): Add support for hd44780 LCD displays

### 3.3.287 2021-10-09

- T3894 (bug): Tunnel Commit Failed if system does not have `eth0`

### 3.3.288 2021-10-08

- T3893 (bug): MGRE Tunnel commit crash If sit tunnel available

### 3.3.289 2021-10-04

- T3888 (bug): Incorrect warning when poweroff command executed from configure mode.
- T3890 (feature): dhcp(v6): provide op-mode commands to retrieve both server and client logfiles
- T3889 (feature): Migrate to journalctl when reading daemon logs

### 3.3.290 2021-10-03

- T3880 (bug): EFI boot shows error on display

### 3.3.291 2021-10-02

- T3882 (feature): Upgrade PowerDNS recursor to 4.5 series
- T3883 (bug): VRF - Delete vrf config on interface

### 3.3.292 2021-10-01

- T3877 (bug): VRRP always enabled rfc3768-compatibility even when not specified

### 3.3.293 2021-09-30

- T3874 (bug): D-Link Ethernet Interface not working.

### 3.3.294 2021-09-27

- T3858 (bug): Deleting OSPFv3 process yields: Unknown command: no router-id

### 3.3.295 2021-09-26

- T3860 (bug): Error on pppoe, tunnel and wireguard interfaces for IPv6 EUI64 addresses
- T3857 (feature): reboot: send wall message to all users for information
- T3867 (bug): vxlan: multicast group address is not validated
- T3859 (bug): Add "log-adjacency-changes" to ospfv3 process

### 3.3.296 2021-09-23

- T3850 (bug): Dots are no longer allowed in SSH public key names

### 3.3.297 2021-09-21

- T2602 (bug): pptp/sstp/l2tp add possibility enable or disable CCP

### 3.3.298 2021-09-19

- T3841 (feature): dhcp-server: add ping-check option to CLI
- T2738 (bug): Modifying configuration in the "interfaces" section from VRRP transition scripts causes configuration lockup and high CPU utilization
- T3842 (feature): Backport DHCP server improvements from VyOS 1.4 sagitta to 1.3 equuleus
- T3840 (feature): dns forwarding: Cache size should allow values > 10k
- T3672 (bug): DHCP-F0 with multiple subnets results in invalid/non-functioning dhcpd.conf configuration file output

### 3.3.299 2021-09-11

- T3402 (feature): Add VyOS programming library for operational level commands

### 3.3.300 2021-09-10

- T3802 (bug): Commit fails if ethernet interface doesn't support flow control
- T3819 (bug): Upgrade Salt Stack 3002.3 -> 3003 release train
- T3421 (bug): MTR/Traceroute broken in 1.3-beta
- T3820 (feature): PowerDNS recursor - update from 4.3 -> 4.4 to sync with current
- T1770 (bug): webproxy breaks commit and http access on routed client
- T915 (feature): MPLS Support

### 3.3.301 2021-09-09

- T3816 (bug): Error after entering outbound-interface command in NAT
- T3814 (bug): wireguard: commit error showing incorrect peer name from the configured name
- T3805 (bug): OpenVPN insufficient privileges for rtnetlink when closing TUN/TAP interface

### 3.3.302 2021-09-07

- T2322 (bug): CLI [op-mode] bugs. Root task
- T1894 (bug): FRR config not loaded after daemons segfault or restart
- T3807 (bug): Op Command "show interfaces wireguard" does not show the output
- T3808 (default): ipsec is mistakenly restarted after delete

### 3.3.303 2021-09-06

- T3806 (bug): Don't set link local ipv6 address if MTU less than 1280
- T3803 (default): Add source-address option to the ping CLI
- T3431 (bug): Show version all bug
- T3362 (bug): 1.3 - RC1 ifb redirect failing to commit
- T3291 (bug): Fault on setting offload RPS with single-core CPU
- T2920 (bug): Commit crash when adding the second mGRE tunnel with the same key
- T2895 (bug): VPN IPsec "leftsubnet" declared 2 times
- T2019 (bug): LLDP wrong config generation for interface 'all'

### 3.3.304 2021-09-05

- T3804 (feature): cli: Migrate and merge "system name-servers-dhcp" into "system name-server"

### 3.3.305 2021-09-04

- T3697 (bug): Impossible to delete IPsec completely
- T3619 (bug): Performance Degradation 1.2 --> 1.3 | High ksoftirqd CPU usage
- T1785 (bug): Deleting partitions on disks (Raid1) with default value 'no'

### 3.3.306 2021-09-03

- T3788 (bug): Keys are not allowed with ipip and sit tunnels
- T3683 (bug): VXLAN not accept ipv6 and source-interface options and mtu bug
- T3634 (feature): Add op command option for ping for do not fragment bit to be set

### 3.3.307 2021-09-02

- T3792 (bug): login: A hyphen present in a username from "system login user" is replaced by an underscore
- T3790 (bug): Does not possible to configure PPTP static ip-address to users

### 3.3.308 2021-09-01

- T2434 (bug): Duplicate Address Detection Breaks Interfaces

### 3.3.309 2021-08-31

- T3789 (feature): Add custom validator for base64 encoded CLI data
- T3782 (default): Ingress Shaping with IFB No Longer Functional with 1.3

### 3.3.310 2021-08-30

- T3777 (bug): adding IPv6 EUI64 address fails commit in 1.3.0-rc6
- T3768 (default): Remove early syntaxVersion implementation
- T2558 (feature): Add some CPU information to `show version` + fix broken hypervisor detection
- T2430 (default): cannot delete specific route static next-hop
- T1350 (bug): VRRP transition script will be executed once only
- T2941 (default): Using a non-ASCII character in the description field causes UnicodeDecodeError in configsource.py
- T3787 (bug): Remove deprecated UDP fragmentation offloading option

- T3677 (feature): "sipcalc" not included in 1.3

### 3.3.311 2021-08-29

- T3708 (bug): isisd and gre-bridge commit error
- T3783 (bug): "set protocols isis spf-delay-ietf" is not working
- T2750 (default): Use m4 as a template processor

### 3.3.312 2021-08-27

- T3182 (bug): Main blocker Task for FRR 7.4/7.5 series update
- T2108 (default): Use minisign/signify instead of GPG for release signing

### 3.3.313 2021-08-26

- T3781 (bug): Revert the NAT implementation in 1.3 back to iptables
- T3776 (default): Rename FRR daemon restart op-mode commands
- T3779 (feature): Backport all 1.4 IS-IS features and configuration to 1.3 except VRF

### 3.3.314 2021-08-25

- T3773 (bug): Delete the "show system integrity" command (to prepare for a re-implementation)
- T1514 (default): Add ability to restart frr processes

### 3.3.315 2021-08-24

- T3772 (bug): VRRP virtual interfaces are not shown in show interfaces

### 3.3.316 2021-08-23

- T2555 (bug): XML op-mode generation scripts silently discard XML nodes

### 3.3.317 2021-08-21

- T3682 (bug): Remove running dhclient from ether-resume.py

### 3.3.318 2021-08-20

- T1950 (default): Store VyOS configuration syntax version data in JSON file

### 3.3.319 2021-08-19

- T2759 (bug): `validate-value` prints error messages from validators that fail even if overall validation succeeds
- T3234 (bug): `multi_to_list` fails in certain cases, with root cause an element redundancy in XML interface-definitions
- T3732 (feature): `override-default` helper should support adding `defaultValues` to default less nodes
- T1962 (default): Add syntax version to schema

### 3.3.320 2021-08-17

- T2525 (bug): OSPFv3 missing route map, not establishing
- T508 (bug): ISC DHCP incorrect UDP checksum generation
- T1643 (bug): Deleting all firewall zones failed and locked out box
- T1550 (bug): Add support for Large BGP Community show commands

### 3.3.321 2021-08-16

- T3738 (default): `openvpn` fails if server and authentication are configured
- T1594 (bug): `l2tpv3` error on IPv6 local-ip

### 3.3.322 2021-08-15

- T3756 (default): VyOS generates invalid QR code for wireguard clients

### 3.3.323 2021-08-14

- T3745 (feature): `op-mode IPsec show vpn ipse sa` sorting
- T521 (bug): Network services may fail if `vyatta-router.service` startup takes longer than a few seconds

### 3.3.324 2021-08-13

- T3740 (bug): HTTPs API breaks when the address is IPv6

### 3.3.325 2021-08-12

- T3731 (bug): `verify_accel_ppp_base_service` return wrong config error for SSP
- T3405 (feature): PPPoE server unit-cache
- T2432 (default): `dhcpcd`: Can't create new lease file: Permission denied
- T3746 (feature): Inform users logging into the system about a pending reboot
- T3744 (default): Dns forwarding statistics formatting missing a new line

### 3.3.326 2021-08-10

- T3730 (bug): `op-mode contrack-sync` miss some functions

### 3.3.327 2021-08-09

- T1501 (bug): VPN Commit Errors

### 3.3.328 2021-08-08

- T2027 (bug): `get_config_dict` is failing when the configuration section is empty/missing
- T169 (feature): Image install should put correct serial console device in created GRUB menu entry

### 3.3.329 2021-08-07

- T548 (feature): BGP IPv6 multipath support

### 3.3.330 2021-08-06

- T1153 (bug): VyOS 1.2.0RC10, RAID-1, fresh install, unable to save config

### 3.3.331 2021-08-05

- T696 (feature): Rewrite `contrack sync` to XML

### 3.3.332 2021-08-04

- T3704 (feature): Add ability to interact with Areca RAID adapters
- T320 (default): OSPF does not redistribute connected routes associated with virtual tunnel interfaces

### 3.3.333 2021-08-02

- T2623 (bug): Creating sit tunnel fails with “Can not set “local” for tunnel sit tun1 at tunnel creation”
- T2161 (default): snmpd cannot start if ipv6 disabled
- T3601 (default): Error in ssh keys for vmware cloud-init if ssh keys is left empty.

### 3.3.334 2021-08-01

- T3707 (bug): Ping incorrect ip host checks

### 3.3.335 2021-07-31

- T3716 (feature): Linux kernel parameters ignore\_routes\_with\_link\_down- ignore disconnected routing connections
- T1626 (bug): BGP exchanges prefixes without specified address-family

### 3.3.336 2021-07-30

- T1176 (default): FRR - BGP replicating routes
- T1123 (bug): Inconsistency in community-list naming validation

### 3.3.337 2021-07-29

- T2931 (bug): Unicode decode error causes vyos.configd service to restart
- T2727 (bug): Add a dotted decimal value validator
- T2328 (default): dhcpv6 server not starting (disable check reversed?)
- T1758 (default): Switch vyos.config to libvyosconfig
- T954 (bug): Using the 10.255.255.0/24 subnet on other interfaces breaks L2TP/IPSec

### 3.3.338 2021-07-23

- T3699 (bug): login: verify selected "system login user" name is not already used by the base system.

### 3.3.339 2021-07-21

- T3689 (bug): static ipv6 route doesn't deleted in some cases
- T3685 (feature): IPv6 PBR doesn't allow setting of an egress interface

### 3.3.340 2021-07-20

- T3691 (bug): GRETAP: key is not applied when interface is created

### 3.3.341 2021-07-13

- T3679 (default): Point the unexpected exception message link to the new rolling release location

### 3.3.342 2021-07-11

- T3665 (bug): Missing VRF support for VxLAN but already documented

### 3.3.343 2021-07-06

- T3660 (feature): Conntrack-Sync configuration command to specify destination udp port for peer

### 3.3.344 2021-07-01

- T3658 (feature): Add support for dhcpdv6 fixed-prefix6

### 3.3.345 2021-06-29

- T3593 (bug): PPPoE server called-sid format does not work

### 3.3.346 2021-06-25

- T3650 (bug): OpenVPN: Upgrade package to 2.5.1 before releasing VyOS 1.3.0
- T3649 (feature): Add bonding additional hash-policy

### 3.3.347 2021-06-24

- T2722 (bug): `get_config_dict()` and `key_mangling=('-', '_')` will alter CLI data for `tagNodes`

### 3.3.348 2021-06-22

- T3629 (bug): IPoE server shifting address in the range

### 3.3.349 2021-06-20

- T3637 (bug): `vrf: bind-to-all` didn't work properly

### 3.3.350 2021-06-19

- T3633 (feature): Add LRO offload for interface ethernet

### 3.3.351 2021-06-17

- T3631 (feature): `route-map: migrate "set extcommunity-rt" and "set extcommunity-soo" to "set extcommunity rt|soo" to match FRR syntax`

### 3.3.352 2021-06-16

- T2425 (feature): Rewrite all policy zebra filters to XML/Python style
- T3630 (feature): `op-mode: add "show version kernel" command`

### 3.3.353 2021-06-13

- T3620 (feature): Rename WWAN interface from `wirelessmodem` to `wwan` to use QMI interface
- T3622 (feature): WWAN: add support for APN authentication
- T3621 (bug): PPPoE interface does not validate if password is supplied when username is set

### 3.3.354 2021-06-10

- T3250 (bug): PPPoE server: wrong local usernames
- T3138 (bug): `ddclient` improperly updated when apply `rfc2136` config
- T2645 (default): Editing `route-map` action requires adding a new rule

### 3.3.355 2021-06-09

- T3602 (bug): Renaming BGP Peer Groups Leaves Router Broken
- T2916 (bug): A state of VTI interface in a configuration does not being processing properly

### 3.3.356 2021-06-08

- T3605 (default): Allow to set prefer-global for ipv6-next-hop
- T3607 (feature): [route-map] set ipv6 next-hop prefer-global

### 3.3.357 2021-06-07

- T3581 (bug): Incomplete command `show ipv6 ospfv3 linkstate`
- T3516 (bug): FRR 7.5 adds a second route when you attempt to change a static route distance instead of overwriting the old route
- T3461 (bug): OpenConnect Server redundancy check
- T3455 (bug): system users can not be added in "edit"

### 3.3.358 2021-06-04

- T3592 (feature): Set default TTL 64 for tunnels

### 3.3.359 2021-06-01

- T406 (bug): VPN configuration error: IPv6 over IPv4 IPsec is not supported when using IPv6 ONLY tunnel.

### 3.3.360 2021-05-30

- T1866 (bug): Commit archive over SFTP doesn't work with non-standard ports
- T3589 (feature): op-mode: support clearing out logfiles from CLI
- T3508 (bug): Check if there's enough drive space for an upgrade before downloading an image
- T1506 (enhancement): commit-archive scp/sftp public key authentication

### 3.3.361 2021-05-29

- T3135 (bug): BFD configurations fail to be applied
- T3103 (default): Rewrite parts of vyos\frr.py for readability, logging and to fix multiline regex "bugs"
- T2739 (default): vyos-utils is not compiled with a Jenkins pipeline.
- T2451 (bug): Cannot use !tcp or !tcp\_udp while adding firewall rule
- T2436 (default): equuleus: Testing: vyos-1x: syntax checking Python scripts in PR
- T2184 (bug): OpenVPN op\_mode tools broken
- T1944 (bug): FRR: Invalid route in BGP causes update storm, memory leak, and failure of Zebra

### 3.3.362 2021-05-28

- T1579 (feature): Rewrite all interface types in new XML/Python style

### 3.3.363 2021-05-27

- T2629 (bug): VXLAN interfaces don't actually allow you to configure most settings
- T2617 (feature): Rewrite vyatta-op-quagga "show" to XML
- T2512 (feature): vyatta-op-quagga [show ip] to XML format
- T1905 (default): Update to Keepalived 2.0.19
- T2669 (bug): DHCP-server overlapping ranges.

### 3.3.364 2021-05-26

- T3558 (default): autocomplete options for dhcp-interface is not showing for the static route command
- T3540 (bug): Keepalived memory utilisation issue when constantly getting its state in JSON format
- T2807 (feature): IPv6 Link-Local Address - Automatically generation/configuration on GRE Interfaces

### 3.3.365 2021-05-24

- T3575 (bug): pseudo-ethernet: must check source-interface MTU
- T3571 (bug): Broken Show Tab Complete
- T3576 (bug): ISIS does not support IPV6

### 3.3.366 2021-05-23

- T3570 (default): Prevent setting of a larger MTU on child interfaces
- T3572 (feature): Basic Drive Diagnostic Tools

### 3.3.367 2021-05-20

- T3554 (feature): Add area-type stub for ospfv3

### 3.3.368 2021-05-19

- T3562 (feature): Update Accel-PPP to a newer revision
- T3559 (feature): Add restart op-command for OpenConnect Server

### 3.3.369 2021-05-18

- T3525 (default): VMWare resume script syntax errors
- T2462 (default): LLDP op-mode exception: IndexError: list index out of range

### 3.3.370 2021-05-15

- T3549 (bug): DHCPv6 "service dhcpv6-server global-parameters name-server" is not correctly exported to dhcpdv6.conf when multiple name-server entries are present
- T3532 (bug): Not possible to change ethertype after interface creation
- T3550 (bug): Router-advert completion typo
- T3547 (feature): conntrackd: remove deprecated config options
- T3535 (feature): Rewrite vyatta-conntrack-sync in new XML and Python flavor
- T2049 (feature): Update strongSwan cipher suites list for IPSec settings

### 3.3.371 2021-05-14

- T3346 (bug): nat 4-to-5 migration script fails when a 'source' or 'destination' node exists but there are no rules
- T3248 (default): Deal with VRRP mode-force command that exists in 1.2 but not in 1.3
- T3426 (default): add support for script arguments to vyos-configd

### 3.3.372 2021-05-13

- T3544 (feature): DHCP server should validate configuration before applying it
- T3543 (feature): Support for setting lacp\_rate on LACP bonded interfaces

### 3.3.373 2021-05-12

- T3302 (default): Make vyos-configd relay stdout from scripts to the user's console

### 3.3.374 2021-05-11

- T3526 (bug): Smoketest policy fail in CI

### 3.3.375 2021-05-10

- T3528 (bug): Frr 7.5.1 uses 'seq' for community-lists

### 3.3.376 2021-05-08

- T3517 (bug): FRR 7.5 bfd behavior for 1.3

### 3.3.377 2021-05-07

- T1171 (bug): 1.2.0 epa2 - IPsec VPN initiation

### 3.3.378 2021-05-06

- T3519 (bug): Cannot add / assign L2TPv3 to vrf

### 3.3.379 2021-05-01

- T3379 (feature): Add global-parameters name-server for dhcpv6-server
- T3491 (default): Change Kernel HZ to 1000

### 3.3.380 2021-04-30

- T3170 (default): Add a sanity check for empty node.def files

### 3.3.381 2021-04-29

- T3502 (bug): "system ip multipath layer4-hashing" doesn't work
- T3029 (bug): Generated NGINX configuration is wrong for the redirection (http -> https)
- T3156 (feature): Add op and additional conf commands for ISIS
- T2012 (feature): Global PBR
- T1314 (feature): Allow BGP on unnumbered interfaces

### 3.3.382 2021-04-27

- T2946 (bug): Calling 'stty\_size' causes show interfaces API to fail

### 3.3.383 2021-04-25

- T3468 (bug): Tunnel interfaces aren't suggested as being available for bridging (regression)
- T1802 (feature): Wireguard QR code in cli for mobile devices

### 3.3.384 2021-04-23

- T3290 (bug): Disabling GRE conntrack module fails

### 3.3.385 2021-04-18

- T3481 (default): Exclude tag node values from key mangling
- T3475 (bug): XML dictionary cache unable to process syntaxVersion elements

### 3.3.386 2021-04-15

- T3386 (bug): PPPoE-server don't start with local authentication

### 3.3.387 2021-04-14

- T3055 (bug): op-mode incorrect naming for ipsec policy-based tunnels

**3.3.388 2021-04-12**

- T3454 (enhancement): dhclient reject option

**3.3.389 2021-04-05**

- T1612 (default): dhcp-server time-offset fails to validate
- T3438 (bug): VRF: removing vif which belongs to a vrf, will delete the entire vrf from the operating system
- T3418 (bug): BGP: system wide known interface can not be used as neighbor

**3.3.390 2021-04-04**

- T3457 (feature): Output the "monitor log" command in a colorful way

**3.3.391 2021-03-31**

- T3445 (bug): vyos-1x build include not all nodes

**3.3.392 2021-03-25**

- T2639 (feature): sort output of show vpn ipsec sa

**3.3.393 2021-03-22**

- T3284 (bug): merge/load fail silently if unable to resolve host

**3.3.394 2021-03-21**

- T3416 (bug): NTP: when running inside a VRF op-mode commands do not work

**3.3.395 2021-03-20**

- T3392 (bug): vrrp over dhcp default route bug (unexpected vrf)
- T3373 (feature): Upgrade to SaltStack version 3002.5
- T3329 (default): "system conntrack ignore" rules can no longer be created due to an iptables syntax change
- T3300 (feature): Add DHCP default route distance
- T3306 (feature): Extend set route-map aggregator as to 4 Bytes

### 3.3.396 2021-03-18

- T3411 (default): Extend the `redirect_stdout` context manager in `vyos-configd` to `redirect stdout` from subprocesses
- T3271 (bug): `qemu-kvm grub` issue

### 3.3.397 2021-03-17

- T3413 (bug): Configuring invalid IPv6 EUI64 address results in "OSError: illegal IP address string passed to `inet_pton`"

### 3.3.398 2021-03-14

- T2271 (feature): OSPF: add per VRF instance support
- T175 (feature): Add source route option to VTI interfaces

### 3.3.399 2021-03-13

- T3406 (bug): `tunnel: interface` no longer supports specifying `encaplimit none` - or `migrator` is missing
- T3407 (bug): `console-server: do not allow to spawn a console-server session on serial port used by "system console"`

### 3.3.400 2021-03-11

- T3399 (bug): RPKI: dashes in hostnames are replaced with underscores when rendering the FRR config
- T3305 (bug): `Ingress qdisc` does not work anymore in `1.3-rolling-202101` snapshot
- T2927 (bug): `isc-dhcpd` release and expiry events never execute
- T899 (bug): Tunnels cannot be moved from one bridge to another
- T786 (feature): new style `xml` and `conf-mode` scripts: possibility to add `tagNode` value as parameter to `conf-script`

### 3.3.401 2021-03-09

- T3382 (bug): Error creating Console Server

### 3.3.402 2021-03-08

- T3387 (bug): Command "Monitor vpn ipsec" is not working

### 3.3.403 2021-03-07

- T3319 (bug): VXLAN uses ttl 1 (auto) by default
- T3391 (feature): Add CLI support for specifying maximum-paths per address family ipv4 unicast and ipv6 unicast
- T3211 (feature): ability to redistribute ISIS into other routing protocols

### 3.3.404 2021-03-05

- T2659 (feature): Add fastnetmon (DDoS detection) support

### 3.3.405 2021-03-04

- T2861 (bug): route-map "set community additive" not working correctly

### 3.3.406 2021-03-03

- T2966 (feature): tunnel: add new encapsulation types ip6tnl and ip6gretap

### 3.3.407 2021-03-01

- T3342 (bug): On xen-netback interfaces must set "scattergather" offload before MTU>1500

### 3.3.408 2021-02-28

- T3370 (bug): dhcp: Invalid domain name "private"
- T3369 (feature): VXLAN: add IPv6 underlay support

### 3.3.409 2021-02-27

- T2291 (bug): Bad hostnames in /etc/hosts with static-mapping in dhcp server config
- T3364 (feature): tunnel: cleanup/rename CLI nodes
- T3368 (feature): macsec: add support for gcm-aes-256 cipher
- T3366 (bug): tunnel: can not change local / remote ip address for gre-bridge tunnel
- T3173 (feature): Need 'nopmtudisc' option for tunnel interface

### 3.3.410 2021-02-26

- T3357 (default): HTTP-API redirect from http correct https port

### 3.3.411 2021-02-24

- T3303 (feature): Change welcome message on boot

### 3.3.412 2021-02-21

- T3163 (feature): ethernet ring-buffer can be set with an invalid value

### 3.3.413 2021-02-19

- T3326 (bug): OSPFv3: Cannot add L2TPv3 interface

### 3.3.414 2021-02-18

- T3259 (default): many dnat rules makes the vyos http api crash, even showConfig op timeouts

### 3.3.415 2021-02-17

- T3047 (bug): OSPF : virtual-link and passive-interface default parameters does not work together
- T3312 (feature): SolarFlare NICs support

### 3.3.416 2021-02-16

- T3318 (feature): Update Linux Kernel to v5.4.208 / 5.10.142

### 3.3.417 2021-02-14

- T2152 (bug): ddclient has bug which prevents use\_web from being used
- T3308 (feature): BGP: add gracefull shutdown support

### 3.3.418 2021-02-13

- T3028 (feature): Create a default user when metadata is not available (for Cloud-init builds)
- T2867 (feature): Cleanup DataSourceOVF.py in the Cloud-init
- T2726 (feature): Allow to use all supported SSH key types in Cloud-init
- T2403 (feature): Full support for networking config in Cloud-init
- T2387 (feature): Create XML scheme for [conf\_mode] BGP

- T2174 (feature): Rewrite protocol BGP to new XML/Python style
- T1987 (bug): A default route can be deleted by dhclient-script in some cases
- T723 (feature): Add support for first boot or installation time saved config modification
- T1775 (bug): Cloud-init not running userdata runcmd
- T1389 (feature): Add support for NoCloud cloud-init datasource
- T1315 (feature): Allow BGP to use address-family l2vpn evpn

### 3.3.419 2021-02-11

- T2638 (default): FRR: New framework for configuring FRR

### 3.3.420 2021-02-08

- T3295 (feature): Update Linux Kernel to v5.4.96 / 5.10.14

### 3.3.421 2021-02-07

- T3293 (bug): RPKI migration script errors out after CLI rewrite

### 3.3.422 2021-02-06

- T3285 (feature): Schedule reboots through systemd-shutdown instead of atd
- T661 (feature): Show a warning if the router is going to reboot soon (due to "commit-confirm" command)

### 3.3.423 2021-02-05

- T2450 (feature): Rewrite "protocols vrf" tree in XML and Python
- T208 (feature): Ability to ignore default-route from dhcpcd per interface

### 3.3.424 2021-02-03

- T3239 (default): XML: override 'defaultValue' for mtu of certain interfaces; remove workarounds
- T2910 (feature): XML: generator should support override of variables
- T2873 (bug): "show nat destination translation address" doesn't filter at all

### 3.3.425 2021-02-02

- T3018 (bug): Unclear behaviour when configuring vif and vif-s interfaces
- T3255 (default): Rewrite protocol RPKI to new XML/Python style

### 3.3.426 2021-02-01

- T3268 (feature): Add VRF support to VIF-S interfaces
- T3274 (default): ask\_yes\_no() doesn't handle EOFError

### 3.3.427 2021-01-31

- T3276 (feature): Update Linux Kernel to v5.4.94 / 5.10.12

### 3.3.428 2021-01-30

- T3269 (bug): VIF-C interfaces don't verify configuration
- T3240 (feature): Support per-interface DHCPv6 DUIDs
- T3273 (default): PPPoE static default-routes deleted on interface down when not added by interface up

### 3.3.429 2021-01-29

- T3262 (bug): DHCPv6 client runs when dhcpv6-options is configured without requesting an address or PD
- T3261 (bug): Does not possible to disable pppoe client interface.

### 3.3.430 2021-01-27

- T3257 (feature): tcpdump supporting complete protocol
- T3110 (bug): Broken pipe in show interfaces
- T651 (enhancement): Split CI'ed, VyOS-specific packages and other packages into separate repos
- T597 (enhancement): Code testing on sonarcloud.com
- T516 (default): Make Python / XML code development more testable
- T625 (default): Lack of IKEv1 lifetime negotiation
- T613 (bug): Missing linux-kbuild
- T505 (bug): Hostapd cannot log

### 3.3.431 2021-01-26

- T3251 (bug): PPPoE client trying to authorize with the wrong username
- T2859 (bug): show nat source translation - Errors out

### 3.3.432 2021-01-25

- T3249 (feature): Support operation mode forwarding table output

### 3.3.433 2021-01-24

- T3230 (bug): RPKI can't be deleted
- T3243 (feature): Update Linux Kernel to v5.4.92 / 5.10.10

### 3.3.434 2021-01-18

- T2761 (feature): Extend "show vrrp" op-mode command with router priority
- T2679 (feature): VRRP with BFD Failure Detection
- T3212 (bug): SSH: configuration directory is not always created on boot
- T3231 (bug): "system option ctrl-alt-delete" has no effect

### 3.3.435 2021-01-17

- T3222 (bug): Typo in BGP dampening description
- T2944 (bug): NTP by default listen on any address/interface
- T3226 (bug): Repair bridge smoke test damage
- T2442 (enhancement): Move application of STP settings for bridge members from interfaces-bridge.py to Interface.add\_to\_bridge()
- T2381 (bug): OpenVPN: openvpn-option parsed/rendered improperly

### 3.3.436 2021-01-16

- T3215 (bug): Operational command "show ipv6 route" is broken
- T3172 (bug): Builds sometime after 2020-12-17 have broken routing after reboot
- T3157 (bug): salt-minion fails to start due to permission error accessing /root/.salt/minion.log
- T3167 (default): Recurring bugs in Intel NIC drivers
- T3151 (default): Decide on the final list of packages for 1.3
- T3137 (feature): Let VLAN aware bridge approach the behavior of professional equipment
- T3223 (feature): Update Linux Kernel to v5.4.89 / 5.10.7

**3.3.437 2021-01-15**

- T3210 (feature): ISIS three-way-handshake
- T3184 (feature): Add correct descriptions for BGP neighbors
- T2850 (feature): Add BGP template for FRR

**3.3.438 2021-01-14**

- T3218 (feature): Replace Intel out-of-tree drivers with Linux Kernel stock drivers.

**3.3.439 2021-01-13**

- T3186 (bug): NAT: Commit failed when applying negated(!) addresses

**3.3.440 2021-01-12**

- T3205 (bug): Does not possible to configure tunnel mode gre-bridge

**3.3.441 2021-01-11**

- T3208 (bug): Does not possible to change user password
- T3198 (bug): OSPF database filtering issue
- T3206 (bug): Unable to delete destination NAT rule
- T3193 (bug): DHCPv6 PD verification issues
- T3201 (bug): Operational command "show log all" is not working for RADIUS users

**3.3.442 2021-01-10**

- T3178 (feature): Migrate vyatta-op-quagga to vyos-1x

**3.3.443 2021-01-09**

- T2467 (bug): Restarting flow accounting fails with systemd error
- T3199 (feature): Update Linux Kernel to v5.4.88 / 5.10.6

### 3.3.444 2021-01-07

- T3192 (feature): login: radius: add support for IPv6 RADIUS servers

### 3.3.445 2021-01-05

- T3169 (enhancement): Reimplement smoke test of span (mirror)
- T3161 (default): Consider removing ConfigLoad.pm
- T1398 (default): Remove vyatta-config-migrate package
- T805 (enhancement): Drop config compatibility with Vyatta Core older than 6.5

### 3.3.446 2021-01-04

- T3185 (bug): [conf-mode] Wrong CompletionHelp for Tunnel local-ip
- T2601 (bug): pppoe-server: Cannot disable CCP

### 3.3.447 2021-01-03

- T3180 (bug): DHCP server raises NameError

### 3.3.448 2021-01-02

- T2321 (feature): VRF support for SSH, NTP, SNMP service
- T3177 (bug): Rolling Release no longer reports VMware UUID

### 3.3.449 2021-01-01

- T3171 (feature): Add CLI option to enable RPS (Receive Packet Steering)

### 3.3.450 2020-12-31

- T3162 (bug): Wrong PPPoE server pado-delay parameter added to config
- T3160 (bug): PPPoE server called-sid option defined in wrong section
- T3168 (feature): Update Linux Kernel to v5.4.86

### 3.3.451 2020-12-29

- T3082 (bug): `multi_to_list` must distinguish between values and defaults
- T1466 (feature): Add EAPOL login support

### 3.3.452 2020-12-28

- T1732 (feature): Removing `vyatta-webproxy` module
- T2666 (feature): Packet Processing with eBPF and XDP
- T2581 (default): `webproxy:` implement proxy chaining
- T563 (feature): `webproxy:` migrate 'service webproxy' to `get_config_dict()`

### 3.3.453 2020-12-27

- T3150 (bug): When configuring QoS, the setting procedure of port mirroring is wrong

### 3.3.454 2020-12-23

- T3143 (bug): OpenVPN server: Push route config format is wrong
- T3146 (feature): Upgrade FRR from 7.4 -> 7.5 version incl. new libyang
- T3145 (feature): Update Linux Kernel to v5.4.85
- T3147 (feature): Upgrade to SaltStack version 3002.2

### 3.3.455 2020-12-22

- T3142 (bug): OpenVPN op-command completion fails due to missing status file
- T2940 (feature): Update FRR to 7.4
- T2573 (bug): BFD op-mode commands are broken
- T2495 (feature): Add `xml` for ISIS [`conf_mode`]
- T1316 (feature): Support for IS-IS

### 3.3.456 2020-12-21

- T2619 (bug): Bug: Changes in NAT or ZONES from 1.2 to 1.3

### 3.3.457 2020-12-20

- T3131 (bug): Typo in ipsec preshared-secret help
- T3134 (bug): DHCPv6 DUID configuration node missing
- T3140 (feature): Relax "ethernet offload-options" CLI definition
- T3132 (feature): Enable egress flow accounting

### 3.3.458 2020-12-17

- T2810 (default): Docs for vpn anyconnect-server
- T2036 (default): Open Connect VPN Server () support

### 3.3.459 2020-12-14

- T3128 (bug): pppoe smoke test failed
- T3129 (feature): Update Linux Kernel to v5.4.83
- T3089 (feature): Migrate port mirroring to vyos-1x and support two-way traffic mirroring
- T3130 (feature): Replace vyos-netplug with upstream debian version

### 3.3.460 2020-12-13

- T3114 (bug): When the bridge member is a non-ethernet interface, setting VLAN-aware bridge parameters fails

### 3.3.461 2020-12-11

- T3123 (bug): Configuration of vti interface impossible

### 3.3.462 2020-12-10

- T3117 (bug): OpenVPN config migration errors upgrading from 1.3-rolling-202010280217 to 1.3-rolling-202012060217

### 3.3.463 2020-12-09

- T3122 (feature): Update Linux Kernel to v4.19.162
- T3121 (bug): get\_config\_dict() and key\_mangling=('-', '\_') Broke PowerDNS dns\_forwarding config file

### 3.3.464 2020-12-08

- T2562 (bug): VyOS can't be used as a DHCP server for a DHCP relay

### 3.3.465 2020-12-07

- T3120 (bug): Python error when deleting nat rule
- T3119 (feature): migrate "system ip" to get\_config\_dict() and provide smoketest

### 3.3.466 2020-12-05

- T2744 (bug): igmp-proxy issue: Address already in use

### 3.3.467 2020-12-04

- T3108 (bug): Section config overlapped match with FRRConfig
- T3112 (feature): PPPoE IPv6: remove "enable" node
- T3100 (feature): Migrate DHCP/DHCPv6 server to get\_config\_dict()

### 3.3.468 2020-12-03

- T3105 (bug): static-host-mapping writing in one line
- T3107 (feature): Update Linux Kernel to v4.19.161
- T3104 (bug): LLDP Traceback error

### 3.3.469 2020-12-01

- T3102 (bug): Destination NAT fails to commit
- T2713 (bug): VyOS must not change permissions on files in /config/auth

### 3.3.470 2020-11-30

- T3091 (feature): Add "tag" for static route
- T1207 (feature): DMVPN behind NAT

### 3.3.471 2020-11-29

- T3095 (feature): Migrate dhcp-relay and dhcpv6-relay to `get_config_dict()`

### 3.3.472 2020-11-28

- T2890 (bug): NAT error adding translation address range
- T2868 (bug): Tcp-mss option in policy calls kernel-panic
- T3092 (feature): nat: migrate to `get_config_dict()`

### 3.3.473 2020-11-27

- T2715 (feature): Duplicate address detection option supporting ARP
- T2714 (feature): A collection of utilities supporting IPv6 or ipv4
- T3088 (feature): Migrate IGMP-Proxy over to `get_config_dict()` and add smoketests

### 3.3.474 2020-11-24

- T3087 (feature): Update Linux Kernel to v4.19.160

### 3.3.475 2020-11-23

- T2177 (default): Commit fails on adding disabled interface to bridge
- T3066 (bug): reboot in - Invalid time
- T2802 (bug): Tunnel interface does not apply EUI-64 IPv6 Address
- T2359 (bug): Adding IPIP6 tun interface to bridge [conf\_mode] errors
- T2357 (bug): GRE-bridge conf\_mode errors
- T2259 (feature): Support for bind vif-c interfaces into VRFs
- T2205 (bug): "set interface ethernet" fails on Hyper-V
- T2182 (bug): Failure to commit an IPv6 address on a tunnel interface
- T2155 (bug): Cannot set anything on Intel 82599ES 10-Gigabit SFI/SFP+
- T2153 (bug): traceroute circular reference
- T3081 (bug): `get_config_dict()` does not honor whitespaces in the CLI values field
- T3080 (bug): OpenVPN failing silently for a number of reasons in rolling post Nov/02
- T3074 (bug): OpenVPN site-to-site creates wrong peer address
- T2542 (bug): OpenVPN client tap interfaces not coming up
- T3084 (bug): wifi: TypeError on "show interfaces wireless info"

### 3.3.476 2020-11-21

- T3079 (bug): Fix the problem that VLAN 1 will be deleted in VLAN-aware bridge
- T3060 (bug): OpenVPN virtual interface not coming up after upgrade

### 3.3.477 2020-11-20

- T3078 (feature): CLI cleanup: rename "system options" -> "system option"
- T2997 (feature): DHCP: disallow/do-not-request certain options when requesting IP address from server
- T3077 (feature): WireGuard: automatically create link-local IPv6 addresses
- T2550 (default): OpenVPN: IPv4 not working in client mode
- T3072 (feature): Migrate tunnel interfaces to new get\_config\_dict() approach
- T3065 (feature): Add "interfaces wirelessmodem" IPv6 support
- T3048 (feature): Drop static smp-affinity for a more dynamic way using tuned

### 3.3.478 2020-11-19

- T3067 (bug): Wireless interface can no longer be added to the bridge after bridge VLAN support
- T3075 (feature): Update Linux Kernel to v4.19.158

### 3.3.479 2020-11-16

- T3003 (enhancement): Extend smoketest framework to allow loading an arbitrary config file

### 3.3.480 2020-11-15

- T3069 (bug): OpenVPN routed networks not available
- T3038 (feature): Supporting AZERTY keyboards
- T2993 (bug): op-mode: lldp: show lldp neighbors - AttributeError: 'str' object has no attribute 'items'

### 3.3.481 2020-11-14

- T3041 (bug): Intel QAT: vyos-1.3-rolling-202011020217-amd64 kernel panic during configure

### 3.3.482 2020-11-13

- T3063 (feature): Add support for Huawei LTE Module ME909s-120
- T3059 (bug): L2TPv3 interface: Enforced to shutdown but no command to enable interface permanently

### 3.3.483 2020-11-12

- T3064 (feature): Update Linux Kernel to v4.19.157

### 3.3.484 2020-11-10

- T2103 (bug): Abnormal interface names if VIF present

### 3.3.485 2020-11-08

- T3050 (bug): Broken address/subnet validation on NAT configuration

### 3.3.486 2020-11-07

- T2914 (bug): OpenVPN: Fix for IPv4 remote-host hostname in client mode:
- T2653 (feature): "set interfaces" Python handler code improvements - next iteration
- T311 (feature): DHCP: set client-hostname via CLI

### 3.3.487 2020-11-06

- T3051 (bug): OpenVPN: multiple client routes do not work in server mode
- T3046 (bug): openvpn directory is not auto-created
- T3052 (feature): Update Linux firmware files to 20201022 version
- T2731 (bug): "show interfaces" returns invalid state when link is down

### 3.3.488 2020-11-05

- T3049 (feature): Update Linux Kernel to v4.19.155
- T2994 (feature): Migrate OpenVPN interfaces to get\_config\_dict() syntax

### 3.3.489 2020-11-03

- T3043 (feature): Wireless: Refactor CLI
- T3034 (feature): Add WiFi WPA 3 support
- T2967 (bug): Duplicate IPv6 BFD peers created
- T2483 (bug): DHCP most likely not restarting pdns\_recursor

### 3.3.490 2020-11-02

- T3024 (bug): DHCPv6 PD configuration doesn't really render an expected behavior

### 3.3.491 2020-11-01

- T3036 (feature): OpenVPN remote-address does not accept IPv6 address
- T2193 (feature): Display disabled VRRP instances in a `show vrrp` output

### 3.3.492 2020-10-30

- T2790 (feature): Add ability to set ipv6 protocol route-map for OSPFv3
- T3033 (feature): Update Linux Kernel to v4.19.154
- T2969 (bug): OpenVPN: command\_set on interface is not applied, if interface doesn't come up in commit

### 3.3.493 2020-10-28

- T2631 (default): l2tp, sstp, pptp add option to disable radius accounting
- T2630 (feature): Allow Interface MTU over 9000
- T3027 (bug): Unable to update system Signature check FAILED
- T2995 (bug): Enhancements/bugfixes for vyos\_dict\_search()
- T2968 (feature): Add support for Intel Atom C2000 series QAT

### 3.3.494 2020-10-27

- T3026 (default): qemu: update script for deprecated ssh\_host\_port\_min/max
- T2938 (feature): Adding remote Syslog RFC5424 compatibility
- T2924 (bug): Using 'set src' in a route-map invalidates it as part of a subsequent boot-up
- T2587 (bug): Cannot enable the interface when the MTU is set to less than 1280
- T2885 (default): configd: print commit errors to config session terminal
- T2808 (default): Add smoketest to ensure script consistency with config daemon
- T2582 (default): Script daemon to offload processing during commit

- T1721 (bug): Recursive Next Hop not updated for static routes

### 3.3.495 2020-10-24

- T3007 (default): HTTP-API should use config load script, not backend config load
- T3009 (bug): vpn l2tp remoteaccess require option broken
- T3010 (bug): ttl option of gre-bridge
- T3005 (bug): Intel: update out-of-tree drivers, i40e driver warning
- T3004 (feature): ConfigSession should (optionally) use config load script
- T2723 (feature): Support tcptraceroute

### 3.3.496 2020-10-22

- T2978 (bug): IPoE service does not work on shared mode
- T2906 (bug): OpenVPN: tls-auth missing key direction

### 3.3.497 2020-10-21

- T2828 (bug): BGP conf\_mode error enforce-first-as
- T2749 (bug): Setting ethx configuration takes a long time
- T2138 (default): Can't load archived configs as they are gzipped

### 3.3.498 2020-10-20

- T2987 (bug): VxLAN not working properly after upgrading to latest October build and with a new installation
- T2989 (default): MPLS documentation expansion

### 3.3.499 2020-10-19

- T1588 (bug): VRRP failed to start if any of its interaces not exist
- T1385 (feature): Allow bonding interfaces to have pseudo-ethernet interfaces
- T3000 (bug): Mismatch between "prefix-length" and "preference" in dhcp6-server syntax
- T2992 (feature): Automatically verify sha256 checksum on ISO download
- T752 (feature): Add an option to disable IPv4 forwarding on specific interface only

### 3.3.500 2020-10-18

- T2965 (feature): Brief BFD Peer Info
- T2907 (feature): OpenVPN: Option to disable encryption
- T2985 (feature): Add glue code to create bridge interface on demand

### 3.3.501 2020-10-17

- T2980 (bug): FRR bfd crash due to invalid length
- T2991 (feature): Update WireGuard to 1.0.20200908
- T2990 (feature): Update Linux Kernel to v4.19.152
- T2981 (feature): MPLS LDP neighbor session clear capability
- T2792 (default): Failed to run `sudo make qemu` with vyos-build container due to the change of packer

### 3.3.502 2020-10-13

- T2976 (bug): Client IP pool does not work for PPPoE local users

### 3.3.503 2020-10-12

- T2951 (bug): Cannot enable logging for monitor nat
- T2782 (bug): Changing timezone, does not restart rsyslog

### 3.3.504 2020-10-06

- T2957 (bug): show openvpn not printing anything

### 3.3.505 2020-10-05

- T2963 (bug): Wireless: WIFI is not password protected when security wpa mode is not defined but passphrase is

### 3.3.506 2020-10-04

- T2953 (feature): Accel-PPP services CLI config cleanup (SSTP, L2TP, PPPoE, IPoE)
- T2829 (bug): PPPoE server: mppe setting is implemented as node instead of leafNode
- T2960 (feature): sstp: migrate to get\_config\_dict()

### 3.3.507 2020-10-03

- T2956 (feature): Add support for list of defaultValues
- T2955 (feature): Update Linux Kernel to v4.19.149

### 3.3.508 2020-10-02

- T2952 (bug): configd: timeout breaks synchronization of messages, causing freeze

### 3.3.509 2020-10-01

- T2945 (bug): Interface removed from bridge on setting change
- T2948 (bug): NAT: OSError when configuring translation address range
- T2936 (feature): Migrate PPPoE server to get\_config\_dict() do reduce boilerplate code

### 3.3.510 2020-09-30

- T2939 (bug): Wireguard Remove Peer Fails

### 3.3.511 2020-09-29

- T2919 (feature): PPPoE server: Called-Station-Id attribute
- T2918 (feature): Accounting interim jitter for pppoe, l2tp, pptp, ipoe
- T2917 (feature): PPPoE server: Preallocate NAS-Port-Id
- T2937 (feature): Update Linux Kernel to v4.19.148

### 3.3.512 2020-09-27

- T2930 (feature): Support configuration of MAC address for VXLAN and GENEVE tunnel

### 3.3.513 2020-09-26

- T2856 (bug): equuleus: `show version all` throws broken pipe exception on abort
- T2929 (bug): Upgrading from 1.2 (crux) to 1.3 rolling causes vyos.configtree.ConfigTreeError for RADIUS settings
- T2928 (bug): MTU less then 1280 bytes and IPv6 will raise FileNotFoundError
- T2926 (bug): snmp.py missing an import
- T2912 (feature): When setting MTU check for hardware maximum supported MTU size

### 3.3.514 2020-09-25

- T2915 (bug): Lost "proxy-arp-pvlan" option for vlan
- T2925 (feature): Update Linux Kernel to v4.19.147
- T2921 (feature): Migrate "service dns forwarding" to get\_config\_dict() for ease of source maintenance

### 3.3.515 2020-09-24

- T2896 (bug): set ip route 0.0.0.0/0 dhcp-interface eth0
- T2923 (bug): Configuring DHCPv6-PD without a interface to delegate to raises TypeError

### 3.3.516 2020-09-23

- T2846 (bug): ip route doesn't show longer-prefixes

### 3.3.517 2020-09-20

- T2904 (feature): 802.1ad / Q-in-Q ethertype default not utilized
- T2905 (feature): Sync CLI nodes between PPPoE and WWAN interface
- T2903 (feature): Q-in-Q (802.1.ad) ethertype should be defined explicitly and not via its raw value

### 3.3.518 2020-09-19

- T2894 (bug): bond: lacp: member interfaces get removed once bond interface has vlans configured
- T2901 (feature): Update Linux Kernel to v4.19.146
- T2900 (bug): DNS forwarding: invalid warning is shown for "system name-server" or "system name-servers-dhcp" even if present

### 3.3.519 2020-09-18

- T945 (bug): Unable to change configuration after changing it from script (vbash + script-template)

### 3.3.520 2020-09-16

- T2886 (bug): RADIUS authentication broken only returns operator level
- T2887 (bug): WiFi ht40+ channel width is not set in hostaptd.conf

### 3.3.521 2020-09-15

- T2515 (bug): Ethernet interface is automatically disabled when removing it from bond

### 3.3.522 2020-09-14

- T2872 (bug): "Show log" for nat and openvpn got intermixed
- T2301 (bug): Cannot delete PBR
- T2880 (feature): Update Linux Kernel to v4.19.145
- T2879 (feature): Cleanup 4.19.144 kernel configuration

### 3.3.523 2020-09-13

- T2858 (feature): Rewrite dynamic dns client to get\_config\_dict()
- T2857 (feature): Cleanup Intel QAT configuration script
- T2877 (feature): LACP / bonding: support configuration of minimum number of links

### 3.3.524 2020-09-12

- T2863 (default): Wireguard IPv6 Link-Local Addresses Are Not Unique
- T2876 (feature): Update Linux Kernel to v4.19.144

### 3.3.525 2020-09-10

- T2870 (feature): Update Linux Kernel to v5.8.8

### 3.3.526 2020-09-09

- T2728 (bug): Protocol option ignored for IPSec peers in transport mode
- T1934 (default): Change default hostname when deploy from OVA without params.
- T1953 (bug): DDNS service name validation rejects valid service names

**3.3.527 2020-09-07**

- T1729 (default): PIM (Protocol Independent Multicast) implementation

**3.3.528 2020-09-06**

- T2860 (bug): Update Accel-PPP to fix l2tp CVE

**3.3.529 2020-09-02**

- T2833 (bug): RIP outgoing update filter list no longer operational
- T2849 (bug): vyos.xml.defaults should return a list on multi nodes, by default

**3.3.530 2020-08-31**

- T2636 (bug): get\_config\_dict() shall always return a list on <multi/> nodes

**3.3.531 2020-08-30**

- T2843 (feature): Upgrade Linux Kernel to 5.8 series
- T2814 (default): kernel 5.1+ : NAT : module `nft\_chain\_nat\_ipv4` renamed
- T2839 (feature): Upgrade WireGuard user-space tools and Kernel module
- T2842 (feature): Replace custom "wireguard, wireguard-tools" package with debian-backports version

**3.3.532 2020-08-29**

- T2836 (default): show system integrity broken in 1.3

**3.3.533 2020-08-28**

- T2126 (bug): show vpn ipsec sa IPSec - Process NOT Running
- T2813 (bug): NAT: possible to commit illegal source nat without translation
- T1463 (bug): Missing command `show ip bgp scan` appears in command completion

**3.3.534 2020-08-27**

- T2832 (feature): Migrate vyos-smoketest content into vyos-1x

### 3.3.535 2020-08-26

- T2830 (default): Migrate "service https" to use get\_config\_dict()
- T2831 (feature): Update Linux Kernel to v4.19.142

### 3.3.536 2020-08-25

- T2826 (bug): frr: frr python lib error in replace\_section

### 3.3.537 2020-08-24

- T2423 (bug): Loadkey scp ssh key errors

### 3.3.538 2020-08-23

- T2811 (bug): Cannot delete vpn anyconnect
- T2823 (bug): VXLAN has state A/D after configuration
- T2812 (default): Add basic smoketest for anyconnect

### 3.3.539 2020-08-22

- T2822 (feature): Update Linux Kernel to v4.19.141
- T2821 (feature): Support DHCPv6-PD without "address dhcpv6"
- T2677 (feature): Proposal for clearer DHCPv6-PD configuration options

### 3.3.540 2020-08-20

- T2209 (bug): Documentation has reference to the old 'user x level admin' option
- T1665 (default): prefix-list and prefix-list6 rules incorrectly accept a host address where prefix is required
- T2815 (default): Move certbot config directory under /config/auth

### 3.3.541 2020-08-19

- T2794 (bug): op-mode: lldp: "show lldp neighbors" IndexError: list index out of range
- T2791 (feature): "monitor traceroute" has no explicit IPv4/IPv6 support
- T1515 (bug): FRR ospf6d crashes when performing: "show ipv6 ospfv3 database"

### 3.3.542 2020-08-16

- T2277 (bug): dhclient-script-vyos does not support VRFs
- T2090 (default): Deleting 'service salt-minion' causes python TypeError

### 3.3.543 2020-08-15

- T2797 (feature): Update Linux Kernel to v4.19.139
- T2796 (bug): PPPoE-Server: listen interface is mandatory but validation check is missing

### 3.3.544 2020-08-14

- T2795 (bug): console server fails to commit

### 3.3.545 2020-08-12

- T2786 (bug): OSPF Interface Cost
- T2325 (bug): NHRP op-mode errors with missing daemon socket
- T2227 (feature): MPLS documentation
- T2767 (bug): The interface cannot be disabled for network enabled configuration
- T2316 (bug): DHCP-server op-mode errors

### 3.3.546 2020-08-11

- T2779 (bug): LLDP: "show lldp neighbors interface" does not yield any result
- T2379 (bug): DHCPv6 address for interface deletion triggers a script error
- T2784 (default): Remove unused arg from host\_name.py functions verify and get\_config

### 3.3.547 2020-08-10

- T2780 (feature): Update Linux Kernel to v4.19.138

### 3.3.548 2020-08-08

- T2716 (bug): Shaper-HFSC shapes but does not control latency correctly
- T2497 (default): Cache config string during commit
- T2501 (bug): Cannot recover from failed boot config load
- T1974 (feature): Allow route-map to set administrative distance
- T1949 (bug): Multihop IPv6 BFD is unconfigurable

### 3.3.549 2020-08-04

- T2758 (bug): router-advert: 'infinity' is not a valid integer number
- T2637 (bug): Vlan is not removed from the system
- T1287 (bug): No DHCPv6 leases reported for "show dhcpv6 client leases"

### 3.3.550 2020-08-03

- T2241 (default): Changing settings on an interface causes it to fall out of bridge
- T2757 (bug): "show system image version" contains additional new-line character breaking output
- T1826 (bug): Misleading message on "reboot at" command
- T1511 (default): Rewrite ethernet setup scripts to python
- T1600 (default): Convert 'ping' operation from vyatta-op to new syntax
- T1486 (bug): Unknown LLDP version reported to peers
- T1414 (enhancement): equuleus: buster: 10-unmountfs.chroot fail under apply
- T1076 (bug): SSH: make configuration (sshd\_config) volatile and store it to /run
- T2724 (feature): Support for IPv6 Toolset
- T2323 (bug): LLDP: "show lldp neighbors detail" returns warnings when service is not configured
- T1754 (bug): DHCPv6 client is impossible to restart

### 3.3.551 2020-08-02

- T2756 (feature): Accel-PPP: make RADIUS accounting port configurable

### 3.3.552 2020-08-01

- T2752 (bug): Exception when configuring unavailable ethernet interface
- T2751 (feature): Update Linux Kernel to v4.19.136
- T2753 (feature): Rewrite "add system image" op mode commands in XML
- T2690 (feature): Add VRF support to the add system image command

### 3.3.553 2020-07-30

- T2746 (feature): IPv6 link-local addresses not configured
- T2678 (bug): High RAM usage on SSH logins with lots of IPv6 routes in the routing table.
- T2701 (bug): `vpn ipsec pfs enable` doesn't work with IKE groups
- T2745 (feature): router-advert: migrate to get\_config\_dict()

### 3.3.554 2020-07-29

- T2743 (feature): WireGuard: move key migration from config script to migration script
- T2742 (feature): mDNS repeater: migrate to get\_config\_dict()

### 3.3.555 2020-07-28

- T1117 (feature): 'show ipv6 bgp route-map' missing
- T928 (feature): Add support for PIM (Protocol-Independent Multicast)

### 3.3.556 2020-07-27

- T2729 (feature): Pseudo-ethernet replace fail message
- T1249 (feature): multiple PBR rules can set to a single interface
- T1956 (feature): PPPoE server: support PADO-delay
- T1295 (feature): FRR: update documentation
- T1222 (bug): OSPF routing problem - route looping
- T1158 (bug): Route-Map configuration dropped updating rc11 to epa2
- T1130 (bug): Deleting BGP communities from prefix does not work
- T2067 (feature): pppoe-server: Add possibility set multiple service-name

### 3.3.557 2020-07-26

- T2734 (feature): WireGuard: fwmark CLI definition is inconsistent
- T2733 (feature): Support MTU configuration on pseudo ethernet devices
- T2644 (default): Bonding interfaces cannot be disabled
- T2476 (bug): Bond member description change leads to network outage
- T2443 (feature): NHRP: Add debugging information to syslog
- T2021 (bug): OSPFv3 doesn't support decimal area syntax
- T1901 (bug): Semicolon in values is interpreted as a part of the shell command by validators
- T2000 (bug): strongSwan does not install routes to table 220 in certain cases
- T2091 (bug): swanctl.conf file is not generated properly if more than one IPsec profile is used
- T1983 (feature): Expose route-map when BGP routes are programmed in to FIB
- T1973 (feature): Allow route-map to match on BGP local preference value
- T1853 (bug): wireguard - disable peer doesn't work
- T1985 (feature): pppoe: Enable ipv6 modules without configured ipv6 pools

### 3.3.558 2020-07-25

- T2730 (feature): Update Linux Kernel to v4.19.134
- T2106 (bug): Wrong interface states after reboot
- T1507 (default): cli: logical redundancy with boolean type

### 3.3.559 2020-07-24

- T2097 (bug): Problems when using <path> as completion helper in op-mode
- T2092 (bug): dhcp-server rfc3442 static route should add default route
- T1817 (bug): BGP next-hop-self not working.
- T1462 (bug): Upgrade path errors 1.1.8 to 1.2.1-S2
- T1372 (bug): Diff functionality behaves incorrectly in some cases
- T2073 (feature): ipoe-server: reset op-mode command for sessions
- T1715 (bug): System DNS Server Order Incorrect

### 3.3.560 2020-07-23

- T2673 (bug): After the bridge is configured with Mac, bridge is automatically disabled
- T2626 (bug): Changing pseudo-ethernet mode, throws CLI error
- T2608 (bug): delete pseudo-ethernet failed (another error type)
- T2527 (bug): bonding: the last slave interface is not deleted
- T2358 (bug): ip6ip6 bridge conf\_mode errors
- T2346 (bug): Setting hostname yields temporary file error
- T2330 (bug): Vpn op-mode syntax
- T2188 (default): NTP op-mode commands don't work

### 3.3.561 2020-07-22

- T2718 (bug): ntp.conf updated incorrectly
- T2658 (bug): Interface description comment display error
- T2643 (bug): show interfaces does not scale with terminal width
- T2725 (bug): Config fails to load if user has no password
- T2707 (default): Allow alternative initialization data for Config

### 3.3.562 2020-07-20

- T2709 (bug): Destination NAT translation port without address fails to commit
- T2519 (bug): Broadcast address does not add automatically

### 3.3.563 2020-07-19

- T2708 (bug): "show flow-accounting" should not display script's "usage" help
- T2592 (default): dhcp-relay discarding packets on valid interfaces
- T2712 (feature): udp-broadcast-relay: service no longer starts
- T2706 (feature): Support NDP protocol monitoring

### 3.3.564 2020-07-18

- T2704 (bug): connect/disconnect Missing newline in op-mode tab completion helper
- T2689 (feature): Add helper functions to query changes between session and effective configs
- T2585 (bug): Unable to access the Internet after opening PPPoE on-demand dialing

### 3.3.565 2020-07-15

- T2675 (bug): DNS service failed to start
- T2596 (feature): Allow specifying source IP for 'add system image'

### 3.3.566 2020-07-12

- T1575 (default): `show snmp mib ifmib` crashes with IndexError
- T2696 (bug): Some bugfixes of vyatta-wanloadbalance

### 3.3.567 2020-07-11

- T2687 (feature): SNMP: change logic on v3 password encryption
- T2693 (bug): Dhcp6c cannot be restarted after PPPoE link is reset

### 3.3.568 2020-07-08

- T2692 (bug): Evaluate Setting Default Hash Policy to L3+L4
- T2646 (bug): Sysctl for IPv4 ECMP Hash Policy Not Set

### 3.3.569 2020-07-07

- T2691 (bug): Upgrade from 1.2.5 to 1.3-rolling-202007040117 results in broken config due to case mismatch
- T2389 (bug): BGP community-list unknown command
- T2686 (bug): FRR: BGP: large-community configuration is not applied properly after upgrading FRR to 7.3.x series

### 3.3.570 2020-07-06

- T2680 (bug): dhcp6c service cannot recover when it fails

### 3.3.571 2020-07-05

- T2684 (feature): Update Linux Kernel to v4.19.131
- T2685 (feature): Update Accel-PPP to fix SSTP client issues
- T2681 (bug): PPPoE stops negotiating IPv6

### 3.3.572 2020-07-04

- T2682 (bug): VRF aware services - connection no longer possible after system reboot

### 3.3.573 2020-07-03

- T2670 (default): Remove dependency on show\_config from get\_config\_dict
- T2676 (feature): NTP: migrate to get\_config\_dict() implementation

### 3.3.574 2020-07-02

- T2668 (default): get\_config\_dict: add get\_first\_key arg to utility function get\_sub\_dict

### 3.3.575 2020-07-01

- T2662 (default): get\_config\_dict includes node name as key only for tag and leaf nodes
- T2667 (feature): get\_config\_dict: Use utility function for non-empty path argument

### 3.3.576 2020-06-28

- T2660 (bug): XML: Python default dictionary does not obey underscore (\_) when flat is False

### 3.3.577 2020-06-27

- T2656 (bug): XML: Python default dictionary returns wrong dictionary level(s)

### 3.3.578 2020-06-26

- T2642 (bug): sshd fails to start due to configuration error
- T2588 (default): Add support for default values to the interface-definition format
- T2622 (bug): Pseudo-ethernet interface config disappears across versions
- T2057 (feature): Generalised Interface configuration
- T2625 (feature): Provide generic Library for package builds

### 3.3.579 2020-06-25

- T2487 (bug): VRRP does not display info when group disabled
- T2329 (bug): Show remote config openvpn
- T2165 (bug): When trying to add route to ripng it complains that ip address should be IPv4 format
- T2159 (default): webproxy log read from wrong file
- T2101 (feature): Fix VXLAN config option parsing
- T2062 (bug): Wrong dhcp-server static route subnet bytes
- T1986 (bug): Python configuration manipulation library leaks open files
- T1762 (bug): VLAN interface configuration fails after internal representation of edit level was switched from a string to a list
- T1538 (bug): Update conntrack-sync packages to fix VRRP issues
- T1808 (feature): add package nftables

### 3.3.580 2020-06-24

- T2634 (feature): remove autogeneration of interface "ip section" from vyatta-cfg-system
- T2633 (bug): Error with arp\_accept on tun interface
- T2595 (feature): Update Linux Kernel to v4.19.128
- T1938 (bug): syslog doesn't start automatically

### 3.3.581 2020-06-23

- T2632 (bug): WireGuard: Cannot use only one preshared-key for one peer
- T1829 (bug): Install Image script does not respect size of partition greater than 2G but less than disk size
- T2635 (feature): SSH: migrate to get\_config\_dict()

### 3.3.582 2020-06-22

- T2486 (bug): DNS records set via 'system static-host-mapping' return NXDOMAIN from 'service dns forwarding' after a request to a forwarded zone
- T2463 (bug): DHCP-received nameserver not added to vyos-hostsd
- T2534 (bug): pdns-recursor override.conf error
- T2054 (bug): Changing "system name-server" doesn't update dns forwarding config, neither does "restart dns forwarding"
- T2225 (default): PIM/IGMP documentation

### 3.3.583 2020-06-21

- T2624 (feature): Serial Console: fix migration script for configured powersave and no console
- T2610 (bug): default-lifetime is not reflected in the RA message
- T2299 (feature): login radius-server priority
- T1739 (bug): Serial interface seems not to be deleted properly
- T480 (bug): Error if no serial interface is present (/dev/ttyS0: not a tty)

### 3.3.584 2020-06-20

- T2621 (bug): show interfaces repeats interface description if it is longer than an arbitrary number of characters
- T2618 (default): Conversion from 1.2 to 1.3 lost RADVD prefix autonomous-flag setting

### 3.3.585 2020-06-19

- T2589 (bug): delete pseudo-ethernet failed
- T2490 (feature): Add serial (rs232) to ssh bridge service

### 3.3.586 2020-06-18

- T2614 (default): Add an option to mangle dict keys to `vyos.config.get_config_dict()`
- T2026 (default): Make `cli-shell-api` correctly exit with non-zero code on failures
- T1868 (default): Add opportunity to get current values from API

### 3.3.587 2020-06-17

- T2478 (feature): `login radius: use NAS-IP-Address` if defined source address
- T2141 (bug): Static ARP is not applied on boot
- T2609 (bug): `router-advert: radvd` does not start when lifetime is improperly configured
- T1720 (feature): support for more 'show ip route' commands

### 3.3.588 2020-06-16

- T2604 (default): Remove use of `is_tag` in `system-syslog.py`
- T2605 (bug): SNMP service is not disabled by default
- T2568 (bug): Add some missing checks in config
- T2156 (default): PIM op-mode commands

### 3.3.589 2020-06-15

- T2600 (bug): RADIUS system login configuration rendered wrongly
- T2599 (bug): "show interfaces" does not list VIF interfaces in ascending order
- T2591 (bug): show command has wrong interfaces ordering
- T2576 (bug): "show interfaces" does not return VTI

### 3.3.590 2020-06-14

- T2354 (bug): Wireless `conf_mode` errors
- T2593 (bug): source NAT translation port can not be set when translation address is set to masquerade
- T2594 (default): Missing firmware for `iwlwifi`

### 3.3.591 2020-06-11

- T2578 (bug): ipaddrcheck unaware of /31 host addresses - can no longer assign /31 mask to interface addresses
- T2571 (bug): NAT destination port with ! results in error
- T2570 (feature): Drop support for "system console device <device> modem"
- T2586 (bug): WWAN default route is not installed into VRF
- T2561 (feature): Drop support for "system console netconsole"
- T2569 (feature): Migrate "set system console" to XML and Python representation

### 3.3.592 2020-06-10

- T2575 (bug): pppoe-server: does not possibly assign IP address
- T2565 (bug): Cannot connect to l2tp server with radius auth
- T2553 (bug): set interface ethN vif-s nnnn does not commit

### 3.3.593 2020-06-08

- T2559 (feature): Add operational mode command to retrieve hardware sensor data

### 3.3.594 2020-06-07

- T2529 (feature): WWAN: migrate from ttyUSB device to new device in /dev/serial/by-bus
- T2560 (feature): New op-mode command to display information about USB interfaces

### 3.3.595 2020-06-05

- T2548 (bug): Interfaces allowing inappropriate network addresses to be assigned
- T1958 (default): Include only firmware we actually need

### 3.3.596 2020-06-04

- T2514 (enhancement): "mac" setting for bond members

### 3.3.597 2020-06-02

- T2129 (feature): XML schema: tagNode not allowed on first level in new XML op-mode definition
- T2545 (feature): Show physical device offloading capabilities for specified ethernet interface
- T2544 (feature): Enable Kernel KONFIG\_KALLSYMS
- T2543 (feature): Kernel: always build perf binary but ship as additional deb package to not bloat the image
- T1096 (bug): BGP process memory leak

### 3.3.598 2020-06-01

- T2535 (feature): Update Intel QAT drivers to 1.7.1.4.9.0-00008
- T2537 (feature): Migrate "show log dns" from vyatta-op to vyos-1x
- T2536 (bug): "show log dns forwarding" still refers to dnsmasq
- T2538 (feature): Update Intel NIC drivers to recent release (preparation for Kernel >=5.4)
- T2526 (feature): Wake-On-Lan CLI implementation

### 3.3.599 2020-05-31

- T2532 (feature): VRF aware OpenVPN

### 3.3.600 2020-05-30

- T2388 (feature): template rendering should create folder and set permission
- T2531 (feature): Update Linux Kernel to v4.19.125
- T2530 (bug): Error creating VRF with a name of exactly 16 characters

### 3.3.601 2020-05-29

- T2528 (bug): "update dns dynamic" throws FileNotFoundError excepton

### 3.3.602 2020-05-28

- T1291 (default): Under certain conditions the VTI will stay forever down

### 3.3.603 2020-05-27

- T2395 (feature): HTTP API move to flask/flask-restx as microframework
- T1121 (bug): Can't search for prefixes by community: Community malformed: AA:NN

### 3.3.604 2020-05-26

- T2520 (bug): show conntrack fails with Perl error
- T2502 (bug): PPPoE default route not installed for IPv6 when "default-route auto"
- T2458 (feature): Update FRR to 7.3.1
- T2506 (feature): DHCPv6-PD add prefix hint CLI option

### 3.3.605 2020-05-25

- T2391 (bug): pppoe-server session-control does not work
- T2269 (feature): SSTP specify tunnels names
- T1137 (bug): 'sh ip bgp sum' being truncated

### 3.3.606 2020-05-22

- T2491 (feature): MACsec: create CLI for replay protection
- T2489 (feature): Add MACsec interfaces to "show interfaces" output
- T2201 (feature): Rewrite protocol BGP [op-mode] to new XML/Python style
- T2492 (feature): Do not set encrypted user password when it is not changed
- T2496 (feature): Set default to new syntax for config file component versions
- T2493 (feature): Update Linux Kernel to v4.19.124
- T2380 (bug): After PPPoE 0 is restarted, the default static route is lost

### 3.3.607 2020-05-21

- T1876 (bug): IPSec VTI tunnels are deleted after rekey and dangling around as A/D
- T2488 (feature): Remove logfile for dialup interfaces like pppoe and wwan
- T2475 (bug): linting
- T1820 (bug): VRRP transition scripts for sync-groups are not supported in VyOS (anymore)
- T2364 (default): Add CLI command for mroute
- T2023 (feature): Add support for 802.1ae MACsec

### 3.3.608 2020-05-20

- T2480 (bug): NAT: after rewrite commit tells that dnat IP address is not locally connected

### 3.3.609 2020-05-19

- T2481 (feature): WireGuard: support tunnel via IPv6 underlay
- T421 (bug): Add Pv6 prefix delegation support
- T815 (feature): Add DHCPv6 server prefix-delegation support

### 3.3.610 2020-05-17

- T2471 (feature): PPPoE server: always add AdvAutonomousFlag when IPv6 is configured
- T2409 (default): At boot, effective config should not be equal to current config

### 3.3.611 2020-05-16

- T2466 (bug): live-build encounters apt dependency problem when building with local packages
- T2470 (feature): Update to PowerDNS recursor 4.3
- T2469 (feature): Update Linux Kernel to v4.19.123
- T2198 (default): Rewrite NAT in new XML/Python style

### 3.3.612 2020-05-15

- T2449 (bug): 'ipv6 address autoconf' and 'address dhcpv6' don't work because interfaces have accept\_ra=1 (they should have accept\_ra=2 when forwarding=1)

### 3.3.613 2020-05-14

- T2456 (bug): netflow source-ip cannot be configured

### 3.3.614 2020-05-13

- T2435 (bug): Pseudo-ethernet Interfaces Broken
- T2294 (bug): ipoe-server broken (jinja2 template issue)

### 3.3.615 2020-05-12

- T2454 (feature): Update Linux Kernel to v4.19.122
- T2392 (bug): SSTP with ipv6

### 3.3.616 2020-05-10

- T2445 (bug): VRF route leaking for ipv4 not working
- T2372 (bug): VLAN: error on commit if main interface is disabled
- T2439 (bug): Configuration dependency problem, unable to load complex configuration after reboot

### 3.3.617 2020-05-09

- T2427 (default): Interface addressing broken since fix for T2372 was merged
- T2438 (default): isc-dhcp-server(6).service reports startup success immediately even if dhcpd fails to start up
- T2367 (default): Flush addresses from bridge members

### 3.3.618 2020-05-08

- T2441 (bug): TZ validator has a parse error
- T2429 (bug): Vyos cannot apply VLAN sub interface to bridge

### 3.3.619 2020-05-06

- T2402 (bug): Live ISO should warn when configuring that changes won't persist

### 3.3.620 2020-05-05

- T1899 (bug): Unionfs metadata folder is copied to the active configuration directory

### 3.3.621 2020-05-04

- T2412 (bug): ping flood does not work as unprivileged user
- T701 (bug): LTE interface dosen't come up
- T951 (bug): command 'isolate-stations true/false' does not make any changes in the hostapd.conf

### 3.3.622 2020-05-03

- T2420 (feature): Update Linux Kernel to v4.19.120
- T2406 (feature): DHCPv6 CLI improvements
- T2421 (feature): Update WireGuard to Debian release 1.0.20200429-2\_bpo10+1

### 3.3.623 2020-05-02

- T2414 (feature): Improve runtime from Python numeric validator
- T2413 (feature): Update Linux Kernel to v4.19.119

### 3.3.624 2020-05-01

- T2411 (feature): op-mode: make "monitor traceroute" VRF aware
- T2347 (bug): During commit, any script output directed to stdout will contain path
- T2239 (default): build-vmware-image script ignores the predefined file path, uses the environment variable unconditionally.

### 3.3.625 2020-04-29

- T2399 (bug): op-mode "dhcp client leases" does not return leases
- T2398 (bug): op-mode "dhcp client leases interface" completion helper misses interfaces
- T2394 (feature): dhcpv6 client does not start
- T2393 (feature): dhclient: migrate from SysVinit to systemd
- T2268 (bug): DHCPv6 is broken

### 3.3.626 2020-04-28

- T1227 (bug): rip PW can't be set at interface config

### 3.3.627 2020-04-27

- T2373 (feature): Required auth options for pppoe-server
- T1381 (feature): Enable DHCP option 121 processing
- T2010 (bug): Reboot at reports wrong time or missing timezone

### 3.3.628 2020-04-26

- T2386 (bug): salt: upgrade to 2019.2 packages
- T2385 (bug): salt-minion: improve completion helpers
- T2384 (bug): salt-minion: log to syslog and remove custom logging option
- T2383 (feature): Update Linux Kernel to v4.19.118
- T2382 (bug): salt-minion: Throws KeyError on commit
- T2350 (bug): Interface geneve conf-mode error

### 3.3.629 2020-04-25

- T2304 (feature): "system login" add RADIUS VRF support
- T1842 (bug): Equuleus: "reboot at 04:00" command not working

### 3.3.630 2020-04-24

- T2375 (feature): WireGuard: throw exception if address and port are not given as both are mandatory
- T2348 (bug): On IPv6 address distribution and DHCPv6 bugs

### 3.3.631 2020-04-23

- T2369 (feature): VRF: can not leak interface route from default VRF to any other VRF
- T2368 (bug): VRF: missing completion helper when leaking to default table
- T2374 (bug): Tunnel interface can not be disabled
- T2362 (default): IPv6 link-local addresses missing due to EUI64 address code, causing router-advert not to work
- T2345 (default): IPv6 router-advert not working

### 3.3.632 2020-04-22

- T2361 (bug): Unable to delete VLAN vif interface
- T2339 (bug): OpenVPN: IPv4 no longer working after adding IPv6 support
- T2331 (bug): VRRP op-mode errors
- T2320 (bug): Wireguard creates non-existing interfaces in [op-mode].
- T2096 (feature): Provide "generate" and "show" commands via the http API
- T2351 (feature): Cleanup PPTP server implementation and CLI commands

### 3.3.633 2020-04-21

- T2341 (bug): Pseudo-ethernet Interfaces Not Loaded on Boot
- T2270 (bug): using load with scp/sftp and a username and password does not work
- T2255 (bug): DNS forwarding op-mode error
- T1907 (bug): Traceback on a non-existent interface.
- T2204 (feature): Support tunnel source-interface

### 3.3.634 2020-04-20

- T2335 (bug): Unable to assign IPv6 from ISP
- T2317 (bug): l2tp overwriting ipsec config files
- T2292 (bug): Ensure graceful shutdown of vyos-http-api
- T2344 (bug): PPPoE server client static IP assignment silently fails

### 3.3.635 2020-04-19

- T2337 (default): hw-id gone missing from interfaces after upgrade to 1.3-rolling-202004191028
- T2340 (feature): Remove informational "sg" messages from syslog
- T2338 (bug): Can't delete static IPv6 route on vrf
- T2336 (bug): OpenVPN service fails to start
- T2308 (default): openvpn op-mode scripts broken after migrating to systemd service
- T2185 (default): Start daemons with systemd units instead of with start-stop-daemon

### 3.3.636 2020-04-18

- T2318 (bug): dns-forwarding migration script breaks with invalid interface name
- T2319 (feature): Update Linux Kernel to v4.19.116
- T2314 (feature): Cleanup PPPoE server implementation and CLI commands
- T2313 (bug): Accel-PPP / PPPoEserver raises "Floating point exception" when not all limits are defined
- T2312 (feature): Use LED modules to enable more visible feedback on VyOS hardware chassis
- T2306 (feature): Add new cipher suites to the WiFi configuration
- T2286 (default): IPoE server vulnerability
- T2224 (feature): Update Linux Kernel to v4.19.114
- T2110 (feature): RADIUS: supply include file for radius config to have a uniform CLI
- T2324 (feature): Cleanup IPoE server implementation and CLI commands

### 3.3.637 2020-04-17

- T2275 (bug): flow-accounting broken in rolling
- T2256 (feature): Accel-ppp op-mode syntax

### 3.3.638 2020-04-16

- T2295 (bug): Passwords with Special Characters Broken
- T2305 (feature): Add release name to "show version" command
- T2235 (default): OpenVPN server client IP doesn't reserve that IP in the pool
- T149 (feature): IPv6 support in OpenVPN tunnel

### 3.3.639 2020-04-15

- T2293 (bug): OpenVPN: UnboundLocalError after merging server\_network PullRequest
- T2298 (bug): Errors PDNS with name-server set

### 3.3.640 2020-04-14

- T2213 (bug): vyos-1x: WiFi mode ieee80211ac should also activate ieee80211n

### 3.3.641 2020-04-13

- T2283 (default): openvpn not starting: ccd path in template not moved to /run/openvpn/ccd
- T2236 (bug): DMVPN broken after tunnel rewrite to XML/Python
- T2284 (default): Upgrade ddclient to 3.9.1 which also brings systemd files
- T2282 (feature): Clarify hw-id in ethernet and wireless interface nodes
- T611 (feature): Static route syntax should reflect `ip` command routing capabilities, if possible.

### 3.3.642 2020-04-12

- T2273 (default): OpenVPN no longer starts in latest rolling, migrate to systemd
- T2263 (feature): Reset feature for SSTP sessions
- T2262 (bug): Broken reset commands for pptp and l2tp
- T2031 (bug): pseudo-ethernet link interface cannot be changed

### 3.3.643 2020-04-11

- T2264 (feature): l2tp: cleanup CLI definition
- T2233 (bug): Typos in wlanX.cfg
- T2238 (bug): After re-writing list\_interfaces.py to use Interfaces() pseudo-ethernet is missing

### 3.3.644 2020-04-10

- T2265 (feature): DHCP to be an attribute of the class instead of a inheritance
- T2261 (bug): "client-config-dir" not being set for openvpn
- T2248 (bug): PPPoE Broken in Latest 1.3 Rolling (1.3-rolling-202004070629)
- T1629 (bug): IP addresses configured on vif-s interfaces are not added to the system
- T2266 (default): openvpn bridged client-server doesn't work (validation error)
- T2253 (default): Fix use of cmd in merge config and remote function helpers

### 3.3.645 2020-04-09

- T2260 (feature): vxlan, pseudo-ethernet: convert link nodes to source-interface
- T2172 (feature): Enable conf VXLAN without remote address
- T2237 (bug): l2tp, pptp, pppoe wrong chap-secrets file

### 3.3.646 2020-04-08

- T2244 (feature): WireGuard: cleanup Python implementation and reduce amount of boilerplate code
- T2186 (feature): Provide more information to the user when a traceback is reported to the user
- T2246 (bug): LLDP op-mode error
- T2240 (feature): Support for bind vif-c interfaces into VRFs
- T2160 (feature): Allow restricting HTTP API to specific virtual hosts
- T2247 (feature): WireGuard: add VRF support

### 3.3.647 2020-04-05

- T2212 (bug): vyos-1x: WiFi card antenna count not set accordingly
- T2230 (feature): Split out inlined Jina2 template to data/templates folder
- T2206 (feature): Split WireGuard endpoint into proper host and port nodes

### 3.3.648 2020-04-04

- T2158 (bug): Commit fails if ethernet interface doesn't support flow control (pause)
- T2221 (bug): Ability to remove a VRF that has a next-hop-vrf as target
- T2211 (bug): vyos-1x: VHT channel width not set accordingly
- T2208 (bug): vyos-1x: commit on interfaces wireless wlanX capabilities vht link-adaptation (both|unsolicited) fails
- T2183 (bug): A number of bugs with wireguard script due to interface rearrangement
- T2104 (default): ifconfig.py size
- T2028 (feature): Convert "interfaces tunnel" to new XML/Python representation
- T2219 (bug): VRF default route of PPPoE and WWAN interfaces do not get added into proper routing table
- T2222 (default): openvpn: requires "multihome" option to listen on all addresses with udp protocol

### 3.3.649 2020-04-02

- T2072 (bug): Shell autocomplete of option (config node) with quoted value doesn't work
- T1823 (feature): l2tpv3 interface migration fails
- T2202 (feature): Update PowerDNS recursor to 4.2 series
- T2200 (feature): Add VRF support on wirelessmodem interfaces

### 3.3.650 2020-03-31

- T2166 (bug): Broken proxy-arp on vif
- T2180 (bug): get\_config\_dict should be independent of CLI edit level
- T2053 (default): Update vyos-load-config.py for version string syntax change
- T2052 (default): Update vyos-merge-config.py for version string syntax change
- T2144 (default): vyos-build: docker: selection of text in the terminal still selects it in vim (mouse isn't completely disabled)

### 3.3.651 2020-03-30

- T2176 (default): 'WiFiIf' object has no attribute 'set\_state'
- T2029 (feature): Switch to new syntax for config file component versions

### 3.3.652 2020-03-29

- T2178 (bug): VRF interface don't get removed when VRF is deleted
- T2170 (feature): Add ability to create static route from default to VRF
- T1831 (feature): Denest IPv6 router-advert from Interfaces to general service

### 3.3.653 2020-03-28

- T2167 (bug): `vyos.ifconfig.get_mac()` broken
- T2151 (default): wireless: can't delete interface present in config but not present in system
- T1988 (feature): Migrate wirelessmodem to new XML/Python style interface

### 3.3.654 2020-03-27

- T2164 (bug): Package `libstrongswan-standard-plugins` missing from image
- T2105 (bug): wireless: not possible to disabled wlan0
- T2169 (default): Remove redundant use of `show_config` in `vyos-merge-config`

### 3.3.655 2020-03-26

- T2162 (default): migration script for router-advert sets link-mtu 0 on bridge interfaces
- T1735 (bug): Issue in "show vpn ipsec/ike sa" output with ipsec encryption algorithm `aes128gcm128/aes256gcm128/chacha` etc

### 3.3.656 2020-03-25

- T2148 (default): openvpn: setting "server client" config without "server client ip" results in `ValueError: '' does not appear to be an IPv4 or IPv6 address`
- T2146 (default): openvpn: "delete server client" doesn't delete the corresponding ccd configs

### 3.3.657 2020-03-24

- T2157 (default): Organize service `https listen-address/listen-port/server-name` under 'virtual-host' node
- T1845 (bug): syslog host no longer accepts a port

### 3.3.658 2020-03-22

- T2150 (feature): SSTP ssl certificates can only be stored in /config/user-data/sstp
- T2149 (feature): Update Linux Kernel to v4.19.112
- T476 (enhancement): Update the base system to Debian 10 (Buster)

### 3.3.659 2020-03-21

- T2142 (bug): vyos-build: Add required packages and step to build-GCE-image script
- T1870 (feature): Extend Pipeline scripts to support PullRequests

### 3.3.660 2020-03-20

- T2006 (bug): SSTP RADIUS CLI accepts invalid values
- T2140 (default): openvpn: tls file check function checkCertHeader returns True even when no match is found
- T2007 (feature): SSTP accepts client MTU up to 16384 bytes
- T2008 (feature): Adjustment of SSTP CLI to be more consistent to the rest of VyOS

### 3.3.661 2020-03-19

- T2135 (bug): Login banner missing spacing now
- T2132 (feature): Document kernel boot parameter 'vyos-config-debug'
- T1744 (default): Config load fails in ConfigTree with ValueError: Failed to parse config: lexing: empty token

### 3.3.662 2020-03-17

- T2134 (bug): VXLAN: `NameError: name 'config' is not defined`

### 3.3.663 2020-03-16

- T2131 (feature): Improve syslog remote host CLI definition

### 3.3.664 2020-03-15

- T2122 (feature): Update Intel out-of-tree drivers to latest version(s)
- T2121 (feature): Update Linux Kernel to v4.19.109
- T2119 (bug): Error on boot when removing ethernet interface from VM

### 3.3.665 2020-03-14

- T834 (feature): New L2TP server implementation based on accel-ppp

### 3.3.666 2020-03-13

- T1622 (default): Add failsafe and back trace to boot config loader

### 3.3.667 2020-03-11

- T1961 (bug): VXLAN - fails to commit due to non-existent variable, broken MTU
- T2084 (default): contrack-tools package build error for current/equuleus

### 3.3.668 2020-03-10

- T1331 (bug): DNS stops working

### 3.3.669 2020-03-09

- T2111 (feature): VRF add route leaking support
- T2109 (bug): Ping by name broken in VyOS 1.3-rolling-202003080217
- T2065 (bug): VyOS 1.3 Don't set daemon in openvpn-{intf}.conf file
- T31 (feature): Add VRF support

### 3.3.670 2020-03-08

- T1954 (bug): Having `system login radius` configured causes exponentially long boot times
- T1760 (bug): RADIUS shared secret is not redacted from "show configuration" op mode command

### 3.3.671 2020-03-07

- T2107 (bug): Wireless interfaces do not work in station mode without security

### 3.3.672 2020-03-05

- T2074 (bug): VyOS docker container: Cannot configure ethernet interface

### 3.3.673 2020-03-04

- T2098 (bug): Wrong call to cli-shell-api in generated op-mode templates for path completion helper

### 3.3.674 2020-03-03

- T2095 (bug): Copy command errors out

### 3.3.675 2020-03-01

- T2082 (bug): WireGuard broken after merging T2057
- T2089 (feature): RADIUS: do not query servers when commit is running started from a non RADIUS user
- T2086 (feature): Move sudo session open/close log entries to auth.log

### 3.3.676 2020-02-29

- T2046 (feature): allowing sub-classes of Interface to redefine how the interface is created

### 3.3.677 2020-02-28

- T2083 (default): vyos-build: build-packages fails at mdns-repeater due to wrong branch
- T2080 (default): traffic-policy shaper error when setting bandwidth

### 3.3.678 2020-02-27

- T2075 (feature): Add support for OpenVPN tls-crypt file option
- T2068 (feature): Update Linux Kernel to v4.19.105
- T1703 (default): Macvlan PPPoE support
- T2078 (feature): Kernel: remove unused RAID functions 5,6,10,jbod,dm

### 3.3.679 2020-02-25

- T2070 (feature): Rewrite (dis-)connect op-mode commands in XML and Python
- T2071 (feature): Add possibility to temporary disable a RADIUS server used for system login

**3.3.680 2020-02-23**

- T2055 (feature): Remove IPv6 router-advert options for PPPoE
- T1318 (feature): PPPoE client CLI redesign

**3.3.681 2020-02-22**

- T2063 (feature): vyos-salt-minion package is missing from vyos-world

**3.3.682 2020-02-20**

- T1969 (default): OSPF with WireGuard cause Route Inactive

**3.3.683 2020-02-18**

- T2034 (default): Removal of interfaces loopback lo removed 127.0.0.1 and ::1

**3.3.684 2020-02-17**

- T2047 (feature): Update Linux Kernel to v4.19.104
- T2048 (bug): ISO boot fails when wireless adapter is present

**3.3.685 2020-02-16**

- T2043 (bug): Bond VLANs can't be extended on the fly
- T2030 (bug): Bond doesn't survive reboot
- T1992 (bug): Adding vlan on a bond resets all BGP connections on same bond
- T1908 (feature): Add zone option for Cloudflare DDNS
- T1246 (bug): VyOS 1.2.0 "openvpn-options" configuration does not allow quotes in values

**3.3.686 2020-02-15**

- T2042 (bug): Error on reboot after deleting "service snmp" and not "service lldp snmp enable"
- T2041 (bug): Adding non existent bond interface raises exception

### 3.3.687 2020-02-14

- T2039 (bug): Wrong system type displayed in show version
- T2040 (bug): vyos-http-api-server should reload Config in all routes

### 3.3.688 2020-02-13

- T2033 (feature): Drop vyos-replace package
- T1635 (feature): Rewrite interface pseudo-ethernet in new XML/Python style

### 3.3.689 2020-02-10

- T2024 (feature): Migrate "system login banner" to XML/Python

### 3.3.690 2020-02-09

- T2022 (bug): When RADIUS config is active, local logins won't work
- T2020 (default): Unable to log in after upgrade to 1.3-rolling-202002080217
- T1931 (bug): Enabling SNMP commit error

### 3.3.691 2020-02-05

- T1948 (bug): RADIUS login broken in 1.3
- T1990 (feature): Migrate "system login" to XML/Python representation
- T1585 (default): Add letsencrypt/certbot support for 'service https'

### 3.3.692 2020-02-04

- T1965 (bug): VyOS-1.3: ping no longer supports specifying interface or source

### 3.3.693 2020-02-02

- T2011 (feature): Update Linux Kernel to v4.19.101
- T640 (bug): Images no longer work when built without "recommended" packages

### 3.3.694 2020-02-01

- T2009 (bug): Ethernet Interface always stays down
- T1989 (bug): `conf.get_config_dict()` throws exception

### 3.3.695 2020-01-31

- T1768 (bug): PPTP - `vyos.config` rewrite
- T2002 (bug): VLAN interfaces try to be enabled even if parent interface is A/D

### 3.3.696 2020-01-30

- T1994 (default): lldpd not bound to specified interfaces - Fix jinja template
- T1896 (enhancement): Remove LLDP-MED `civic_based` location information
- T1724 (feature): wireguard - add endpoint check in `verify()`

### 3.3.697 2020-01-29

- T1996 (feature): Update Linux Kernel to 4.19.99
- T1862 (default): Use regex pattern `\s+` to split strings on whitespace in Python 3.7
- T1755 (bug): Python `KeyError` exceptions raised with `'show vpn ipsec sa'` command under use of certain IPSEC cipher suites
- T1747 (bug): L2TP breaks after upgrading to VyOS 1.2-rolling-201910180117 [issue report and proposed solution]
- T1664 (bug): Ipoe with bond per vlan don't work
- T1895 (feature): There is not restriction on selection of syslog facility
- T1670 (feature): OpenVPN option for `tls-auth`

### 3.3.698 2020-01-26

- T1937 (bug): `snmpd` throwing a tremendous amount of errors
- T1767 (bug): IPoE - `vyos.config` rewrite
- T1765 (bug): wireguard - `vyos.config` rewrite

### 3.3.699 2020-01-24

- T1975 (bug): OpenVPN tap devices won't come up automatically

### 3.3.700 2020-01-23

- T1766 (bug): `service-pppoe - vyos.config` rewrite

### 3.3.701 2020-01-21

- T1784 (bug): DMVPN with IPSec does not work in HUB mode
- T1977 (bug): webproxy error on fresh install

### 3.3.702 2020-01-18

- T1830 (feature): 1.3-rolling boots to GRUB prompt post-install on UEFI systems
- T1940 (bug): EFI Fresh Install fails to boot, 4K Sector Drives Fail to boot EFI

### 3.3.703 2020-01-16

- T1880 (default): "A stop job is running for live-tools - System Support Scripts" hangs, times out when shutting down equuleus live iso

### 3.3.704 2020-01-15

- T1959 (bug): Error message when adding IPSec VPN

### 3.3.705 2020-01-09

- T1955 (feature): `snmp - cli config val_help` missing
- T1813 (bug): error in generated `/etc/hosts` file

### 3.3.706 2020-01-08

- T1946 (bug): Recovery ifname for PPTP remote-access

### 3.3.707 2020-01-03

- T1939 (feature): Provide abstraction for interface "ip" options

### 3.3.708 2020-01-01

- T1779 (bug): Tunnel interfaces aren't suggested as being available for bridging

### 3.3.709 2019-12-31

- T1654 (bug): sFlow: multiple "sflow server" not work, and "disable-imt" could break configuration
- T1923 (feature): Migrate L2TPv3 interface to XML/Python

### 3.3.710 2019-12-30

- T1920 (bug): beep: Error: Running under sudo, which is not supported for security reasons.
- T1918 (bug): l2tp / ipsec config broken in latest daily
- T1897 (bug): IPSec - 1.2 to 1.3 migration failed
- T1921 (bug): snmp: VyOS options no longer recognized
- T1922 (feature): Add VXLAN IPv6 support
- T1919 (feature): Migrate "system options" to XML/Python representation

### 3.3.711 2019-12-28

- T1916 (feature): Update Linux Kernel to v4.19.91
- T1915 (bug): Remove "system ipv6 blacklist" option
- T1912 (feature): Migrate "system (ip|ipv6)" to XML/Python representation

### 3.3.712 2019-12-27

- T1910 (bug): Invalid parmissions on latest 1.3 rolling ISO images

### 3.3.713 2019-12-26

- T1794 (bug): Interface description can't contain a colon
- T1906 (feature): Migrate "system time-zone" configuration to XML/Python

### 3.3.714 2019-12-23

- T1898 (enhancement): Support multiple IPv4/IPv6 LLDP management addresses
- T1878 (bug): accel-ppp: pppoe single-session option implementation

### 3.3.715 2019-12-22

- T393 (enhancement): Migrate vyatta-lldpd to vyos-1x

### 3.3.716 2019-12-20

- T1892 (default): vyos-build: Do not install recommends in docker image [enhancement]
- T1411 (enhancement): equuleus: buster: vyatta-ravpn: libfreeradius-client2 is missing in buster

### 3.3.717 2019-12-19

- T1873 (default): DHCP server fails to start due to a change in isc-dhcp-server init scripts

### 3.3.718 2019-12-18

- T1889 (bug): Error building docker build image
- T1132 (default): Build on Debian Buster

### 3.3.719 2019-12-17

- T1886 (feature): Update Linux Kernel to v4.19.89
- T1887 (feature): Update WireGuard to Debian release 0.0.20191212-1

### 3.3.720 2019-12-13

- T1861 (default): hosts lost after modified static-host-mapping

### 3.3.721 2019-12-10

- T1843 (feature): Add GCC preprocessor support for XML files

### 3.3.722 2019-12-08

- T1566 (feature): Extend L2TP/IPSec server with IPv6

### 3.3.723 2019-12-07

- T1714 (bug): Disable DHCP Nameservers Not Working

### 3.3.724 2019-12-06

- T1860 (feature): Update WireGuard to Debian release 0.0.20191127-2
- T1859 (feature): Update Linux Kernel to v4.19.88
- T1854 (bug): Dynamic DNS configuration cannot be deleted
- T1849 (bug): DHCPv6 client does not start
- T1169 (bug): LLDP potentially broken
- T586 (bug): Cannot add ethernet vif-s vif-c interface to bridge-group

### 3.3.725 2019-12-05

- T1847 (bug): set\_level incorrectly handles path given as empty string

### 3.3.726 2019-12-04

- T1787 (default): Failed config migration from V1.2.3 to 1.2-rolling-201911030217
- T1212 (bug): IPSec Tunnel to Cisco ASA drops reliably after 4.2GB transferred
- T1704 (feature): OpenVPN - Add support for ncp-ciphers

### 3.3.727 2019-12-03

- T1782 (bug): pppoe0: showing as "Coming up"
- T1801 (bug): Unescaped backslashes in config values cause configuration failure

### 3.3.728 2019-12-02

- T1840 (bug): PPPoE doesn't not rename pppX to pppoeX

### 3.3.729 2019-11-25

- T1824 (bug): Permission denied: '/opt/vyatta/etc/config/vyos-migrate.log'

### 3.3.730 2019-11-24

- T1673 (bug): vif bridge-group not migrated to bridge member interface
- T1799 (feature): Add support for GENEVE (Generic Network Virtualization Encapsulation)

### 3.3.731 2019-11-23

- T1627 (feature): Rewrite wireless interface in new style XML syntax

### 3.3.732 2019-11-21

- T1818 (default): Print name of migration script on failure
- T1814 (default): Add log of migration scripts run during config migration

### 3.3.733 2019-11-14

- T1710 (default): [equuleus] buster: add patch to fix live-build missing key error
- T1804 (default): Add python3-psutil to docker image
- T1736 (default): Decide on best practice for patching live-team packages for VyOS build system
- T1424 (default): Rewrite the config load script

### 3.3.734 2019-11-11

- T1793 (feature): Editing description on an interface causes BGP sessions to reset on commit

### 3.3.735 2019-11-10

- T1791 (feature): Update Linux Kernel to 4.19.82

### 3.3.736 2019-11-08

- T1789 (bug): ddclient not working with generated RFC2136 / nsupdate config

### 3.3.737 2019-11-03

- T1777 (bug): Bonding interface MAC address mismatch after reboot
- T1752 (bug): PPPoE does not automatically start on boot

### 3.3.738 2019-11-02

- T1783 (bug): Interface can't unpin from bridge

### 3.3.739 2019-10-22

- T1756 (feature): Modify output to be more useful - Wireguard

### 3.3.740 2019-10-21

- T1741 (feature): Add system wide proxy setting

### 3.3.741 2019-10-19

- T1746 (bug): 201910180117 fails startup with 'Permission Denied' errors
- T1743 (default): equuleus: remove references to SSH key type "rsa1" deprecated in Debian Buster

### 3.3.742 2019-10-18

- T1712 (default): DHCP client sometimes doesn't start
- T1604 (enhancement): equuleus: buster: vbash: tab completion breaks

### 3.3.743 2019-10-11

- T1723 (bug): wireguard - Interface wg01 could not be brought up in time

### 3.3.744 2019-10-09

- T1719 (feature): ssh deprecated options
- T1718 (bug): ISO check in /opt/vyatta/sbin/install-image faulty
- T1682 (feature): Migrate to new Jenkins Pipeline script

### 3.3.745 2019-10-08

- T1717 (bug): disable multiple daemons to autostart at boot

### 3.3.746 2019-10-06

- T1713 (feature): Remove deprecated packages no longer required after migration to Accel-PPP

### 3.3.747 2019-10-03

- T1689 (feature): "reset openvpn" op-mode command should terminate and restart OpenVPN process

### 3.3.748 2019-10-01

- T1706 (bug): wireguard broken in latest rolling

### 3.3.749 2019-09-30

- T1688 (feature): OpenVPN - Add new cipher aes-(128|192|256)-gcm

### 3.3.750 2019-09-28

- T1696 (bug): NTP - Tests fail when building vyos-1x
- T1512 (bug): vyos 1.2 openvpn client names with spaces created incorrectly

### 3.3.751 2019-09-27

- T1681 (feature): cleanup wireguard code since tagnodes are now visible
- T1695 (bug): Syntax error in interface-dummy.py

### 3.3.752 2019-09-26

- T1692 (bug): ipoe-server verify function error
- T1691 (bug): OpenVPN - Committing config when OpenVPN peer/server not available makes commit hang
- T1690 (feature): restart op-mode commands for 'service (pppoe|ipoe)-server'

### 3.3.753 2019-09-25

- T1672 (bug): Wireguard keys not automatically moved

### 3.3.754 2019-09-23

- T1679 (bug): during bootup: invalid literal for int() with base 10
- T1680 (feature): DHCP client does not release IP address on exit/deletion

### 3.3.755 2019-09-21

- T1676 (default): [equuleus] buster: update GRUB boot parameters during upgrade
- T1637 (feature): Rewrite ethernet interface in new style XML syntax
- T1675 (feature): OpenVPN - Specify minimum TLS version

### 3.3.756 2019-09-20

- T1602 (default): equuleus: buster: add live build apt options for choosing vyos packages

### 3.3.757 2019-09-19

- T1666 (feature): Deleting a bond will place member interfaces into A/D state

### 3.3.758 2019-09-17

- T239 (bug): Improve documentation for the firewall all-ping setting

### 3.3.759 2019-09-16

- T1040 (default): rc.local is executed too early

### 3.3.760 2019-09-15

- T1662 (default): openvpn: 'show openvpn client' error
- T1661 (default): openvpn: wrong checking for existence cert files
- T1630 (bug): OpenVPN after changing it from root to nobody (unprivileged user) cant add routes

### 3.3.761 2019-09-13

- T1660 (bug): Bonding dont't work on VyOS 1.2-rolling-201909120338
- T1655 (enhancement): equuleus: buster: arm: vyos-accel-ppp build failes because of filename hardcoded as x86\_64 in debian/rules

### 3.3.762 2019-09-12

- T1572 (feature): Wireguard keyPair per interface
- T1545 (bug): IPSEC vti issue

### 3.3.763 2019-09-10

- T1650 (feature): implement wireguard default key removal
- T1649 (feature): feature documentation different keypairs per interface
- T1648 (feature): add cli command 'delete wireguard named-key <key>'

### 3.3.764 2019-09-09

- T1639 (bug): wireguard pubkey change error

### 3.3.765 2019-09-07

- T1640 (feature): Update Linux Kernel to v4.19.70

### 3.3.766 2019-09-06

- T1624 (bug): Failed to set up config session
- T1636 (feature): Rewrite VXLAN in new style XML/Python
- T1479 (bug): libvyosconfig error reporting doesn't include line numbers
- T808 (feature): replace lighthttpd with nginx
- T1478 (bug): libvyosconfig parser does not support escaped quotes inside single-quoted strings

### 3.3.767 2019-09-04

- T1632 (bug): OpenVPN 'push' options with quotes
- T1631 (bug): Multiple push-route options cause error generating openvpn configuration
- T1557 (feature): Create generic abstraction for configuring interfaces e.g. IP address
- T1628 (feature): Adopt WireGuard configuration script to new vyos.ifconfig class
- T1614 (feature): Rewrite bonding interface in new style XML syntax

### 3.3.768 2019-09-02

- T1621 (default): Rewrite the rest of trivial vyatta-op commands to new syntax

### 3.3.769 2019-08-31

- T1456 (bug): Port group cannot be configured if the same port is configured as standalone and inside a range

### 3.3.770 2019-08-28

- T1615 (feature): After migration to pyroute2 the address DHCP statement is no longer covered

### 3.3.771 2019-08-27

- T1617 (default): OpenVPN push route failure
- T1250 (bug): FRR not setting default gateway from DHCP

### 3.3.772 2019-08-26

- T1591 (bug): OpenVPN "run show openvpn client status" does not work
- T1608 (feature): bridge: Bridge adding non existing interfaces is allowed but does not work
- T1548 (feature): Rewrite OpenVPN interface/op-commands in new style XML/Python
- T1607 (default): Convert 'reset conntrack' and 'reset ip[v6] cache' operations from vyatta-op to new syntax

### 3.3.773 2019-08-25

- T1611 (default): Migration to latest rolling fails with vyos.configtree.ConfigTreeError: Path [b'interfaces bridge br0 igmp-snooping querier'] doesn't exist

### 3.3.774 2019-08-23

- T1606 (bug): Rolling release no longer boots after adding hostname daemon

### 3.3.775 2019-08-21

- T1601 (feature): Rewrite loopback interface type with new style XML/Python interface
- T1596 (default): Convert 'telnet' and 'traceroute' vyatta-op commands to new syntax

### 3.3.776 2019-08-20

- T1595 (feature): Migrate deprecated "service dns forwarding listen-on" to listen-address

### 3.3.777 2019-08-19

- T1580 (feature): Rewrite dummy interface type with new style XML/Python interface
- T1590 (default): Convert 'show system' operations from vyatta-op to python/xml syntax

### 3.3.778 2019-08-17

- T1592 (feature): Update Linux Kernel to v4.19.67

### 3.3.779 2019-08-15

- T1584 (default): equuleus: buster: add consistent grub options for predictable interface names

### 3.3.780 2019-08-13

- T1556 (feature): Rewrite Bridge in new style XML syntax

### 3.3.781 2019-08-09

- T1569 (feature): interfaceconfig class documetation

### 3.3.782 2019-08-05

- T1562 (feature): Change version scheme on current branch used for rolling releases

### 3.3.783 2019-08-04

- T1561 (bug): VyOS rolling ISO cluttered with vyatta-ravpn Git Repo

### 3.3.784 2019-08-02

- T853 (feature): Add SSTP server support
- T742 (feature): Replace poptop and xl2tpd with accel-ppp

### 3.3.785 2019-08-01

- T1544 (feature): L2TP documentation

### 3.3.786 2019-07-31

- T1552 (feature): accel-ppp: SSTP documentation
- T1553 (default): equuleus: buster: add 'noautologin' to boot parameters

### 3.3.787 2019-07-29

- T1532 (default): [equuleus] buster: GPG error on vyos package repository

### 3.3.788 2019-07-28

- T1547 (feature): accel-ppp/L2TP restructure CLI
- T1546 (bug): accel-ppp/L2TP radius-source address is not honored

### 3.3.789 2019-07-23

- T1533 (bug): Rolling builds broken!
- T1489 (feature): Add vlan\_mon usage at Accel

### 3.3.790 2019-07-22

- T1435 (enhancement): Make ip-address [OPTIONAL] (in dhcp-server -> static-mapping) to cope with "unfriendly" client-hostnames of IoT-Devices

### 3.3.791 2019-07-21

- T823 (feature): Rewrite DHCP op mode in the new style

### 3.3.792 2019-07-18

- T1497 (bug): "set system name-server" generates invalid/incorrect resolv.conf
- T533 (feature): Support for PPPoE MTU greater than 1492

### 3.3.793 2019-07-08

- T1510 (feature): [IPoE] vlan-mon option implementation
- T1508 (feature): [pppoe] migration script for service pppoe-server interface
- T1494 (feature): accel-ppp: IPoE update documentation
- T989 (feature): Add support for IPoE server

### 3.3.794 2019-07-03

- T1502 (feature): Add build sanity checking tools to the dev builds

### 3.3.795 2019-07-02

- T1099 (default): Openvpn: use config files instead of one long command.
- T1495 (feature): accel-ppp: IPoE implement IPv6 PD

### 3.3.796 2019-07-01

- T1498 (bug): Nameservers are not propagated into resolv.conf

### 3.3.797 2019-06-24

- T1482 (feature): Add OpenVPN SHA384 hashing algorithm

### 3.3.798 2019-06-23

- T1476 (bug): Update PowerDNS recursor to 4.2 series

### 3.3.799 2019-06-22

- T1313 (feature): Add support for reusable build flavours
- T1202 (bug): Add ``hvinfo`` to the packages directory

### 3.3.800 2019-06-20

- T1413 (enhancement): equuleus: buster: `vyos-xe-guest-utilities` is not installable and breaks live-build
- T1412 (enhancement): equuleus: buster: `vyos-netplug` is not installable and breaks live-build

### 3.3.801 2019-06-19

- T1334 (feature): Migration script runner rewrite
- T1327 (bug): Set the serial console speed to 115200 by default

### 3.3.802 2019-06-18

- T1451 (bug): Intel e1000e driver missing in latest rolling release

### 3.3.803 2019-06-17

- T1408 (feature): `pppoe-server` - implement local-ipv6 for pure IPv6 based deployments

### 3.3.804 2019-06-12

- T1397 (default): Rewrite the config merge script

### 3.3.805 2019-06-05

- T1426 (default): Update the script that checks `conntrack hash-size` on reboot

### 3.3.806 2019-06-03

- T1423 (default): When merging remote config files, create `known_hosts` file if not present.

### 3.3.807 2019-05-28

- T1410 (feature): Upgrade Linux Kernel to 4.19.46

### 3.3.808 2019-05-26

- T1404 (feature): Update iproute2 package to 4.19

### 3.3.809 2019-05-24

- T1407 (bug): pppoe IPv6 PD documentation by practical example

### 3.3.810 2019-05-23

- T1402 (feature): Update Linux Kernel to 4.19.45

### 3.3.811 2019-05-22

- T1399 (bug): accel-ppp kernel modules missing in rolling build 20190522
- T1393 (bug): pppoe IPv6 pool doesn't work

### 3.3.812 2019-05-21

- T592 (bug): lldpcli: unknown command from argument 1: `#`

### 3.3.813 2019-05-16

- T1267 (feature): FRR: Add interface name for static routes
- T1148 (bug): epa2 BGP peers initiate before config is fully loaded, routes leak.

### 3.3.814 2019-05-06

- T1368 (feature): Enable MPLS support in Linux Kernel

### 3.3.815 2019-05-04

- T1365 (bug): Cannot configure syslog on 1.2.0-rolling+201904260337

### 3.3.816 2019-04-29

- T1352 (feature): vyos-documentaion: accel-pppoe adding CIDR based IP pool option

### 3.3.817 2019-04-21

- T1348 (feature): Upgrade WireGuard to 0.0.20190406-1
- T1347 (feature): Upgrade Linux Kernel to 4.19.36

### 3.3.818 2019-04-20

- T1344 (feature): Unclutter "system login radius" configuration nodes

### 3.3.819 2019-04-19

- T1325 (default): GRE tunnel to Cisco router fails in 1.2.0 - works in 1.1.8

### 3.3.820 2019-04-16

- T1184 (feature): wireguard - extend documentation with the show interface wireguard commands

### 3.3.821 2019-04-15

- T1260 (feature): VICI-based implementation of "run show vpn ipsec sa"
- T1248 (default): Add a function for copying nodes to the vyos.configtree library

### 3.3.822 2019-04-05

- T1324 (feature): update documtation for 'set system login user level'

### 3.3.823 2019-04-04

- T1323 (feature): migrate operator accounts to admin accounts and remove the option to setup an operator account

### 3.3.824 2019-03-20

- T405 (feature): Add binaries for lcdproc

### 3.3.825 2019-03-12

- T1284 (feature): accel-ppp: ptp implementation documention
- T833 (feature): New PPTP server implementation based on accel-ppp

### 3.3.826 2019-02-22

- T1257 (bug): implement 'set system static-host-mapping' in host\_name.py and remove old function calls

### 3.3.827 2019-02-21

- T1214 (bug): Add `ipaddrcheck` to the packages directory

### 3.3.828 2019-02-10

- T1154 (default): use of local cache to build iso

### 3.3.829 2019-02-09

- T1236 (feature): Update Linux Kernel

## 3.4 1.2.6-S1

1.2.6-S1 is a security release release made in September 2020.

### 3.4.1 Resolved issues

VyOS 1.2.6 release was found to be susceptible to CVE-2020-10995. It's a low- impact vulnerability in the PowerDNS recursor that allows an attacker to cause performance degradation via a specially crafted authoritative DNS server reply.

- T2899 remote syslog server migration error on update

## 3.5 1.2.6

1.2.6 is a maintenance release made in September 2020.

### 3.5.1 Resolved issues

- T103 DHCP server prepends shared network name to hostnames
- T125 Missing PPPoE interfaces in l2tp configuration
- T1194 cronjob is being setup even if not saved
- T1205 module pcspkr missing
- T1219 Redundant active-active configuration, asymmetric routing and conntrack-sync cache
- T1220 Show transceiver information from plugin modules, e.g SFP+, QSFP
- T1221 BGP - Default route injection is not processed by the specific route-map
- T1241 Remove of policy route throws CLI error
- T1291 Under certain conditions the VTI will stay forever down
- T1463 Missing command *show ip bgp scan* appears in command completion
- T1575 *show snmp mib ifmib* crashes with IndexError
- T1699 Default `net.ipv6.route.max_size 32768` is too low
- T1729 PIM (Protocol Independent Multicast) implementation
- T1901 Semicolon in values is interpreted as a part of the shell command by validators
- T1934 Change default hostname when deploy from OVA without params.
- T1938 syslog doesn't start automatically
- T1949 Multihop IPv6 BFD is unconfigurable
- T1953 DDNS service name validation rejects valid service names
- T1956 PPPoE server: support PADO-delay
- T1973 Allow route-map to match on BGP local preference value
- T1974 Allow route-map to set administrative distance
- T1982 Increase rotation for `atop.acct`
- T1983 Expose route-map when BGP routes are programmed in to FIB
- T1985 pppoe: Enable ipv6 modules without configured ipv6 pools
- T2000 strongSwan does not install routes to table 220 in certain cases
- T2021 OSPFv3 doesn't support decimal area syntax
- T2062 Wrong dhcp-server static route subnet bytes
- T2091 `swanctl.conf` file is not generated properly if more than one IPsec profile is used
- T2131 Improve syslog remote host CLI definition
- T2224 Update Linux Kernel to v4.19.114
- T2286 IPoE server vulnerability
- T2303 Unable to delete the image version that came from OVA
- T2305 Add release name to "show version" command
- T2311 Statically configured name servers may not take precedence over ones from DHCP
- T2327 Unable to create syslog server entry with different port

- T2332 Backport node option for a syslog server
- T2342 Bridge l2tpv3 + ethX errors
- T2344 PPPoE server client static IP assignment silently fails
- T2385 salt-minion: improve completion helpers
- T2389 BGP community-list unknown command
- T2398 op-mode “dhcp client leases interface” completion helper misses interfaces
- T2402 Live ISO should warn when configuring that changes won’t persist
- T2443 NHRP: Add debugging information to syslog
- T2448 *monitor protocol bgp* subcommands fail with ‘command incomplete’
- T2458 Update FRR to 7.3.1
- T2476 Bond member description change leads to network outage
- T2478 login radius: use NAS-IP-Address if defined source address
- T2482 Update PowerDNS recursor to 4.3.1 for CVE-2020-10995
- T2517 vyos-container: link\_filter: No such file or directory
- T2526 Wake-On-Lan CLI implementation
- T2528 “update dns dynamic” throws FileNotFoundError exception
- T2536 “show log dns forwarding” still refers to dnsmasq
- T2538 Update Intel NIC drivers to recent release (preparation for Kernel >=5.4)
- T2545 Show physical device offloading capabilities for specified ethernet interface
- T2563 Wrong interface binding for Dell VEP 1445
- T2605 SNMP service is not disabled by default
- T2625 Provide generic Library for package builds
- T2686 FRR: BGP: large-community configuration is not applied properly after upgrading FRR to 7.3.x series
- T2701 *vpn ipsec pfs enable* doesn’t work with IKE groups
- T2728 Protocol option ignored for IPSec peers in transport mode
- T2734 WireGuard: fwmark CLI definition is inconsistent
- T2757 “show system image version” contains additional new-line character breaking output
- T2797 Update Linux Kernel to v4.19.139
- T2822 Update Linux Kernel to v4.19.141
- T2829 PPPoE server: mppe setting is implemented as node instead of leafNode
- T2831 Update Linux Kernel to v4.19.142
- T2852 rename dynamic dns interface breaks ddclient.cache permissions
- T2853 Intel QAT acceleration does not work

## 3.6 1.2.5

1.2.5 is a maintenance release made in April 2020.

### 3.6.1 Resolved issues

- T1020 OSPF Stops distributing default route after a while
- T1228 pppoe default-route force option not working (Rel 1.2.0-rc11)
- T1301 bgp peer-groups don't work when "no-ipv4-unicast" is enabled.
- T1341 Adding rate-limiter for pppoe server users
- T1376 Incorrect DHCP lease counting
- T1392 Large firewall rulesets cause the system to lose configuration and crash at startup
- T1416 2 dhcp server run in failover mode can't sync hostname with each other
- T1452 accel-pppoe - add vendor option to shaper
- T1490 BGP configuration (is lost|not applied) when updating 1.1.8 -> 1.2.1
- T1780 Adding ipsec ike closeaction
- T1803 Unbind NTP while it's not requested...
- T1821 "authentication mode radius" has no effect for PPPoE server
- T1827 Increase default gc\_thresh
- T1828 Missing completion helper for "set system syslog host 192.0.2.1 facility all protocol"
- T1832 radvd adding feature DNSSL branch.example.com example.com to existing package
- T1837 PPPoE unrecognized option 'replacedefaultroute'
- T1851 wireguard - changing the pubkey on an existing peer seems to destroy the running config.
- T1858 l2tp: Delete deprecated outside-nexthop and add gateway-address
- T1864 Lower IPSec DPD timeout lower limit from 10s -> 2s
- T1879 Extend Dynamic DNS XML definition value help strings and validators
- T1881 Execute permissions are removed from custom SNMP scripts at commit time
- T1884 Keeping VRRP transition-script native behaviour and adding stop-script
- T1891 Router announcements broken on boot
- T1900 Enable SNMP for VRRP.
- T1902 Add redistribute non main table in bgp
- T1909 Incorrect behaviour of static routes with overlapping networks
- T1913 "system ipv6 blacklist" command has no effect
- T1914 IPv6 multipath hash policy does not apply
- T1917 Update WireGuard to Debian release 0.0.20191219-1
- T1934 Change default hostname when deploy from OVA without params.
- T1935 NIC identification and usage problem in Hyper-V environments

- T1936 pppoe-server CLI control features
- T1964 SNMP Script-extensions allows names with spaces, but commit fails
- T1967 BGP parameter “enforce-first-as” does not work anymore
- T1970 Correct adding interfaces on boot
- T1971 Missing modules in initrd.img for PXE boot
- T1998 Update FRR to 7.3
- T2001 Error when router reboot
- T2032 Monitor bandwidth bits
- T2059 Set source-validation on bond vif don't work
- T2066 PPPoE interface can be created multiple times - last wins
- T2069 PPPoE-client does not works with service-name option
- T2077 ISO build from crux branch is failing
- T2079 Update Linux Kernel to v4.19.106
- T2087 Add maxfail 0 option to pppoe configuration.
- T2100 BGP route advertisement wih checks rib
- T2120 “reset vpn ipsec-peer” doesn't work with named peers
- T2197 Cant add vif-s interface into a bridge
- T2228 WireGuard does not allow ports < 1024 to be used
- T2252 HTTP API add system image can return '504 Gateway Time-out'
- T2272 Set system flow-accounting disable-imt has syntax error
- T2276 PPPoE server vulnerability

## 3.7 1.2.4

1.2.4 is a maintenance release made in December 2019.

### 3.7.1 Resolved issues

- T258 Can not configure wan load-balancing on vyos-1.2
- T818 SNMP v3 - remove required engineid from user node
- T1030 Upgrade ddclient from 3.8.2 to 3.9. (support Cloudflare API v4)
- T1183 BFD Support via FRR
- T1299 Allow SNMPd to be extended with custom scripts
- T1351 accel-pppoe adding CIDR based IP pool option
- T1391 In route-map set community additive
- T1394 syslog systemd and host\_name.py race condition
- T1401 Copying files with the FTP protocol fails if the passwor contains special characters

- T1421 OpenVPN client push-route stopped working, needs added quotes to fix
- T1430 Add options for custom DHCP client-id and hostname
- T1447 Python subprocess called without import in host\_name.py
- T1470 improve output of “show dhcpv6 server leases”
- T1485 Enable ‘AdvIntervalOpt’ option in for radvd.conf
- T1496 Separate rolling release and LTS kernel builds
- T1560 “set load-balancing wan rule 0” causes segfault and prevent load balancing from starting
- T1568 strip-private command improvement for additional masking o IPv6 and MAC address
- T1578 completion offers “show table”, but show table does not exist
- T1593 Support ip6gre
- T1597 /usr/sbin/rsyslogd after deleting “system syslog”
- T1638 vyos-hostsd not setting system domain name
- T1678 hostfile-update missing line feed
- T1694 NTPd: Do not listen on all interfaces by default
- T1701 Delete domain-name and domain-search won’t work
- T1705 High CPU usage by bgpd when snmp is active
- T1707 DHCP static mapping and exclude address not working
- T1708 Update Rolling Release Kernel to 4.19.76
- T1709 Update WireGuard to 0.0.20190913
- T1716 Update Intel NIC drivers to recent versions
- T1726 Update Linux Firmware binaries to a more recen version 2019-03-14 -> 2019-10-07
- T1728 Update Linux Kernel to 4.19.79
- T1737 SNMP tab completion missing
- T1738 Copy SNMP configuration from node to node raises exception
- T1740 Broken OSPFv2 virtual-link authentication
- T1742 NHRP unable to commit.
- T1745 dhcp-server commit fails with “DHCP range stop address must be greater or equal to the range start address y!” when static mapping has same IP as range stop
- T1749 numeric validator doesn’t support multiple ranges
- T1769 Remove complex SNMPv3 Transport Security Model (TSM)
- T1772 <regex> constraints in XML are partially broken
- T1778 Kilobits/Megabits difference in configuration Vyos/FRR
- T1780 Adding ipsec ike closeaction
- T1786 disable-dhcp-nameservers is missed in current host\_name.p implementation
- T1788 Intel QAT (QuickAssist Technology ) implementation
- T1792 Update WireGuard to Debian release 0.0.20191012-1

- T1800 Update Linux Kernel to v4.19.84
- T1809 Wireless: SSID scan does not work in AP mode
- T1811 Upgrade from 1.1.8: Config file migratio failed: module=l2tp
- T1812 DHCP: hostnames of clients not resolving afte update v1.2.3 -> 1.2-rolling
- T1819 Reboot kills SNMPv3 configuration
- T1822 Priority inversion wireless interface dhcpv6
- T1825 Improve DHCP configuration error message
- T1836 import-conf-mode-commands in vyos-1x/scripts fails to create an xml
- T1839 LLDP shows “VyOS unknown” instead of “VyOS”
- T1841 PPP ipv6-up.d direcotry missing
- T1893 igmp-proxy: Do not allow adding unknown interface
- T1903 Implementation udev predefined interface naming
- T1904 update eth1 and eth2 link files for the vep4600

## 3.8 1.2.3

1.2.3 is a maintenance and feature backport release made in September 2019.

### 3.8.1 New features

- HTTP API
- T1524 “set service dns forwarding allow-from <IPv4 net|IPv6 net>” option for limiting queries to specific client networks
- T1503 Functions for checking if a commit is in progress
- T1543 “set system contig-mangement commit-archive source-address” option
- T1554 Intel NIC drivers now support receive side scaling and multiqueue

### 3.8.2 Resolved issues

- T1209 OSPF max-metric values over 100 no longer causes commit errors
- T1333 Fixes issue with DNS forwarding not performing recursive lookups on domain specific forwarders
- T1362 Special characters in VRRP passwords are handled correctly
- T1377 BGP weight is applied properly
- T1420 Fixed permission for log files
- T1425 Wireguard interfaces now support /31 addresses
- T1428 Wireguard correctly handles firewall marks
- T1439 DHCPv6 static mappings now work correctly
- T1450 Flood ping commands now works correctly

- T1460 Op mode “show firewall” commands now support counters longer than 8 digits (T1460)
- T1465 Fixed priority inversion in VTI commands
- T1468 Fixed remote-as check in the BGP route-reflector-client option
- T1472 It’s now possible to re-create VRRP groups with RFC compatibility mode enabled
- T1527 Fixed a typo in DHCPv6 server help strings
- T1529 Unnumbered BGP peers now support VLAN interfaces
- T1530 Fixed “set system syslog global archive file” command
- T1531 Multiple fixes in cluster configuration scripts
- T1537 Fixed missing help text for “service dns”
- T1541 Fixed input validation in DHCPv6 relay options
- T1551 It’s now possible to create a QinQ interface and a firewall assigned to it in one commit
- T1559 URL filtering now uses correct rule database path and works again
- T1579 “show log vpn ipsec” command works again
- T1576 “show arp interface <intf>” command works again
- T1605 Fixed regression in L2TP/IPsec server
- T1613 Netflow/sFlow captures IPv6 traffic correctly
- T1616 “renew dhcpv6” command now works from op mode
- T1642 BGP remove-private-as option iBGP vs eBGP check works correctly now
- T1540, T1360, T1264, T1623 Multiple improvements in name servers and hosts configuration handling

### 3.8.3 Internals

`/etc/resolv.conf` and `/etc/hosts` files are now managed by the `vyos-hostsd` service that listens on a ZMQ socket for update messages.

## 3.9 1.2.2

1.2.2 is a maintenance release made in July 2019.

### 3.9.1 New features

- Options for per-interface MSS clamping.
- BGP extended next-hop capability
- Relaxed BGP multipath option
- Internal and external options for “remote-as” (accept any AS as long as it’s the same to this router or different, respectively)
- “Unnumbered” (interface-based) BGP peers
- BGP no-prepend option
- Additive BGP community option

- OSPFv3 network type option
- Custom arguments for VRRP scripts
- A script for querying values from config files

### 3.9.2 Resolved issues

- Linux kernel 4.19.54, including a fix for the TCP SACK vulnerability
- T1371 VRRP health-check scripts now can use arguments
- T1497 DNS server addresses coming from a DHCP server are now correctly propagated to resolv.conf
- T1469 Domain-specific name servers in DNS forwarding are now used for recursive queries
- T1433 `run show dhcpv6 server leases` now display leases correctly
- T1461 Deleting `firewall options` node no longer causes errors
- T1458 Correct hostname is sent to remote syslog again
- T1438 Board serial number from DMI is correctly displayed in `show version`
- T1358, T1355, T1294 Multiple corrections in remote syslog config
- T1255 Fixed missing newline in `/etc/hosts`
- T1174 `system domain-name` is correctly included in `/etc/resolv.conf`
- T1465 Fixed priority inversion in `interfaces vti vtiX ip` settings
- T1446 Fixed errors when installing with RAID1 on UEFI machines
- T1387 Fixed an error on disabling an interfaces that has no address
- T1367 Fixed deleting VLAN interface with non-default MTU
- T1505 `vyos.config return_effective_values()` function now correctly returns a list rather than a string

## 3.10 1.2.1

VyOS 1.2.1 is a maintenance release made in April 2019.

### 3.10.1 Resolved issues

- Package updates: kernel 4.19.32, open-vm-tools 10.3, latest Intel NIC drivers
- T1326 The kernel now includes drivers for various USB serial adapters, which allows people to add a serial console to a machine without onboard RS232, or connect to something else from the router
- The collection of network card firmware is now much more extensive
- T1271 VRRP now correctly uses a virtual rather than physical MAC addresses in the RFC-compliant mode
- T1330 DHCP WPAD URL option works correctly again
- T1312 Many to many NAT rules now can use source/destination and translation networks of non-matching size. If 1:1 network bits translation is desired, it's now users responsibility to check if prefix length matches.
- T1290 IPv6 network prefix translation is fixed
- T1308 Non-alphanumeric characters such as `>` can now be safely used in PPPoE passwords

- T1305 `show | commands` no longer fails when a config section ends with a leaf node such as `timezone` in `show system | commands`
- T1235 `show | commands` correctly works in config mode now
- T1298 VTI is now compatible with the DHCP-interface IPsec option
- T1277 `show dhcp server statistics` command was broken in latest Crux
- T1261 An issue with TFTP server refusing to listen on addresses other than loopback was fixed
- T1224 Template issue that might cause UDP broadcast relay fail to start is fixed
- T1067 VXLAN value validation is improved
- T1211 Blank hostnames in DHCP updates no longer can crash DNS forwarding
- T1322 Correct configuration is now generated for DHCPv6 relays with more than one upstream interface
- T1234 `relay-agents-packets` option works correctly now
- T1231 Dynamic DNS data is now cleaned on configuration change
- T1282 Remote Syslog can now use a fully qualified domain name
- T1279 ACPI power off works again
- T1247 Negation in WAN load balancing rules works again
- T1218 FRR `staticd` now starts on boot correctly
- T1296 The installer now correctly detects SD card devices
- T1225 Wireguard peers can be disabled now
- T1217 The issue with Wireguard interfaces impossible to delete is fixed
- T1160 Unintended IPv6 access is fixed in SNMP configuration
- T1060 It's now possible to exclude hosts from the transparent web proxy
- T484 An issue with rules impossible to delete from the zone-based firewall is fixed

## INSTALLATION AND IMAGE MANAGEMENT

### 4.1 Installation

VyOS installation requires a downloaded VyOS .iso file. That file is a live install image that lets you boot a live VyOS. From the live system, you can proceed to a permanent installation on a hard drive or any other type of storage.

Table 1: Comparison of VyOS image releases

Release Type	Description	Release Cycle	Intended Use	Access to Images	Access to Source
<b>Nightly (Current)</b>	Automatically built from the current branch. Always up to date with cutting edge development but guaranteed to contain bugs.	Every night	Developing VyOS, testing new features, experimenting.	Everyone	Everyone
<b>Nightly (Beta)</b>	Automatically built from the development branch and released alongside snapshots. Most likely contains bugs.	Every night	Developing and testing the latest major version under development.	Everyone	Everyone
<b>Snapshot</b>	A particularly stable release frozen from nightly each month after manual testing. Still contains experimental code.	Every month until RC comes out	Home labs and simple networks that call for new features.	Everyone	Everyone
<b>Release Candidate</b>	Rather stable. All development focuses on testing and hunting down remaining bugs following the feature freeze.	Irregularly until EPA comes out	Labs, small offices and non-critical production systems backed by a high-availability setup.	Everyone	Everyone
<b>Early Production Access</b>	Highly stable with no known bugs. Needs to be tested repeatedly under different conditions before it can become the final release.	Irregularly until LTS comes out	Non-critical production environments, preparing for the LTS release.	Everyone	Everyone
<b>Long-Term Support</b>	Guaranteed to be stable and carefully maintained for several years after the release. No features are introduced but security updates are released in a timely manner.	Every major version	Large-scale enterprise networks, internet service providers, critical production environments that call for minimum downtime.	Subscribers, contributors, non-profits, emergency services, academic institutions	Everyone

### 4.1.1 Hardware requirements

The minimum system requirements are 1024 MiB RAM and 2 GiB storage. Depending on your use, you might need additional RAM and CPU resources e.g. when having multiple BGP full tables in your system.

## 4.1.2 Download

### Registered Subscribers

Registered subscribers can log into <https://support.vyos.io/> to access a variety of different downloads via the “Downloads” link. These downloads include LTS (Long-Term Support), the associated hot-fix releases, early public access releases, pre-built VM images, as well as device specific installation ISOs.

The screenshot shows the 'VyOS 1.2.x' download page. At the top right, there are 'RSS Feed' and 'Subscribe' buttons. Below the title, there are three main categories of downloads:

- Protectli:**
  - VyOS 1.2.3 for Protectli hardware
  - VyOS 1.2.2 for Protectli hardware
- ISO:**
  - VyOS 1.2.3 generic ISO image
  - VyOS 1.2.3-epa1 generic ISO image
  - VyOS 1.2.2 generic ISO image
  - VyOS 1.2.1-S2 generic ISO image
  - VyOS 1.2.1 generic ISO image
  - VyOS 1.2.0-H4 generic ISO image
- VMWare vSphere:**
  - VyOS 1.2.3 for VMWare
  - VyOS 1.2.2 for VMWare
  - VyOS 1.2.1 for VMWare

There are also 'View 2 downloads' and 'View 6 downloads' links next to the Protectli and ISO categories respectively.

### Building from source

Non-subscribers can always get the LTS release by building it from source. Instructions can be found in the *Build VyOS* section of this manual. VyOS source code repository is available for everyone at <https://github.com/vyos/vyos-build>.

### Rolling Release

Everyone can download bleeding-edge VyOS rolling images from: <https://downloads.vyos.io/>

**Note:** Rolling releases contain all the latest enhancements and fixes. This means that there will be new bugs of course. If you think you hit a bug please follow the guide at *Bug Report/Issue*. We depend on your feedback to improve VyOS!

The following link will always fetch the most recent VyOS build for AMD64 systems from the current branch: <https://downloads.vyos.io/rolling/current/amd64/vyos-rolling-latest.iso>

### Download Verification

LTS images are signed by the VyOS lead package-maintainer private key. With the official public key, the authenticity of the package can be verified. GPG (GNU Privacy Guard) is used for verification.

**Note:** This subsection only applies to LTS images, for Rolling images please jump to *Live installation*.

## Preparing for the verification

First, install GPG or another OpenPGP implementation. On most GNU+Linux distributions it is installed by default as package managers use it to verify package signatures. If not pre-installed, it will need to be downloaded and installed.

The official VyOS public key can be retrieved in a number of ways. Skip to [GPG verification](#) if the key is already present.

It can be retrieved directly from a key server:

```
gpg --recv-keys FD220285A0FE6D7E
```

Or it can be accessed via a web browser:

```
https://pgp.mit.edu/pks/lookup?op=get&search=0xFD220285A0FE6D7E
```

Or from the following block:

```
-----BEGIN PGP PUBLIC KEY BLOCK-----
Version: GnuPG v1.4.12 (GNU/Linux)

mQINBFXKsiIBEACyid9PR/v56pSRG8VgQyRwvzoI7rLErZ8BCQA2WFxA6+zNy+6G
+0E/6XA0zE+VHli+wtJpiVJwAh+wWuqz0mv9css2fdJxpMW87pJAS2i3EvvVf6ab
wU848JYLgZc9y7gZrnt1m2fNh4MXkZBNDp780WpOZx8roZq5X+j+Y5hk5KcLiBn/
lh9Zoh8yZrWDSXQsz0BGoAbVnLUEWyo0tcRcHuC0eLx6oNG/IHvd/+kxWB1uULHU
SlB/6vcx56lLqgzywkmhP01050ZDyTqrFRIfrvw6gLQaWlgr3lB93txvF/sz87I1
VblV7e6HEyVUQxedDS8ikOyzdb5r9a6Zt/j8ZPSntFNM60cKAI7U1nDD3FV0h1Vn
7lhUiNc+/qjC+pR9CrZjr/BTWE7Zpi6/kzeH4eAkfjyALj18oC5udJDjXE5daTL3
k9di fHf74VkJm29Cy9M3zPck0ZpsGiB18YQsf+RXSBMDVYRKZ1BNNLDoFm4ZGi jK
mriXcAY+VIeVB26J8m8y0zN4/ZdioJXRcy72c1KusRt8e/TsqtC9UFK05YpzRm5R
/nwDFYb7EdY/vHUF0mfwXLaRvyZtRj9LwvRUAqgRbbRZg3ET/tn6JZk8hqx3e1M
IxuskOB19t5vWyAo/TLGIFw44SErrq9jnpqgclTSRgFjcjHEm061r4vjoQARAQAB
tDZWeU9TIE1haW50YWluZXJzIChWeU9TIFJlbGVhc2UpIDxtYWludGFpbmVyc0B2
eW9zLm5ldD6JAjgEEwECACIFALXKsiICGwMGCwkIBWMCBhUIAgkKCwQWAgMBAh4B
AheAAoJEP0iAoWg/m1+xbgP+QEDYZi5dA4IPY+vU1L95Bavju2m2o35TSUDPg5B
jfAGuhbsNUceU+l/yUlxjPKEmvshyW3GHR5QzUaKGup/ZDBo1CBxZNhpS1Fida2E
KAYTx4vHk3MRXcntiAj/hIJwRtzCUp5UQIqHoU8dmHoHOkKEP+zhJur6E2s+WwDr
nTWE6eRa0g/AHY+chj2Je6flpPm2CKoTfUE7a2yBBU3wPq3rGtsQgVxPaxHRZz7A
w4AjH3NM1Uo3etuiDnGkJAuoKKb1J4X3w2Q1bw1R4cODLKhJXHlufwaGtRwEin9S
112bL8V3gy2Hv3D2t9TQZuR5NUHsibJRXLSa8WnSCcc6Bi j5aqfdpYB+YvKH/rIm
GvYPmLZdfKGkx0JE4/qtffjiPj5VE7BxNyliEw/rnQsxWAGPqLlL61SD8w5jGkw3
Cinw03sccTVcPz9b6A1RsbBVhTJJX51cPn1lkOEwVQ718bRhOKCMe0P53qEDcLCd
KcXNnAFbVes9u+kfUQ4oxS0G2JS9ISVNmune+uv+JR7KqSdOuYlyXA9uTjgWz4y
Cs7RS+CpkJFqrq0tS1rmuDW9Ea4PA8ygGllisM5d/AlVknihz/2JYtgetiLcj9mfe
MzQpgnldNSPumKqJ3wmmCnise+1XQ5UXCaoaeqF/qX1ykybQn41LQ+0xt5Uvy7sL
9IwGuQINBFXKsiIBEACg2mP3QYkXdgWTK5JyTGyttE6bDC9uqsK8dc1J66Tjd5Ly
Be0am0+88GHXA0o5Smwk2QNoxsRR41G/D/eAeGsuOEYnePROEr3tcLnDjo4KLgQ+
H69zRPn77sdP3A34Jgp+QIzByJWM7Cnim31quQP3qal2QdpGJcT/jdJWdticN76a
Biaz+HN13LyvZM+DWhUDttbjAJc+TEwF9YzIrU+3AzkTRDwkrh4kNIQxjlpNzvho
9V75riVqg2vtgPwttePhOLb0mZy4AddfezrfvVvMb4M4kY9npu4M1SkNTM97F/I
QKy90JuSUIje05A0+PDXJF4Fd5dcpmukLV/2nV0WM2LAERpJUuAgkZN6pNUFVISR
+nSfgR7wvqeDY9NigHrJqJbSEgaBUS6RTk5hait2wnNKLJajlu3aQ2/QfRT/kG3h
ClKUz3Ju7NCURmFE6mfsdsVrliSejHr/dPbXRswXgC9FLlXpWgAEDYi9Wdxxz8o9
JDWrVYdKRRGg+OpLFh8AP6QL3YnZF+p1oxGUQ5ugXauAJ9YS55pbzaUFP8o002P1Q
BeYnKRs1GcMI8KwTE/fze9C9gZ7Dqju7ZFEy1lM4v3lzhT8muMSAhw41J22mSx6
VRkQVRIAvPDFES45IbB6EEGhDdg4pD2az8Q7i7Uc6/olEmpVONSOZEepsQe/2wAR
```

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```
AQABiQIfBBgBAgAJBQJVyrIiAhsMAAoJEP0iAoWg/m1+niUQAKTxwJ9PTAfB+Xdk
3qH3n+T4902wP3fhBI0EGhJp9Xbx29G7qfEeqcQm69/qSq2/0HQOc+w/g8yy71jA
6rPuozCraon7Im09rQ2NqIhPK/1w5ZvgNVC0NtcMigX9MiSARePKygAHOPHtrhy0
rJQyu8E3cV3VRT4qhqIqXs8Ydc9vL3ZrJbhchQuSLdZxM1k+DahCJgwWabDCuizm
sVP3epAP19FP8sNtHi0P1LC0kq6/0qJot+4iBiRwXMervCD5ExdOm2ugvSgghdYN
BikFHvmsCxbZAQjykQ6TMn+vkmcEz4fGAn4L7Nx4paKEtXaAF08TJmFj0lGUthEm
CtHDKjCTh9WV4pwG2WnXuACjnJcs6LcK377EjWU25H4y1ff+NDIUg/DWfSS85iIc
Ugk0lQ06HJy0096L5uxn7VJpXNYFa20lpfTVZv7uu3BC3RW/FyOYsGtSiUKYq6cb
CMxGTfFxGeynwIlPRLH68BqH6ctR/mVdo+5UIWsChSnNd1GreIEI6p2nBk3mc7jZ
7pTEHjjarwOjs/S/lK+vLW53CSFimmW4lw3MwqiyAkx10tHAT7QMH9Rgw2HF/g6
XD76fpdMT856dsuf+j2uuJF1Fe5B1FERBzeU18MxML0VpDmGFEaxxypfACeI/iu
8vzPzaWHhkOkU8/J/Ci7+vNtUOZb
=Ld8S
-----END PGP PUBLIC KEY BLOCK-----
```

Store the key in a new text file and import it into GPG via: `gpg --import file_with_the_public_key`

The import can be verified with:

```
$ gpg --list-keys
...
pub   rsa4096 2015-08-12 [SC]
       0694A9230F5139BF834BA458FD220285A0FE6D7E
uid   [ unknown] VyOS Maintainers (VyOS Release) <maintainers@vyos.net>
sub   rsa4096 2015-08-12 [E]
```

## GPG verification

With the public key imported, the signature for the desired image needs to be downloaded.

**Note:** The signature can be downloaded by appending `.asc` to the URL of the downloaded VyOS image. That small `.asc` file is the signature for the associated image.

Finally, verify the authenticity of the downloaded image:

```
$ gpg2 --verify vyos-1.2.1-amd64.iso.asc vyos-1.2.1-amd64.iso
gpg: Signature made So 14 Apr 12:58:07 2019 CEST
gpg:          using RSA key FD220285A0FE6D7E
gpg: Good signature from "VyOS Maintainers (VyOS Release) <maintainers@vyos.net>"
↳ [unknown]
Primary key fingerprint: 0694 A923 0F51 39BF 834B A458 FD22 0285 A0FE 6D7E
```

## Minisign verification

Currently we are using GPG for release signing (pretty much like everyone else).

Popularity of GPG for release signing comes from the fact that many people already had it installed for email encryption/signing. Inside a VyOS image, signature checking is the only reason to have it installed. However, it still comes with all the features no one needs, such as support for multiple outdated cipher suits and ability to embed a photo in the key file. More importantly, web of trust, the basic premise of PGP, is never used in release signing context. Once you have a knowingly authentic image, authenticity of upgrades is checked using a key that comes in the image, and to get their first image people never rely on key servers either.

Another point is that we are using RSA now, which requires absurdly large keys to be secure.

In 2015, OpenBSD introduced signify. An alternative implementation of the same protocol is minisign, which is also available for Windows and macOS, and in most GNU/Linux distros it's in the repositories now.

Its installed size (complete with libsodium) is less than that of GPG binary alone (not including libgcrypt and some other libs, which I think we only use for GPG). Since it uses elliptic curves, it gets away with much smaller keys, and it doesn't include as much metadata to begin with.

Another issue of GPG is that it creates a `/root/.gnupg` directory just for release checking. The dir is small so the fact that it's never used again is an aesthetic problem, but we've had that process fail in the past. But, small key size of the Ed25519 algorithm allows passing public keys in command line arguments, so verification process can be completely stateless:

T2108 switched the validation system to prefer minisign over GPG keys.

To verify a VyOS image starting off with VyOS 1.3.0-rc6 you can run:

```
$ minisign -V -P RWTR1ty930yontk6caB9WqmiQC4fgeyd/ejgRxCRGd2MQej7nqebHneP -m vyos-1.3.0-rc6-amd64.iso
vyos-1.3.0-rc6-amd64.iso.minisig
Signature and comment signature verified
Trusted comment: timestamp:1629997936 file:vyos-1.3.0-rc6-amd64.iso
```

During an image upgrade VyOS performs the following command:

```
$ minisign -V -p /usr/share/vyos/keys/vyos-release.minisign.pub -m vyos-1.3.0-rc6-amd64.iso
vyos-1.3.0-rc6-amd64.iso.minisig
Signature and comment signature verified
Trusted comment: timestamp:1629997936 file:vyos-1.3.0-rc6-amd64.iso
```

### 4.1.3 Live installation

---

**Note:** A permanent VyOS installation always requires to go first through a live installation.

---

VyOS, as other GNU+Linux distributions, can be tested without installing it in your hard drive. **With your downloaded VyOS .iso file you can create a bootable USB drive that will let you boot into a fully functional VyOS system.** Once you have tested it, you can either decide to begin a *Permanent installation* in your hard drive or power your system off, remove the USB drive, and leave everything as it was.

If you have a GNU+Linux system, you can create your VyOS bootable USB stick with the `dd` command:

1. Open your terminal emulator.
2. Find out the device name of your USB drive (you can use the `lsblk` command)

3. Unmount the USB drive. Replace X in the example below with the letter of your device and keep the asterisk (wildcard) to unmount all partitions.

```
$ umount /dev/sdX*
```

4. Write the image (your VyOS .iso file) to the USB drive. Note that here you want to use the device name (e.g. /dev/sdb), not the partition name (e.g. /dev/sdb1).

**Warning:** This will destroy all data on the USB drive!

```
# dd if=/path/to/vyos.iso of=/dev/sdX bs=8M; sync
```

5. Wait until you get the outcome (bytes copied). Be patient, in some computers it might take more than one minute.
6. Once dd has finished, pull the USB drive out and plug it into the powered-off computer where you want to install (or test) VyOS.
7. Power the computer on, making sure it boots from the USB drive (you might need to select booting device or change booting settings).
8. Once VyOS is completely loaded, enter the default credentials (login: vyos, password: vyos).

If you find difficulties with this method, prefer to use a GUI program, or have a different operating system, there are other programs you can use to create a bootable USB drive, like [balenaEtcher](#) (for GNU/Linux, macOS and Windows), [Rufus](#) (for Windows) and [many others](#). You can follow their instructions to create a bootable USB drive from an .iso file.

---

**Hint:** The default username and password for the live system is *vyos*.

---

#### 4.1.4 Permanent installation

---

**Note:** Before a permanent installation, VyOS requires a *Live installation*.

---

Unlike general purpose Linux distributions, VyOS uses “image installation” that mimics the user experience of traditional hardware routers and allows keeping multiple VyOS versions installed simultaneously. This makes it possible to switch to a previous version if something breaks or miss-behaves after an image upgrade.

Every version is contained in its own squashfs image that is mounted in a union filesystem together with a directory for mutable data such as configurations, keys, or custom scripts.

---

**Note:** Older versions (prior to VyOS 1.1) used to support non-image installation (`install system` command). Support for this has been removed from VyOS 1.2 and newer releases. Older releases can still be upgraded via the general `add system image <image_path> upgrade` command (consult [Image Management](#) for further information).

---

In order to proceed with a permanent installation:

1. Log into the VyOS live system (use the default credentials: vyos, vyos)
2. Run the `install image` command and follow the wizard:

```
vyos@vyos:~$ install image
Welcome to the VyOS install program. This script
will walk you through the process of installing the
VyOS image to a local hard drive.
Would you like to continue? (Yes/No) [Yes]: Yes
Probing drives: OK
Looking for pre-existing RAID groups...none found.
The VyOS image will require a minimum 2000MB root.
Would you like me to try to partition a drive automatically
or would you rather partition it manually with parted? If
you have already setup your partitions, you may skip this step

Partition (Auto/Parted/Skip) [Auto]:

I found the following drives on your system:
sda 4294MB

Install the image on? [sda]:

This will destroy all data on /dev/sda.
Continue? (Yes/No) [No]: Yes

How big of a root partition should I create? (2000MB - 4294MB) [4294]MB:

Creating filesystem on /dev/sda1: OK
Done!
Mounting /dev/sda1...
What would you like to name this image? [1.2.0-rolling+201809210337]:
OK. This image will be named: 1.2.0-rolling+201809210337
Copying squashfs image...
Copying kernel and initrd images...
Done!
I found the following configuration files:
/opt/vyatta/etc/config.boot.default
Which one should I copy to sda? [/opt/vyatta/etc/config.boot.default]:

Copying /opt/vyatta/etc/config.boot.default to sda.
Enter password for administrator account
Enter password for user 'vyos':
Retype password for user 'vyos':
I need to install the GRUB boot loader.
I found the following drives on your system:
sda 4294MB

Which drive should GRUB modify the boot partition on? [sda]:

Setting up grub: OK
Done!
```

3. After the installation is completed, remove the live USB stick or CD.
4. Reboot the system.

```
vyos@vyos:~$ reboot
Proceed with reboot? (Yes/No) [No] Yes
```

You will boot now into a permanent VyOS system.

### 4.1.5 PXE Boot

VyOS can also be installed through PXE. This is a more complex installation method that allows deploying VyOS through the network.

#### Requirements

- Clients (where VyOS is to be installed) with a PXE-enabled NIC
- *DHCP Server*
- *TFTP Server*
- Webserver (HTTP) - optional, but we will use it to speed up installation
- VyOS ISO image to be installed (do not use images prior to VyOS 1.2.3)
- Files *pxelinux.0* and *ldlinux.c32* from the Syslinux distribution

#### Configuration

##### Step 1: DHCP

Configure a DHCP server to provide the client with:

- An IP address
- The TFTP server address (DHCP option 66). Sometimes referred as *boot server*
- The *bootfile name* (DHCP option 67), which is *pxelinux.0*

In this example we configured an existent VyOS as the DHCP server:

```
vyos@vyos# show service dhcp-server
shared-network-name mydhcp {
  subnet 192.168.1.0/24 {
    option {
      bootfile-name pxelinux.0
      bootfile-server 192.168.1.50
      default-router 192.168.1.50
    }
    range 0 {
      start 192.168.1.70
      stop 192.168.1.100
    }
    subnet-id 1
  }
}
```

## Step 2: TFTP

Configure a TFTP server so that it serves the following:

- The *pxelinux.0* file from the Syslinux distribution
- The *ldlinux.c32* file from the Syslinux distribution
- The kernel of the VyOS software you want to deploy. That is the *vmlinuz* file inside the */live* directory of the extracted contents from the ISO file.
- The initial ramdisk of the VyOS ISO you want to deploy. That is the *initrd.img* file inside the */live* directory of the extracted contents from the ISO file. Do not use an empty (0 bytes) *initrd.img* file you might find, the correct file may have a longer name.
- A directory named *pxelinux.cfg* which must contain the configuration file. We will use the [configuration](#) file shown below, which we named *default*.

In the example we configured our existent VyOS as the TFTP server too:

```
vyos@vyos# show service tftp-server
directory /config/tftpboot
listen-address 192.168.1.50
```

Example of the contents of the TFTP server:

```
vyos@vyos# ls -hal /config/tftpboot/
total 29M
drwxr-sr-x 3 tftp tftp      4.0K Oct 14 00:23 .
drwxrwsr-x 9 root vyattacfg 4.0K Oct 18 00:05 ..
-r--r--r-- 1 root vyattacfg 25M Oct 13 23:24 initrd.img-4.19.54-amd64-vyos
-rwxr-xr-x 1 root vyattacfg 120K Oct 13 23:44 ldlinux.c32
-rw-r--r-- 1 root vyattacfg 46K Oct 13 23:24 pxelinux.0
drwxr-xr-x 2 root vyattacfg 4.0K Oct 14 01:10 pxelinux.cfg
-r--r--r-- 1 root vyattacfg 3.7M Oct 13 23:24 vmlinuz

vyos@vyos# ls -hal /config/tftpboot/pxelinux.cfg
total 12K
drwxr-xr-x 2 root vyattacfg 4.0K Oct 14 01:10 .
drwxr-sr-x 3 tftp tftp      4.0K Oct 14 00:23 ..
-rw-r--r-- 1 root root      191 Oct 14 01:10 default
```

Example of simple (no menu) configuration file:

```
vyos@vyos# cat /config/tftpboot/pxelinux.cfg/default
DEFAULT VyOS123

LABEL VyOS123
  KERNEL vmlinuz
  APPEND initrd=initrd.img-4.19.54-amd64-vyos boot=live nopersistence noautologin_
↪nonetworking fetch=http://address:8000/filesystem.squashfs
```

### Step 3: HTTP

We also need to provide the *filesystem.squashfs* file. That is a heavy file and TFTP is slow, so you could send it through HTTP to speed up the transfer. That is how it is done in our example, you can find that in the configuration file above.

**First** run a web server - you can use a simple one like Python's `SimpleHTTPServer` and start serving the *filesystem.squashfs* file. The file can be found inside the */live* directory of the extracted contents of the ISO file.

**Second**, edit the configuration file of the *Step 2: TFTP* so that it shows the correct URL at `fetch=http://<address_of_your_HTTP_server>/filesystem.squashfs`.

---

**Note:** Do not change the name of the *filesystem.squashfs* file. If you are working with different versions, you can create different directories instead.

---

And **third**, restart the TFTP service. If you are using VyOS as your TFTP Server, you can restart the service with `sudo service tftpd-hpa restart`.

---

**Note:** Make sure the available directories and files in both TFTP and HTTP server have the right permissions to be accessed from the booting clients.

---

### Client Boot

Finally, turn on your PXE-enabled client or clients. They will automatically get an IP address from the DHCP server and start booting into VyOS live from the files automatically taken from the TFTP and HTTP servers.

Once finished you will be able to proceed with the `install image` command as in a regular VyOS installation.

## 4.1.6 Known Issues

This is a list of known issues that can arise during installation.

### Black screen on install

GRUB attempts to redirect all output to a serial port for ease of installation on headless hosts. This appears to cause an hard lockup on some hardware that lacks a serial port, with the result being a black screen after selecting the *Live system* option from the installation image.

The workaround is to type *e* when the boot menu appears and edit the GRUB boot options. Specifically, remove the:

```
console=ttys0,115200
```

option, and type CTRL-X to boot.

Installation can then continue as outlined above.

## 4.2 Running VyOS in Virtual Environments

### 4.2.1 Running on Libvirt Qemu/KVM

Libvirt is an open-source API, daemon and management tool for managing platform virtualization. There are several ways to deploy VyOS on libvirt kvm. Use Virt-manager and native CLI. In an example we will be use use 4 gigabytes of memory, 2 cores CPU and default network virbr0.

#### CLI

##### Deploy from ISO

Create VM name `vyos_r1`. You must specify the path to the ISO image, the disk `qcow2` will be created automatically. The default network is the virtual network (type Virtio) created by the hypervisor with NAT.

```
$ virt-install -n vyos_r1 \
  --ram 4096 \
  --vcpus 2 \
  --cdrom /var/lib/libvirt/images/vyos.iso \
  --os-variant debian10 \
  --network network=default \
  --graphics vnc \
  --hvm \
  --virt-type kvm \
  --disk path=/var/lib/libvirt/images/vyos_r1.qcow2,bus=virtio,size=8 \
  --noautoconsole
```

Connect to VM with command `virsh console vyos_r1`

```
$ virsh console vyos_r1

Connected to domain vyos_r1
Escape character is ^]

vyos login: vyos
Password:

vyos@vyos:~$ install image
```

After installation - exit from the console using the key combination `Ctrl + ]` and reboot the system.

##### Deploy from qcow2

The convenience of using KVM (Kernel-based Virtual Machine) images is that they don't need to be installed. Download predefined VyOS.qcow2 image for KVM

```
curl --url link_to_vyos_kvm.qcow2 --output /var/lib/libvirt/images/vyos_kvm.qcow2
```

Create VM with `import qcow2` disk option.

```
$ virt-install -n vyos_r2 \  
  --ram 4096 \  
  --vcpus 2 \  
  --os-variant debian10 \  
  --network network=default \  
  --graphics vnc \  
  --hvm \  
  --virt-type kvm \  
  --disk path=/var/lib/libvirt/images/vyos_kvm.qcow2,bus=virtio \  
  --import \  
  --noautoconsole
```

Connect to VM with command `virsh console vyos_r2`

```
$ virsh console vyos_r2  
  
Connected to domain vyos_r2  
Escape character is ^]  
  
vyos login: vyos  
Password:  
  
vyos@vyos:~$
```

If you can not go to this screen

```
vyos login: vyos  
Password:
```

Stayed in this stage. This is because the KVM console is chosen as the default boot option.

```
Connected to domain vyos_r2  
Escape character is ^]
```

Open a secondary/parallel session and use this command to reboot the VM:

```
$ virsh reboot vyos_r2
```

Then go to the first session where you opened the console. Select VyOS 1.4.x for QEMU (Serial console) and press Enter

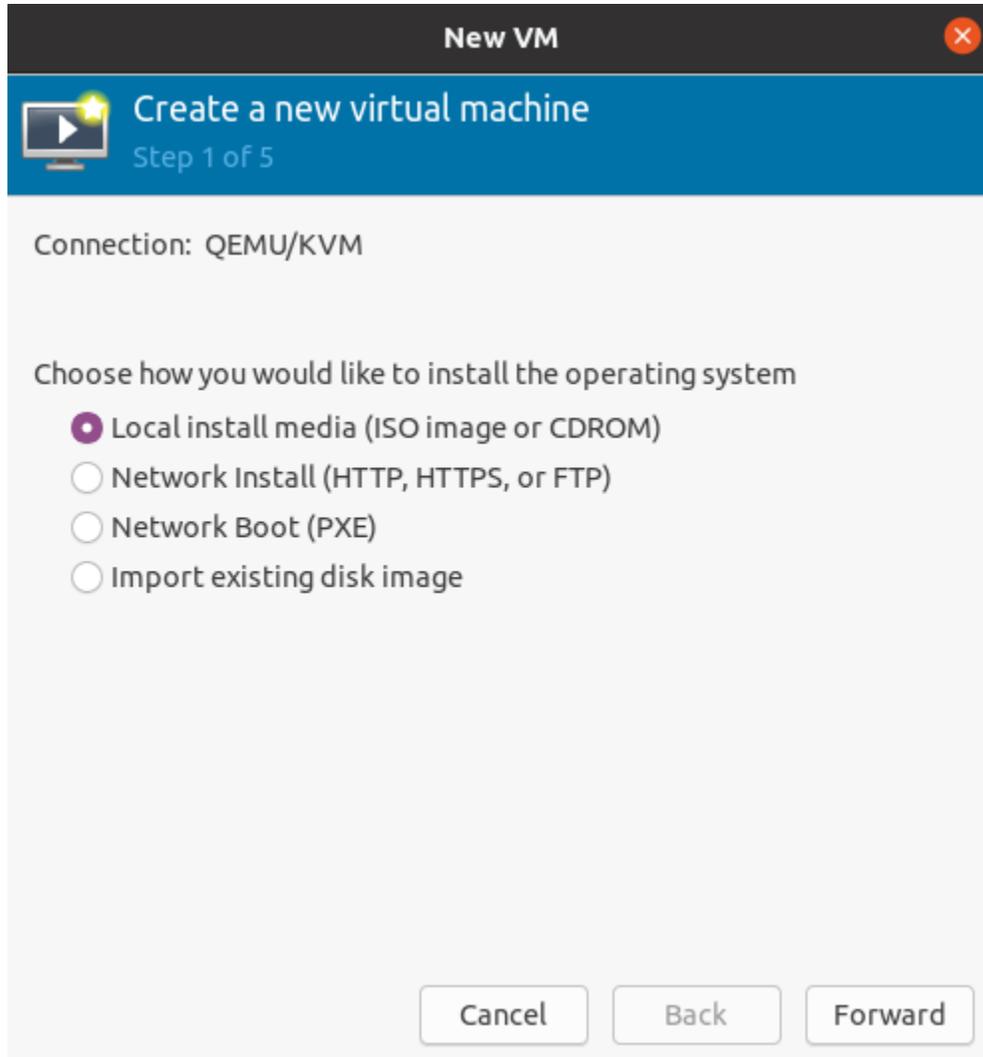
The system is fully operational.

## Virt-manager

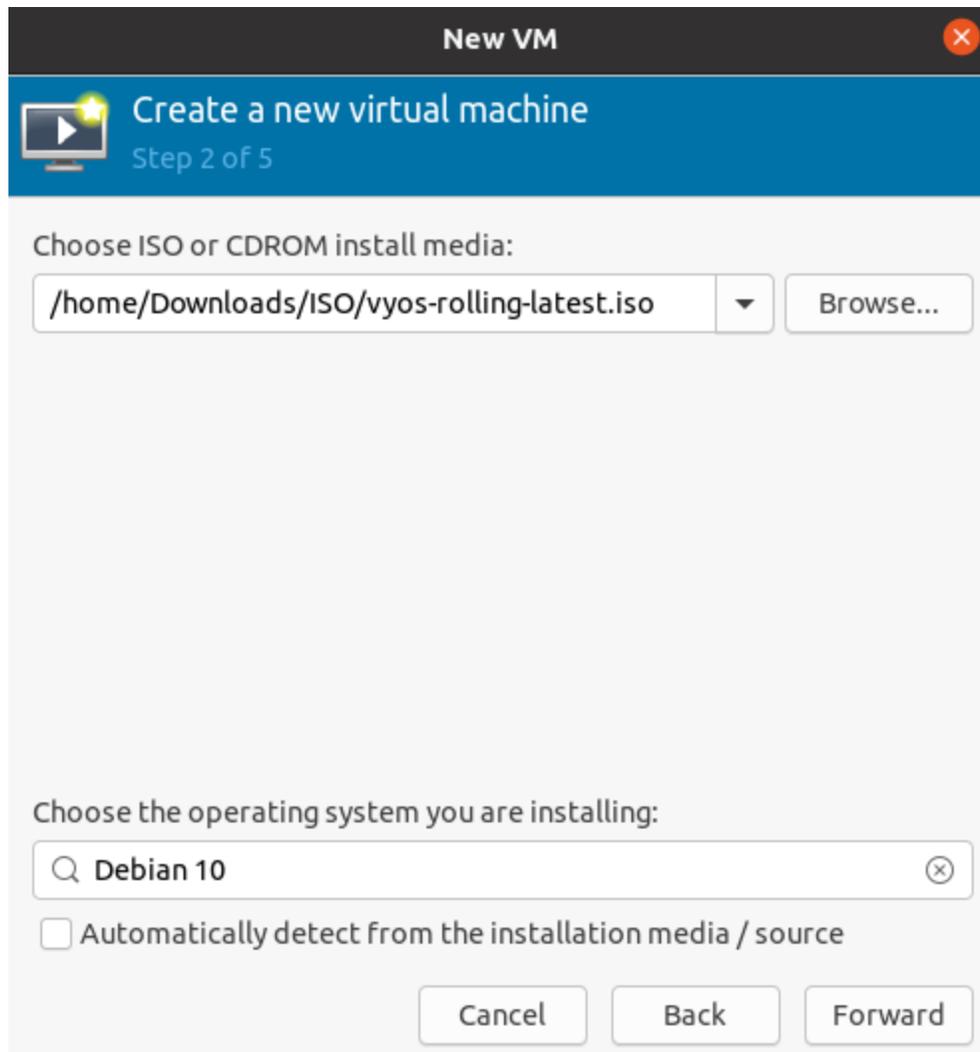
The virt-manager application is a desktop user interface for managing virtual machines through libvirt. On the linux open VMM (Virtual Machine Manager).

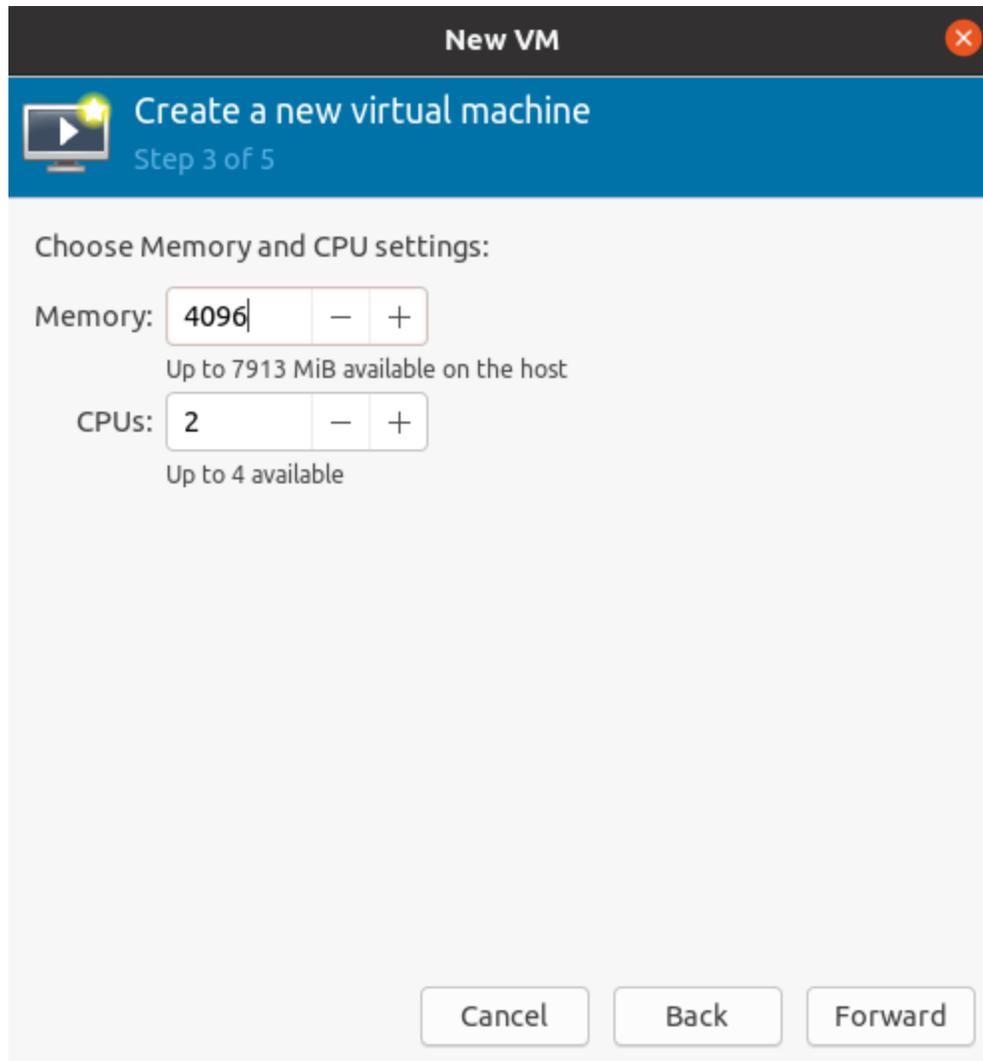
## Deploy from ISO

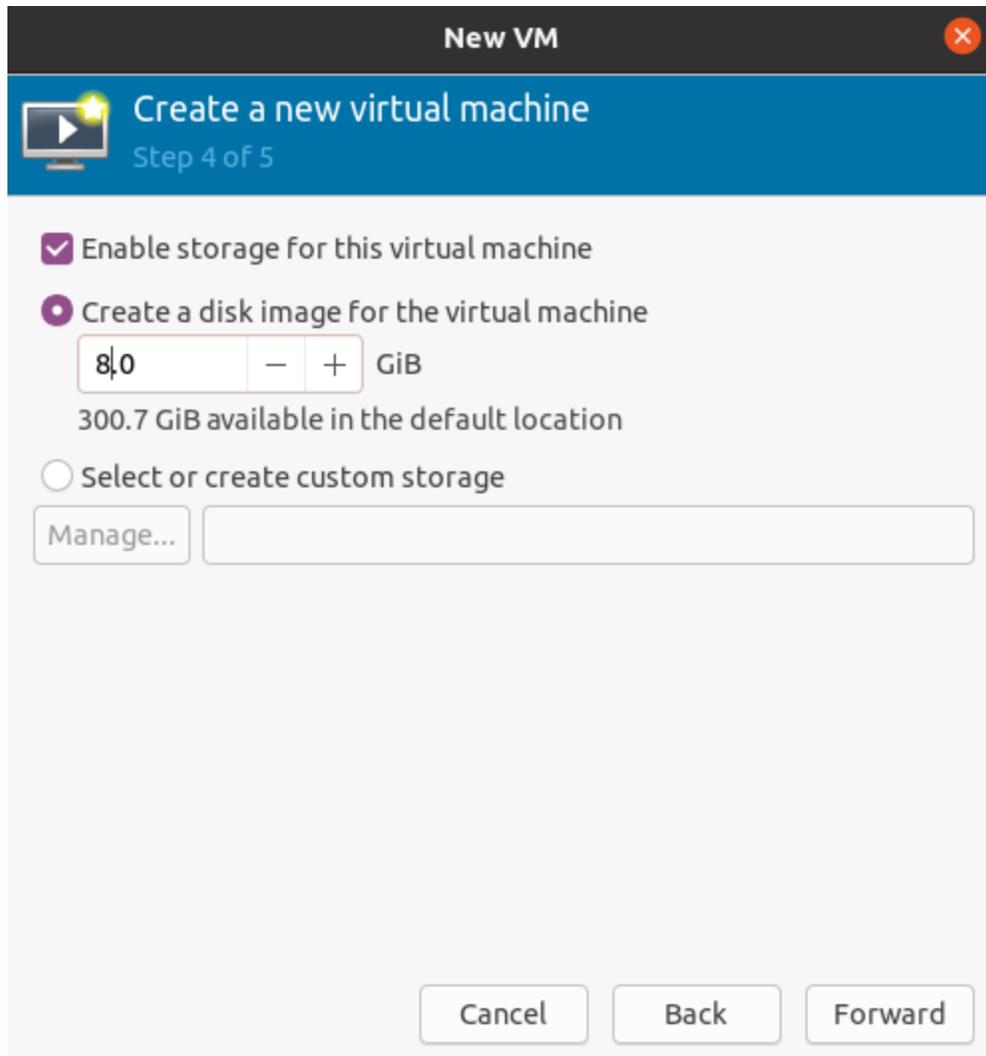
1. Open VMM and Create a new VM (Virtual Machine)
2. Choose Local install media (ISO)

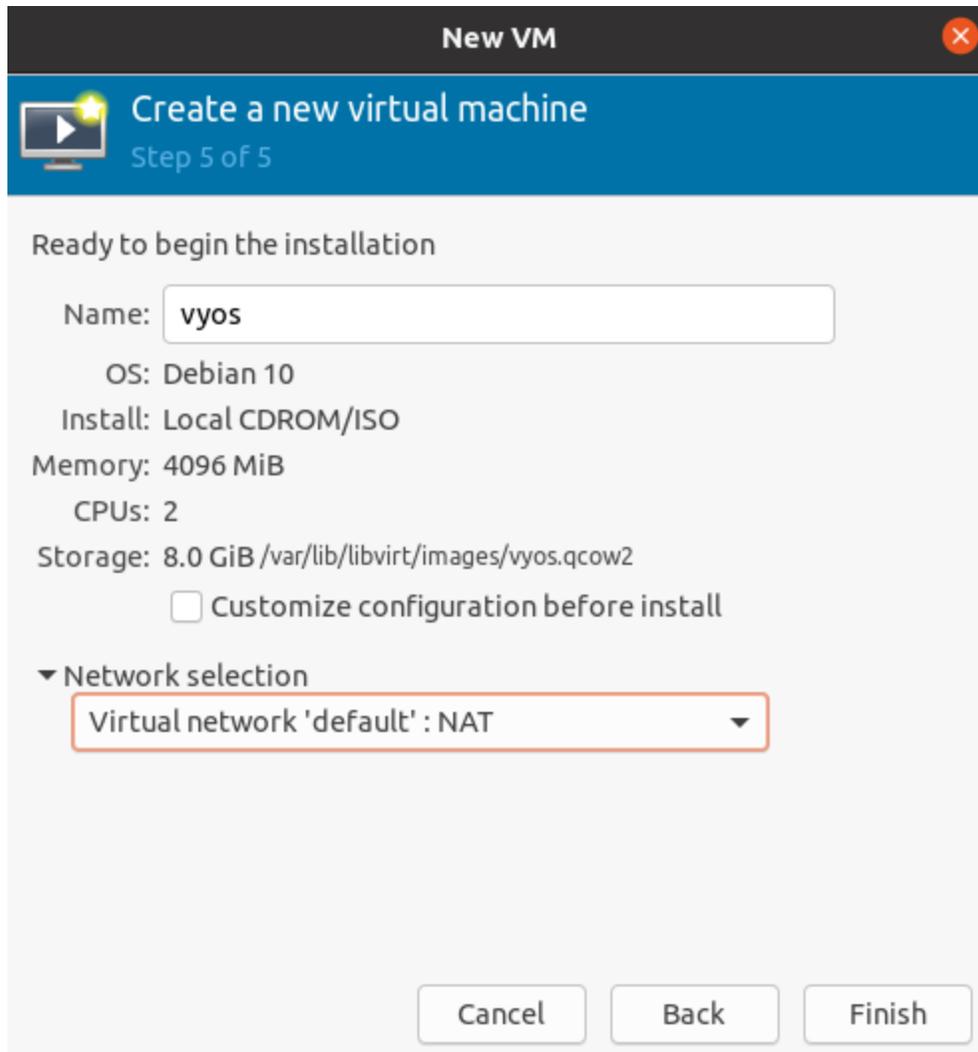


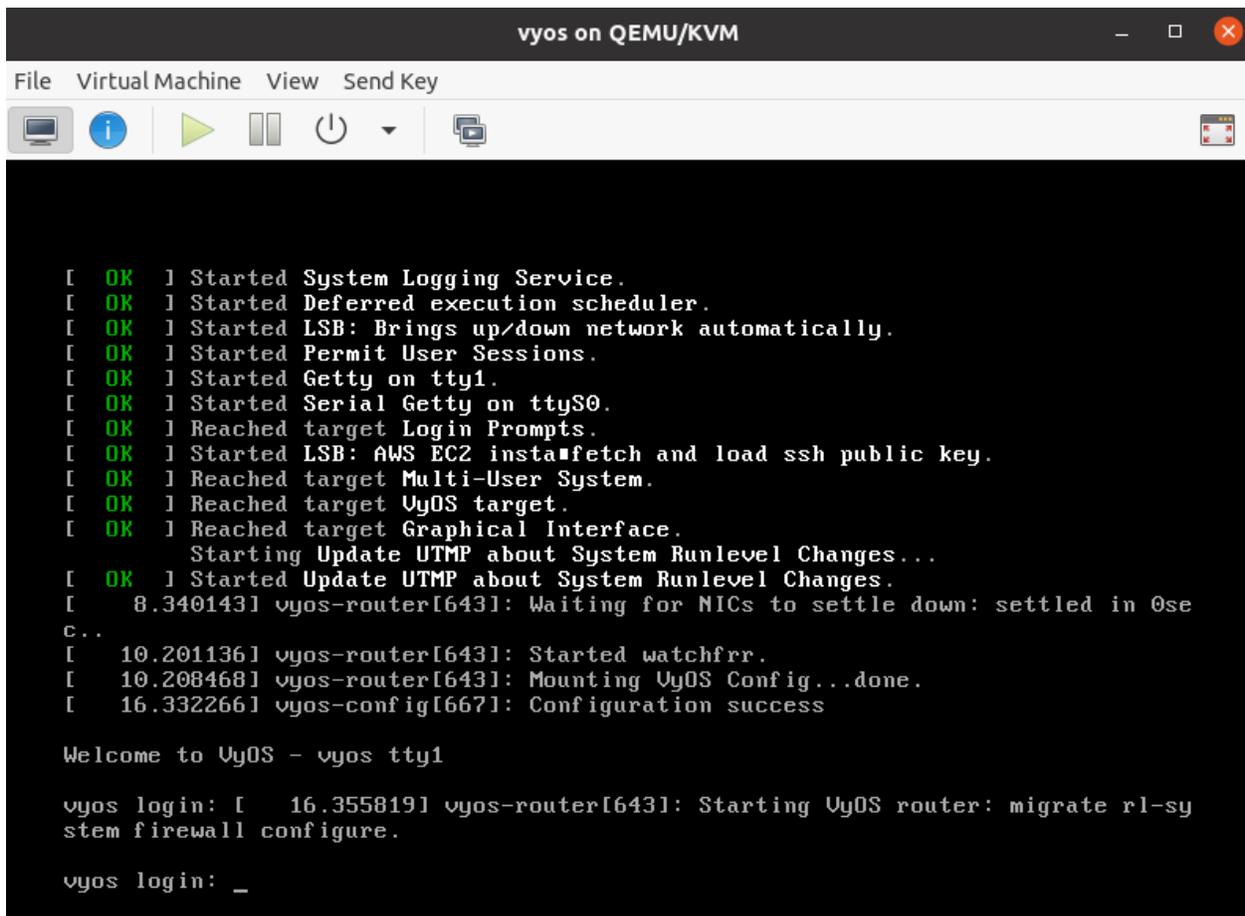
3. Choose path to iso vyos.iso. Operating System can be any Debian based.
4. Choose Memory and CPU
5. Disk size
6. Name of VM and network selection
7. Then you will be taken to the console.











```
[ OK ] Started System Logging Service.
[ OK ] Started Deferred execution scheduler.
[ OK ] Started LSB: Brings up/down network automatically.
[ OK ] Started Permit User Sessions.
[ OK ] Started Getty on tty1.
[ OK ] Started Serial Getty on ttyS0.
[ OK ] Reached target Login Prompts.
[ OK ] Started LSB: AWS EC2 insta#fetch and load ssh public key.
[ OK ] Reached target Multi-User System.
[ OK ] Reached target VyOS target.
[ OK ] Reached target Graphical Interface.
      Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.
[  8.340143] vyos-router[643]: Waiting for NICs to settle down: settled in 0se
c..
[ 10.201136] vyos-router[643]: Started watchfrr.
[ 10.208468] vyos-router[643]: Mounting VyOS Config...done.
[ 16.332266] vyos-config[667]: Configuration success

Welcome to VyOS - vyos tty1

vyos login: [ 16.355819] vyos-router[643]: Starting VyOS router: migrate rl-sy
stem firewall configure.

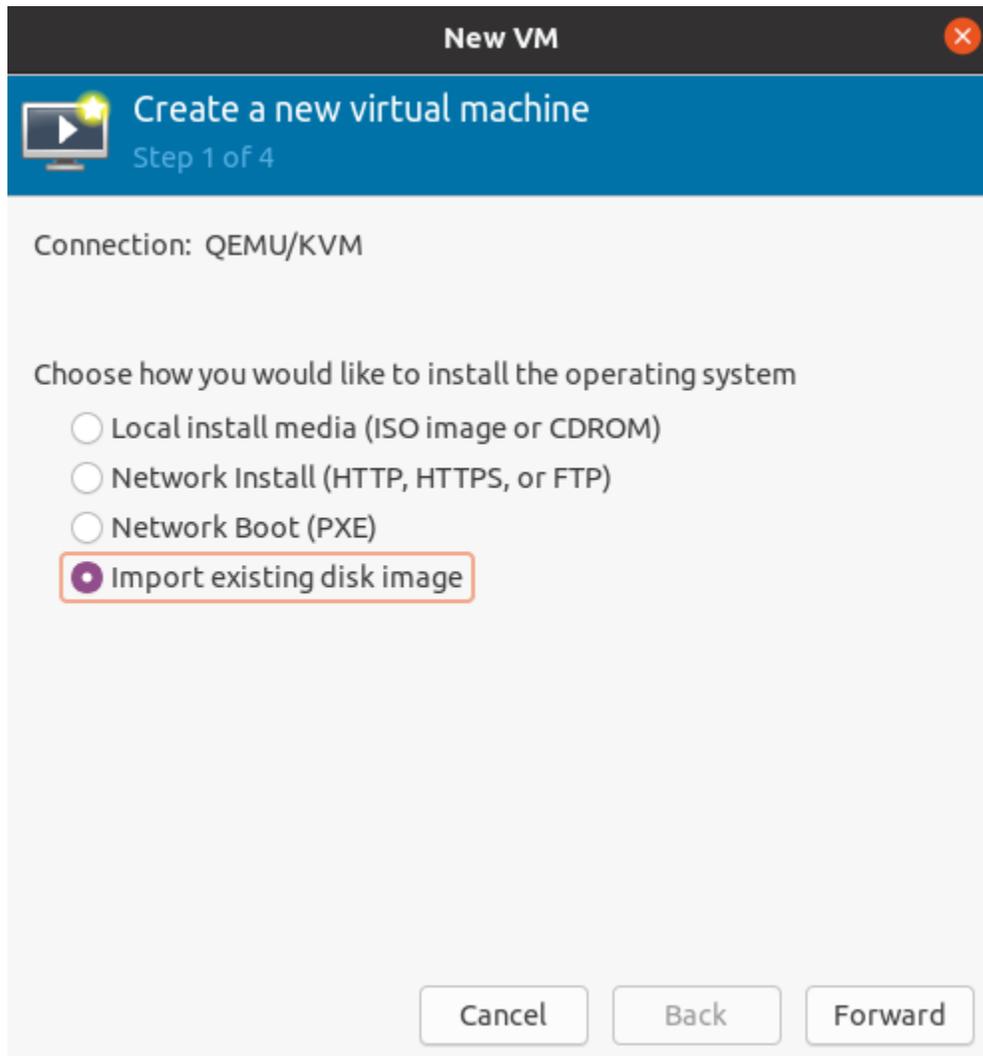
vyos login: _
```

## Deploy from qcow2

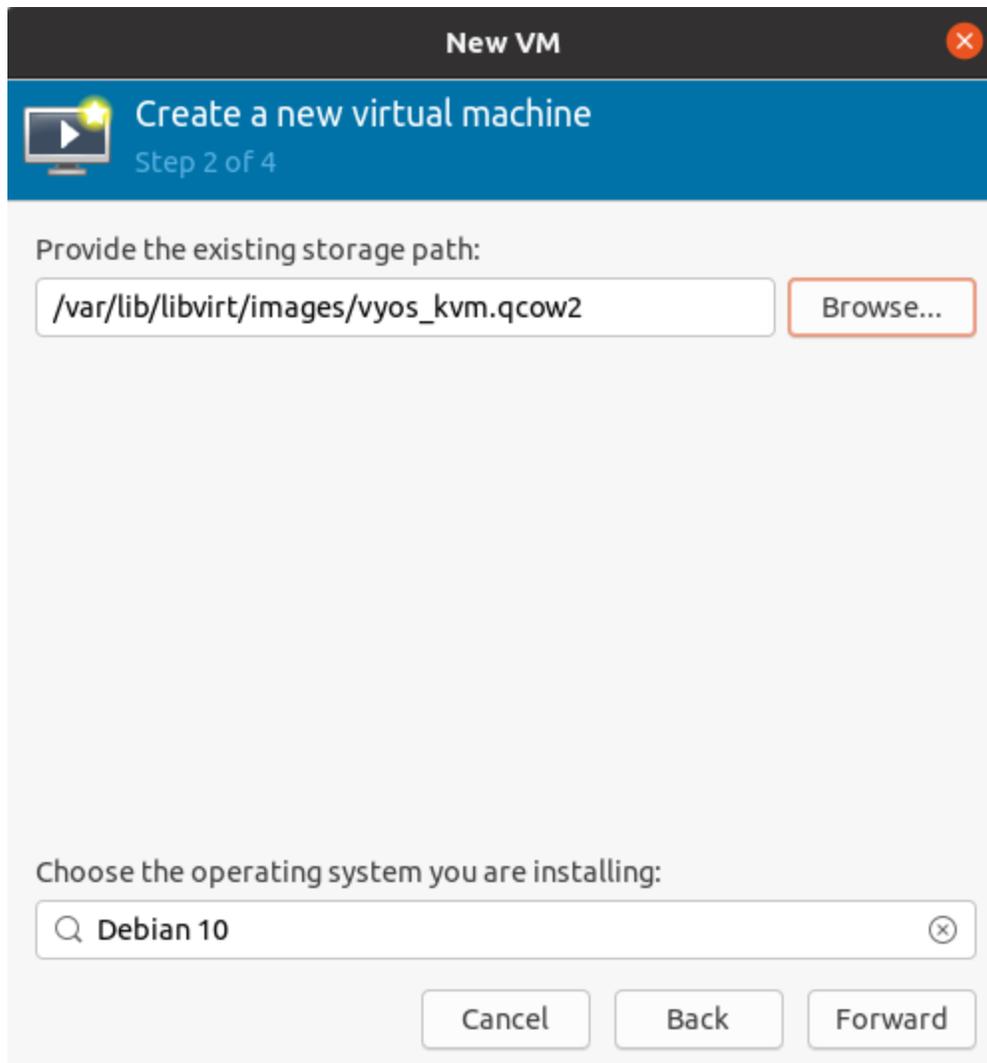
Download predefined VyOS.qcow2 image for KVM

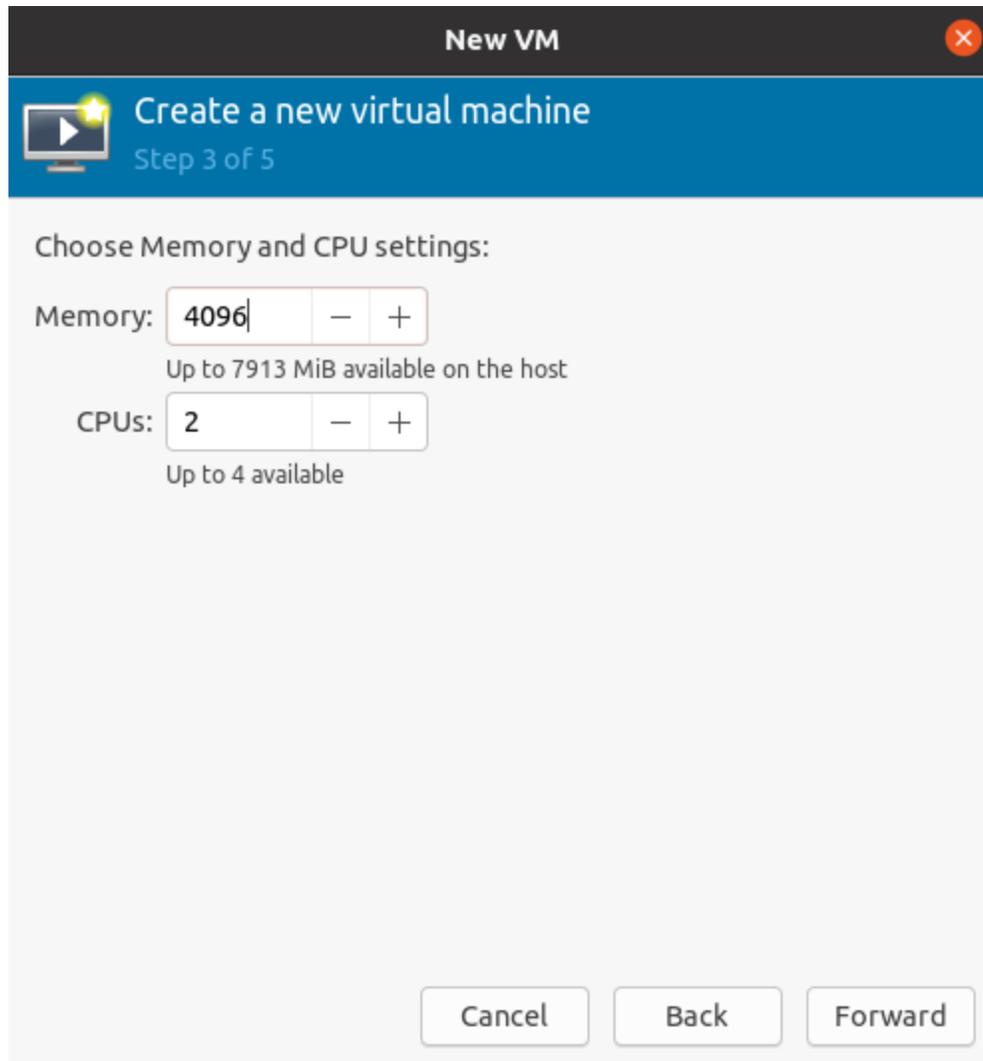
```
curl --url link_to_vyos_kvm.qcow2 --output /var/lib/libvirt/images/vyos_kvm.qcow2
```

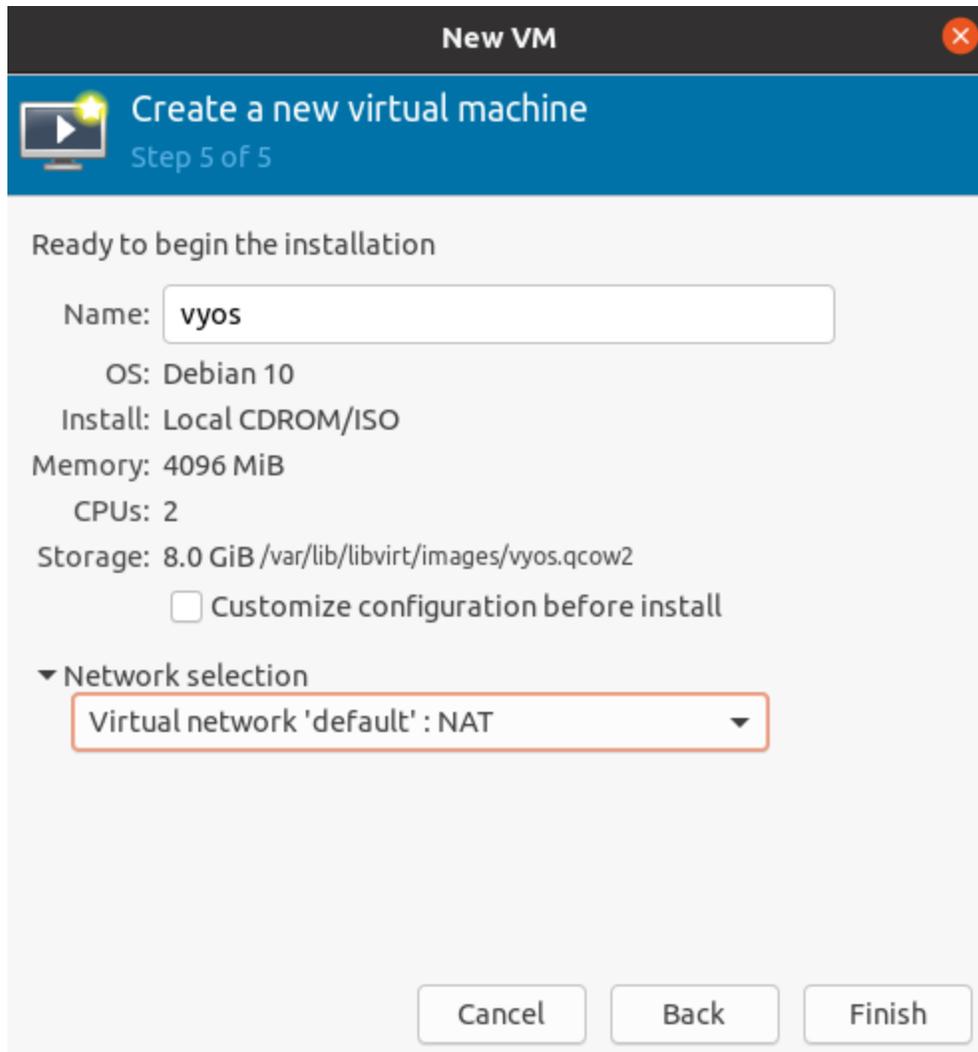
1. Open VMM and Create a new VM
2. Choose Import existing disk image

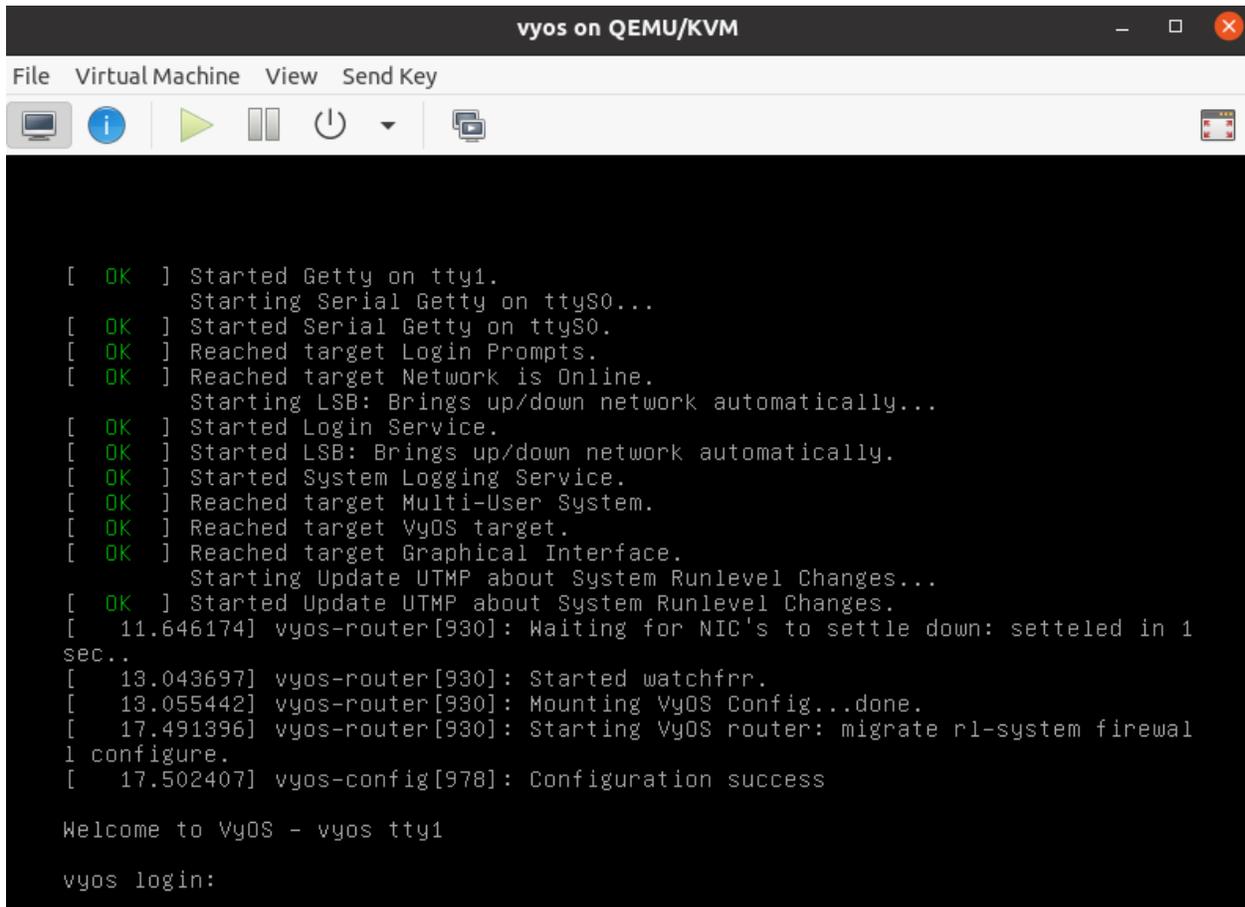


3. Choose the path to the image `vyos_kvm.qcow2` that was previously downloaded . Operation System can be any Debian based.
4. Choose Memory and CPU
5. Name of VM and network selection
6. Then you will be taken to the console.









```
[ OK ] Started Getty on tty1.
      Starting Serial Getty on ttyS0...
[ OK ] Started Serial Getty on ttyS0.
[ OK ] Reached target Login Prompts.
[ OK ] Reached target Network is Online.
      Starting LSB: Brings up/down network automatically...
[ OK ] Started Login Service.
[ OK ] Started LSB: Brings up/down network automatically.
[ OK ] Started System Logging Service.
[ OK ] Reached target Multi-User System.
[ OK ] Reached target VyOS target.
[ OK ] Reached target Graphical Interface.
      Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.
[ 11.646174] vyos-router[930]: Waiting for NIC's to settle down: setteled in 1
sec..
[ 13.043697] vyos-router[930]: Started watchfrr.
[ 13.055442] vyos-router[930]: Mounting VyOS Config...done.
[ 17.491396] vyos-router[930]: Starting VyOS router: migrate rl-system firewal
l configure.
[ 17.502407] vyos-config[978]: Configuration success

Welcome to VyOS - vyos tty1

vyos login:
```

## 4.2.2 Running on Proxmox

Proxmox is an open-source platform for virtualization. Please visit <https://vyos.io> to see how to get a qcow2 image that can be imported into Proxmox.

### Deploy VyOS from CLI with qcow2 image

1. Copy the qcow2 image to a temporary directory on the Proxmox server.
2. The commands below assume that virtual machine ID 200 is unused and that the user wants the disk stored in a storage pool called *local-lvm*.

```
$ qm create 200 --name vyos2 --memory 2048 --net0 virtio,bridge=vbr0
$ qm importdisk 200 /path/to/image/vyos-1.2.8-proxmox-2G.qcow2 local-lvm
$ qm set 200 --virtio0 local-lvm:vm-200-disk-0
$ qm set 200 --boot order=virtio0
```

3. Optionally, the user can attach a CDROM with an ISO as a cloud-init data source. The below command assumes the ISO has been uploaded to the *local* storage pool with the name *seed.iso*.

```
$ qm set 200 --ide2 media=cdrom,file=local:iso/seed.iso
```

4. Start the virtual machine in the proxmox GUI or CLI using `qm start 200`.

### Deploy VyOS from CLI with rolling release ISO

1. Download the rolling release iso from <https://vyos.net/get/nightly-builds/>. Non-subscribers can always get the LTS release by building it from source. Instructions can be found in the *Build VyOS* section of this manual. VyOS source code repository is available <https://github.com/vyos/vyos-build>.
2. Prepare VM for installation from ISO media. The commands below assume that your iso is available in a storage pool 'local', that you want it to have a VM ID '200' and want to create a new disk on storage pool 'local-lvm' of size 15GB.

```
qm create 200 --name vyos --memory 2048 --net0 virtio,bridge=vbr0 --ide2 media=cdrom,
↪file=local:iso/live-image-amd64.hybrid.iso --virtio0 local-lvm:15
```

3. Start the VM using the command `qm start 200` or using the start button located in the proxmox GUI.
4. Using the proxmox webGUI, open the virtual console for your newly created vm. Login username/password is `vyos/vyos`.
5. Once booted into the live system, type `install image` into the command line and follow the prompts to install VyOS to the virtual drive.
6. After installation has completed, remove the installation iso using the GUI or `qm set 200 --ide2 none`.
7. Reboot the virtual machine using the GUI or `qm reboot 200`.

Visit <https://www.proxmox.com/en/> for more information about the download and installation of this hypervisor.

## 4.2.3 Running on VMware ESXi

### ESXi 5.5 or later

.ova files are available for supporting users, and a VyOS can also be stood up using a generic Linux instance, and attaching the bootable ISO file and installing from the ISO using the normal process around *install image*.

---

**Note:** There have been previous documented issues with GRE/IPSEC tunneling using the E1000 adapter on the VyOS guest, and use of the VMXNET3 has been advised.

---

### Memory Contention Considerations

When the underlying ESXi host is approaching ~92% memory utilisation it will start the balloon process in a ‘soft’ state to start reclaiming memory from guest operating systems. This causes an artificial pressure using the vmmemctl driver on memory usage on the virtual guest. As VyOS by default does not have a swap file, this vmmemctl pressure is unable to force processes to move in memory data to the paging file, and blindly consumes memory forcing the virtual guest into a low memory state with no way to escape. The balloon can expand to 65% of guest allocated memory, so a VyOS guest running >35% of memory usage, can encounter an out of memory situation, and trigger the kernel oom\_kill process. At this point a weighted lottery favouring memory hungry processes will be run with the unlucky winner being terminated by the kernel.

It is advised that VyOS routers are configured in a resource group with adequate memory reservations so that ballooning is not inflicted on virtual VyOS guests.

### References

<https://muralidba.blogspot.com/2018/03/how-does-linux-out-of-memory-oom-killer.html>

## 4.2.4 Running on GNS3

Sometimes you may want to test VyOS in a lab environment. [GNS3](#) is a network emulation software you might use for it.

This guide will provide the necessary steps for installing and setting up VyOS on GNS3.

### Requirements

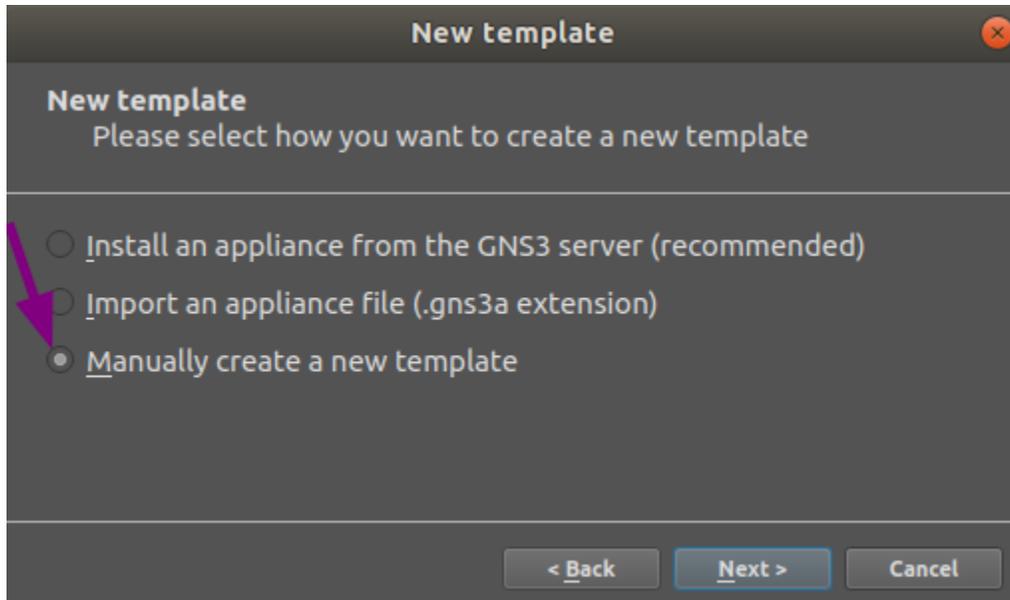
The following items are required:

- A VyOS installation image (.iso file). You can find how to get it on the [Installation](#) page
- A working GNS3 installation. For further information see the [GNS3](#) documentation.

## VM setup

First, a virtual machine (VM) for the VyOS installation must be created in GNS3.

Go to the GNS3 **File** menu, click **New template** and choose select **Manually create a new Template**.



Select **Qemu VMs** and then click on the **New** button.

Write a name for your VM, for instance “VyOS”, and click **Next**.

Select **qemu-system-x86\_64** as Qemu binary, then **512MB** of RAM and click **Next**.

Select **telnet** as your console type and click **Next**.

Select **New image** for the base disk image of your VM and click **Create**.

Use the defaults in the **Binary and format** window and click **Next**.

Use the defaults in the **Qcow2 options** window and click **Next**.

Set the disk size to 2000 MiB, and click **Finish** to end the **Qemu image creator**.

Click **Finish** to end the **New QEMU VM template** wizard.

Now the VM settings have to be edited.

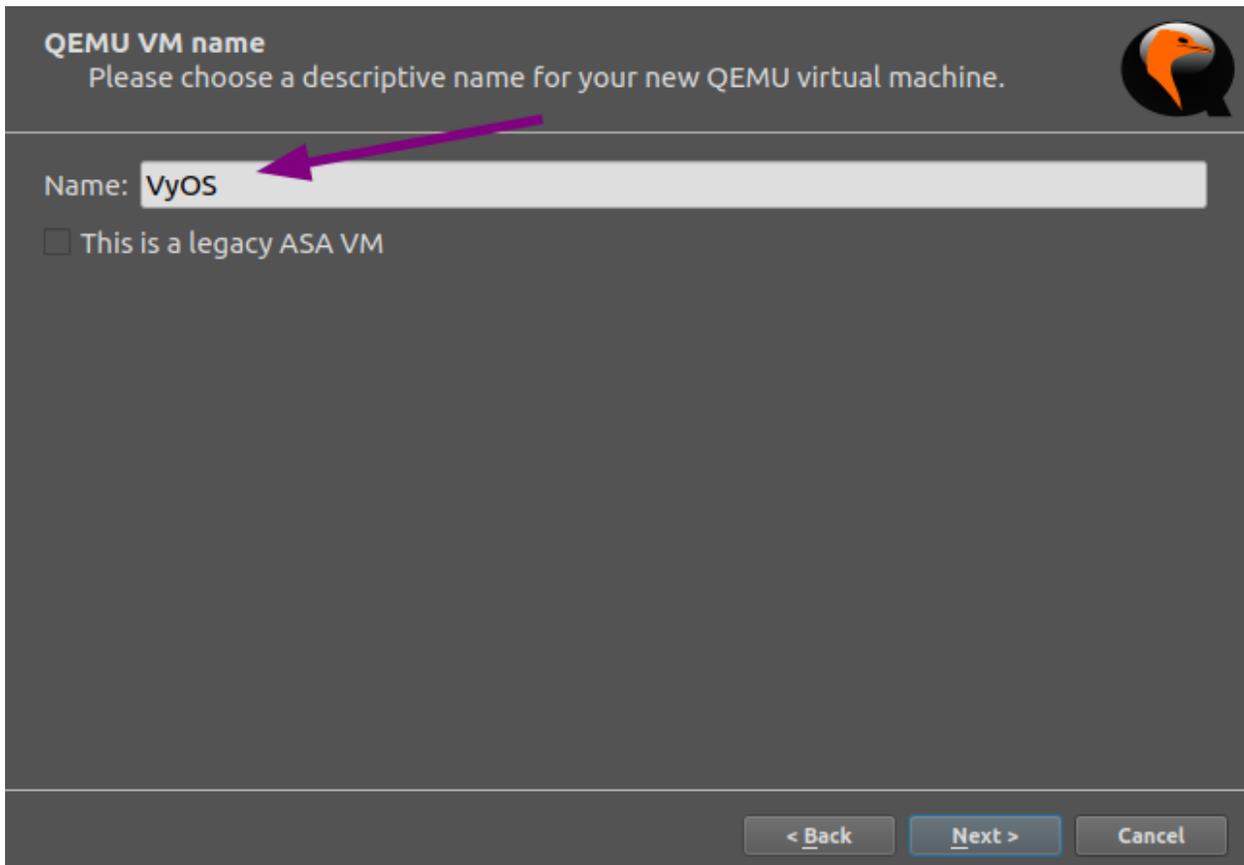
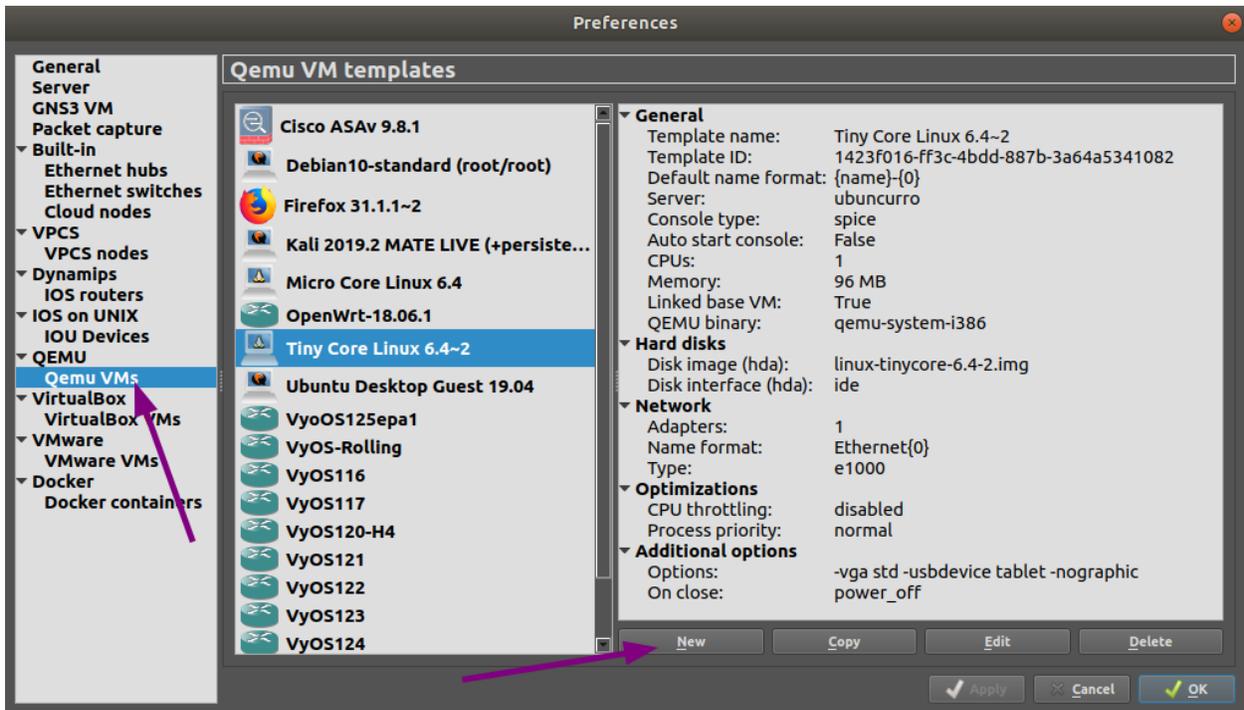
Being again at the **Preferences** window, having **Qemu VMs** selected and having our new VM selected, click the **Edit** button.

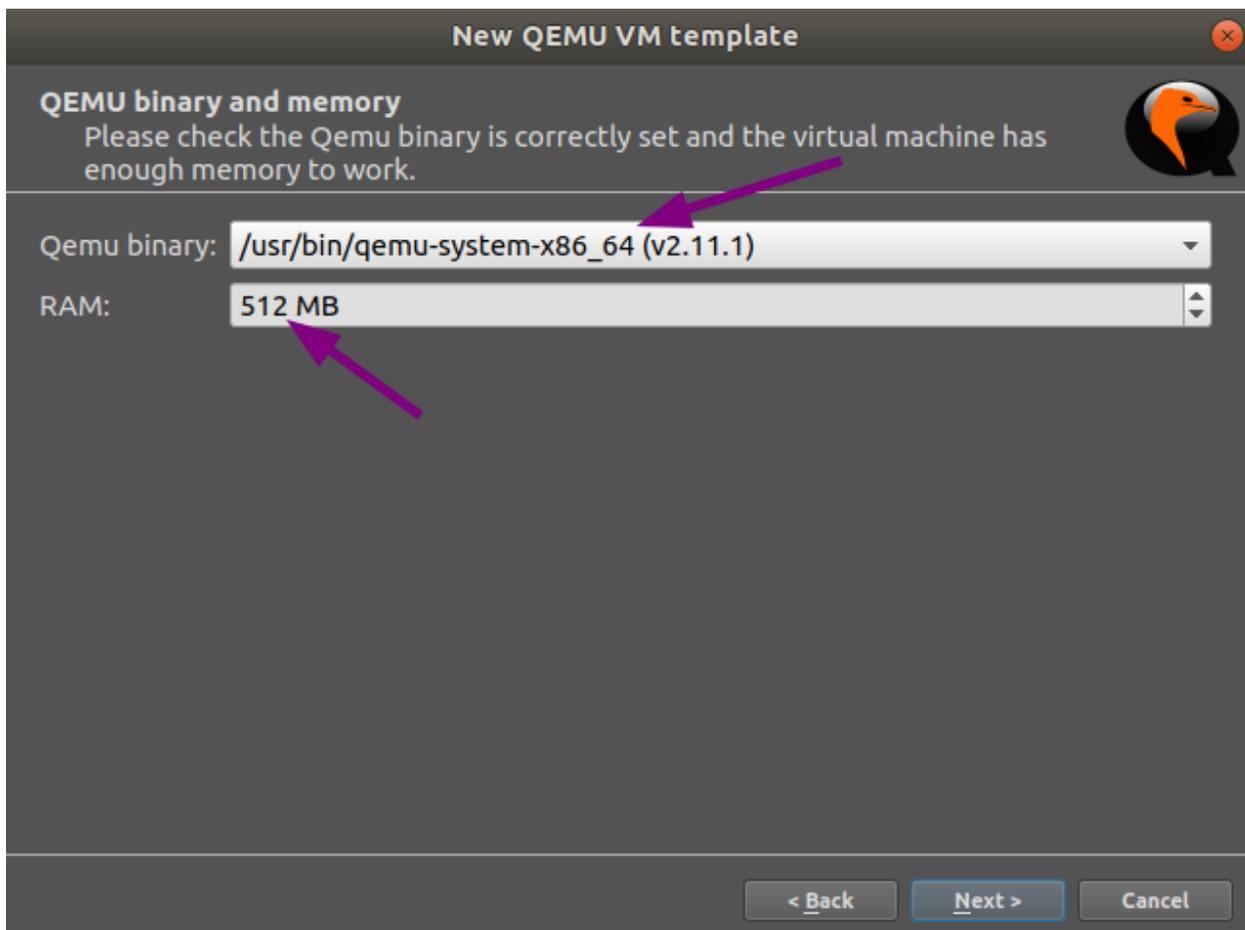
In the **General settings** tab of your **QEMU VM template configuration**, do the following:

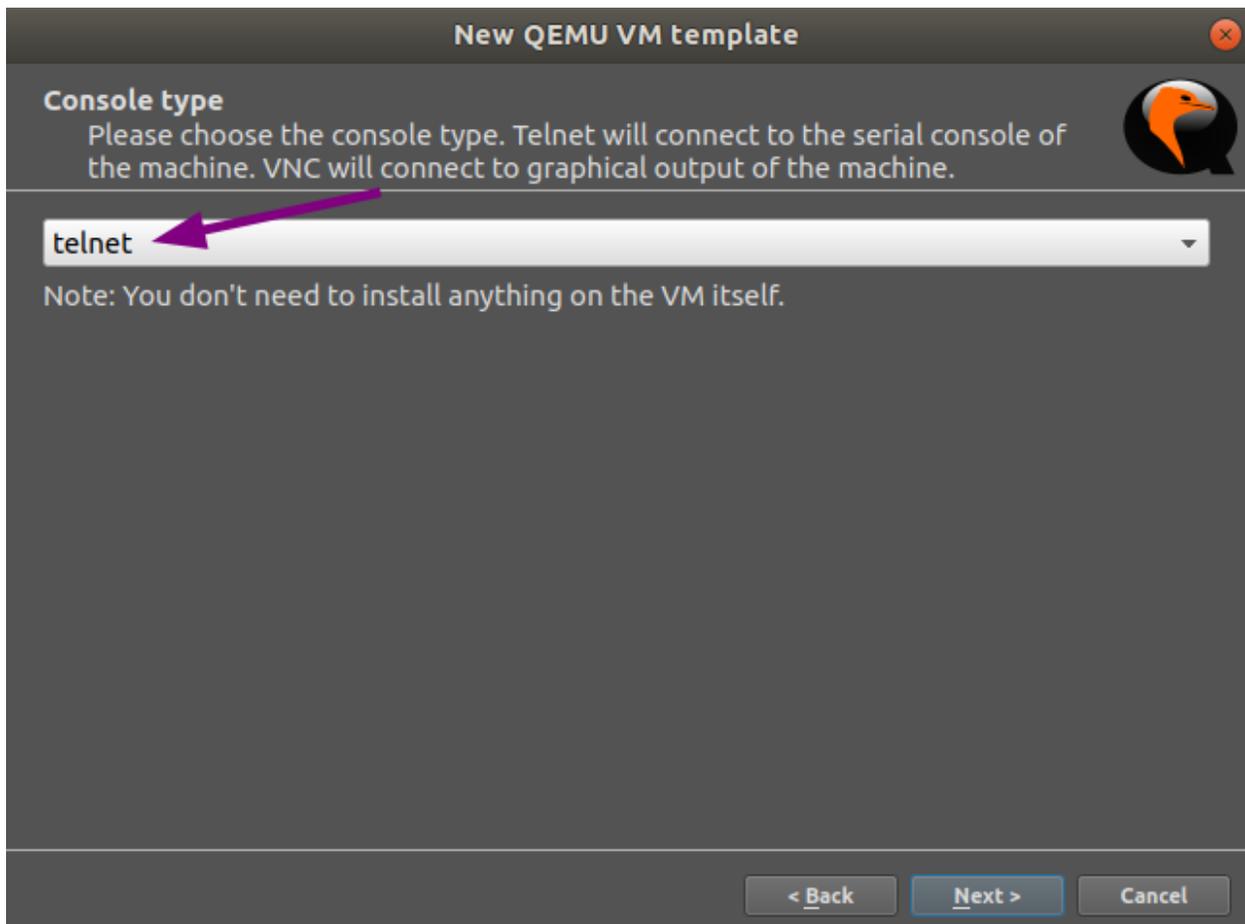
- Click on the **Browse . . .** button to choose the **Symbol** you want to have representing your VM.
- In **Category** select in which group you want to find your VM.
- Set the **Boot priority** to **CD/DVD-ROM**.

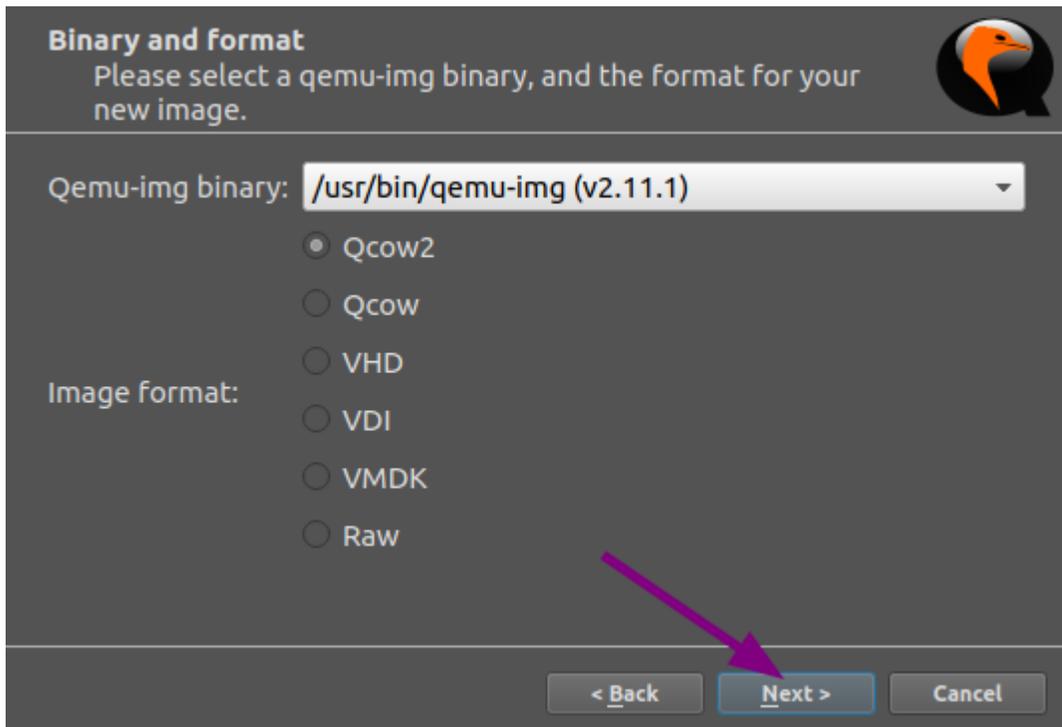
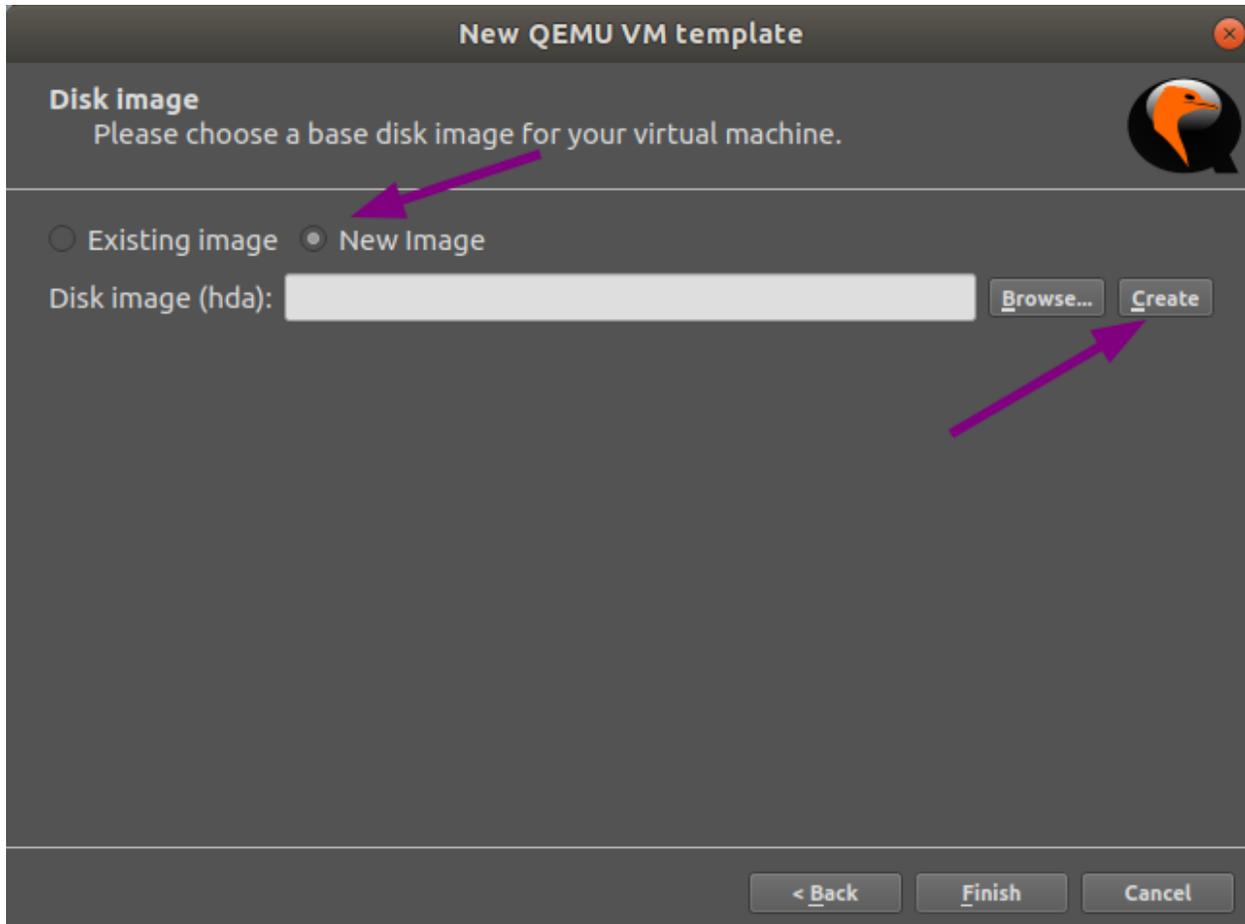
At the **HDD** tab, change the Disk interface to **sata** to speed up the boot process.

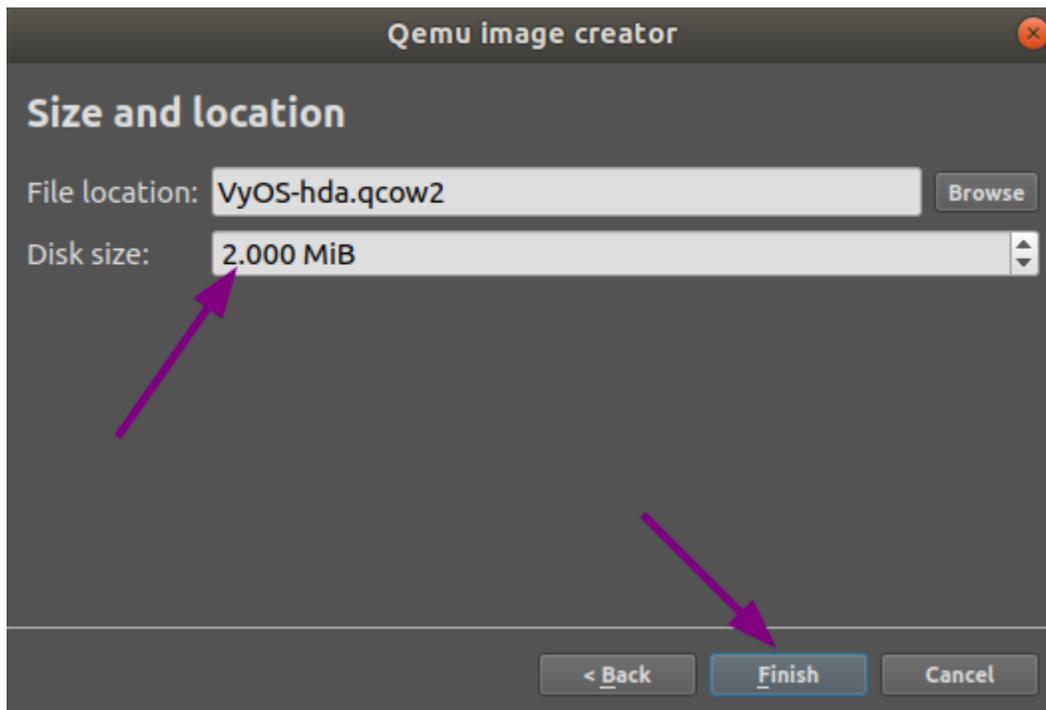
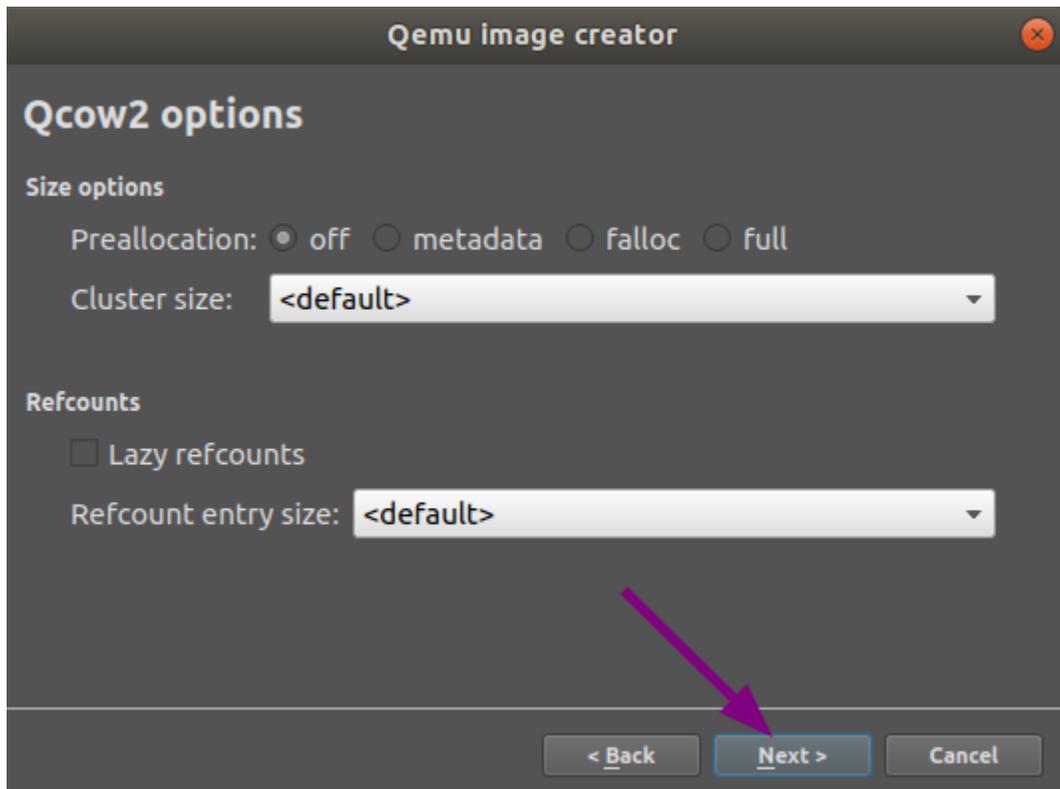
At the **CD/DVD** tab click on **Browse . . .** and locate the VyOS image you want to install.

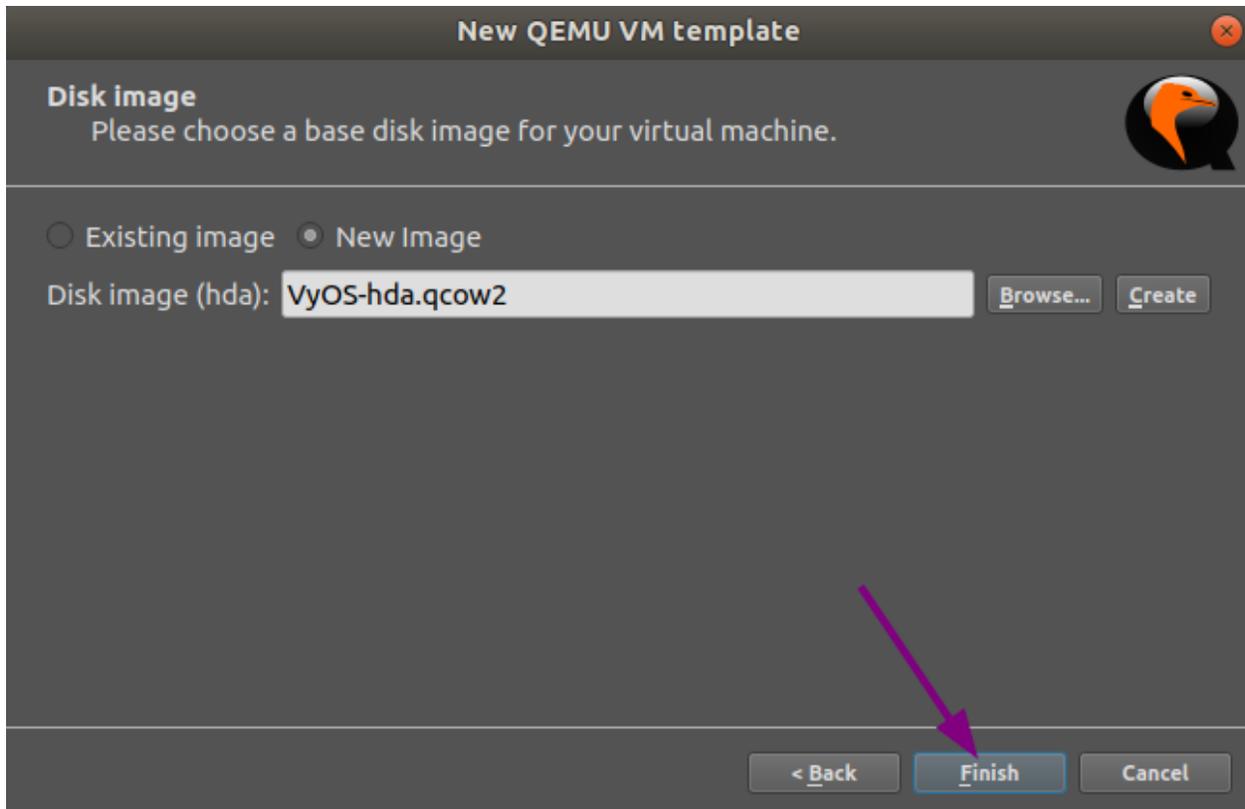













---

**Note:** You probably will want to accept to copy the .iso file to your default image directory when you are asked.

---

In the **Network** tab, set **0** as the number of adapters, set the **Name format** to **eth{0}** and the **Type** to **Paravirtualized Network I/O (virtio-net-pci)**.

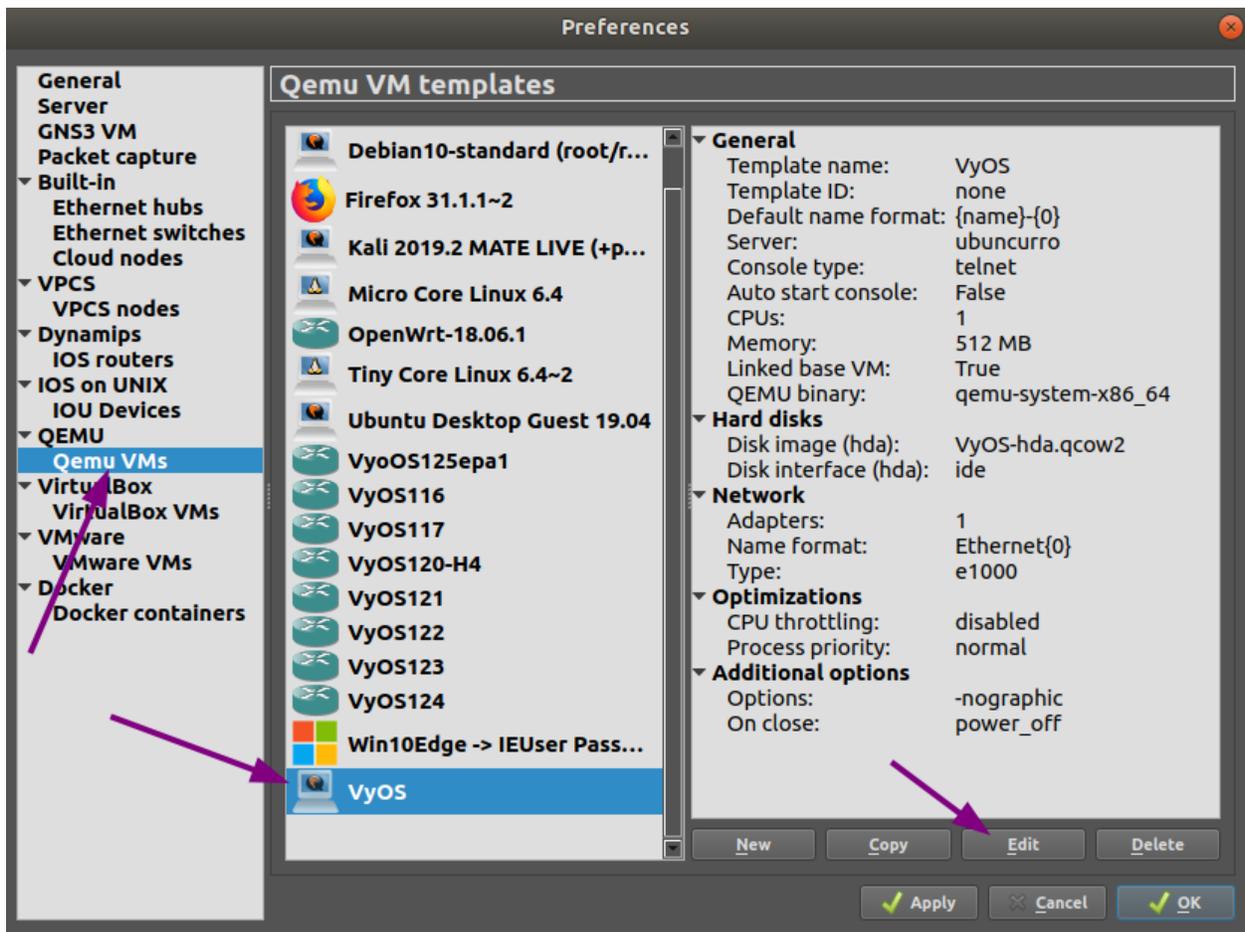
In the **Advanced** tab, unmark the checkbox **Use as a linked base VM** and click **OK**, which will save and close the **QEMU VM template configuration** window.

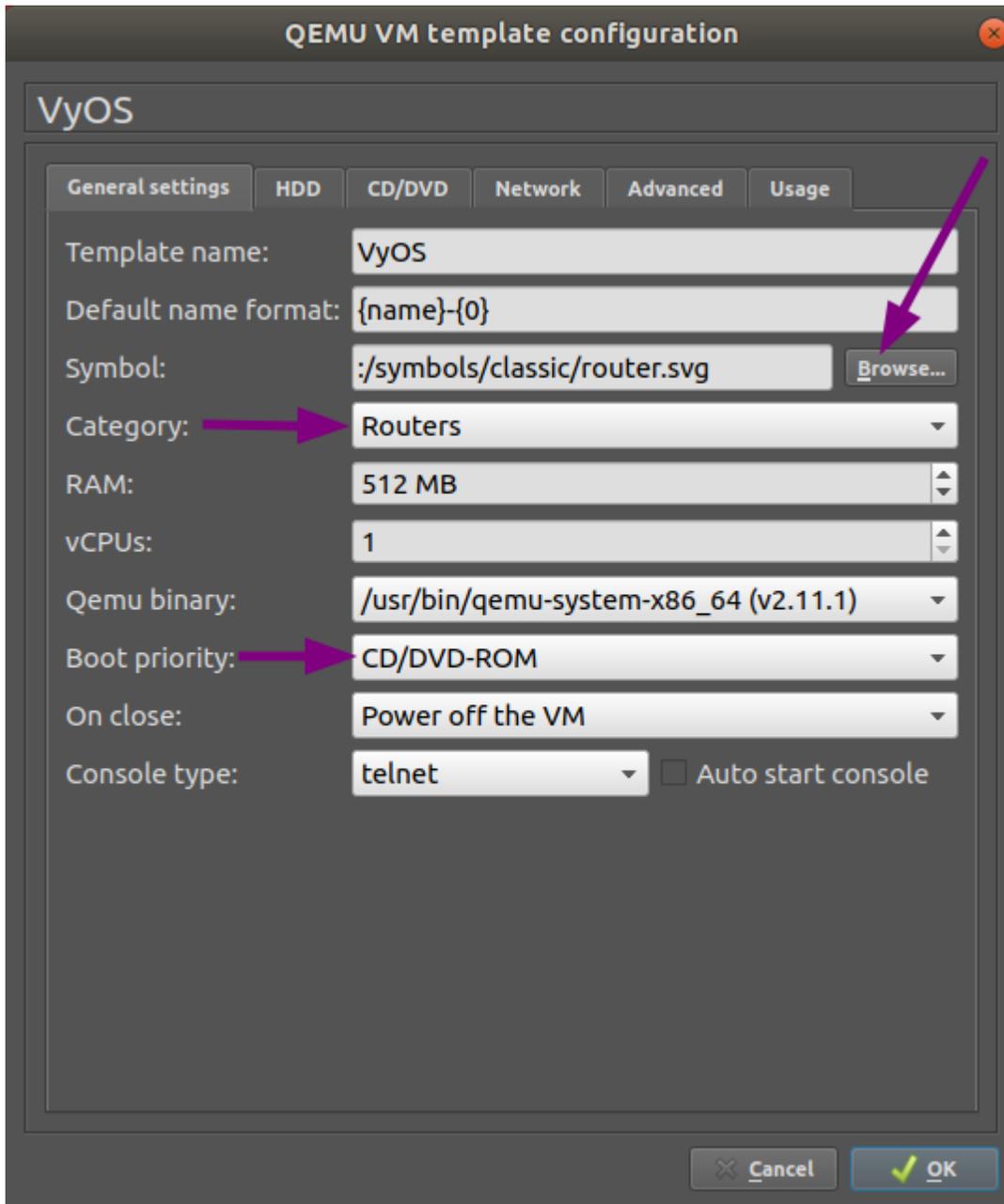
At the general **Preferences** window, click **OK** to save and close.

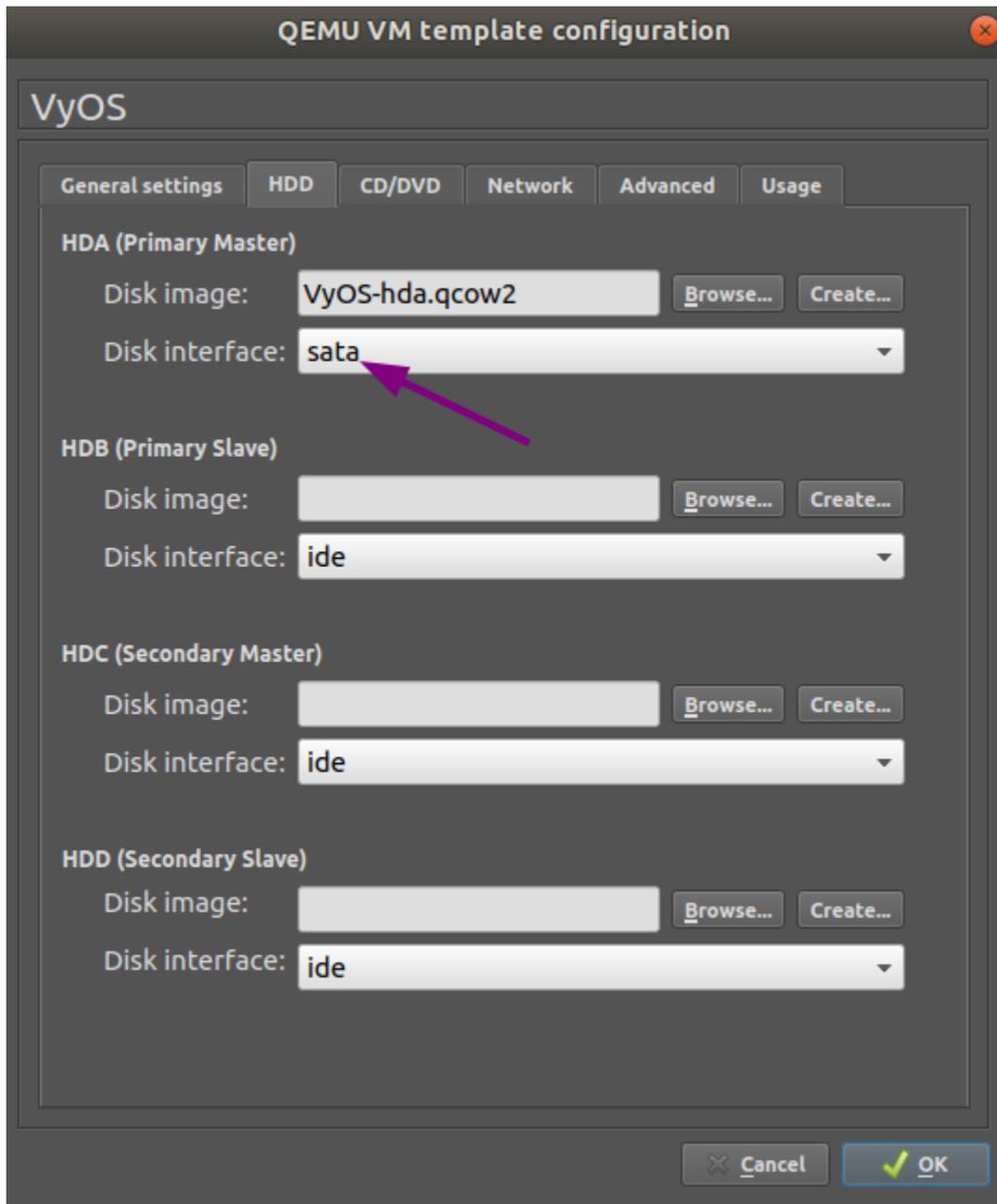
## VyOS installation

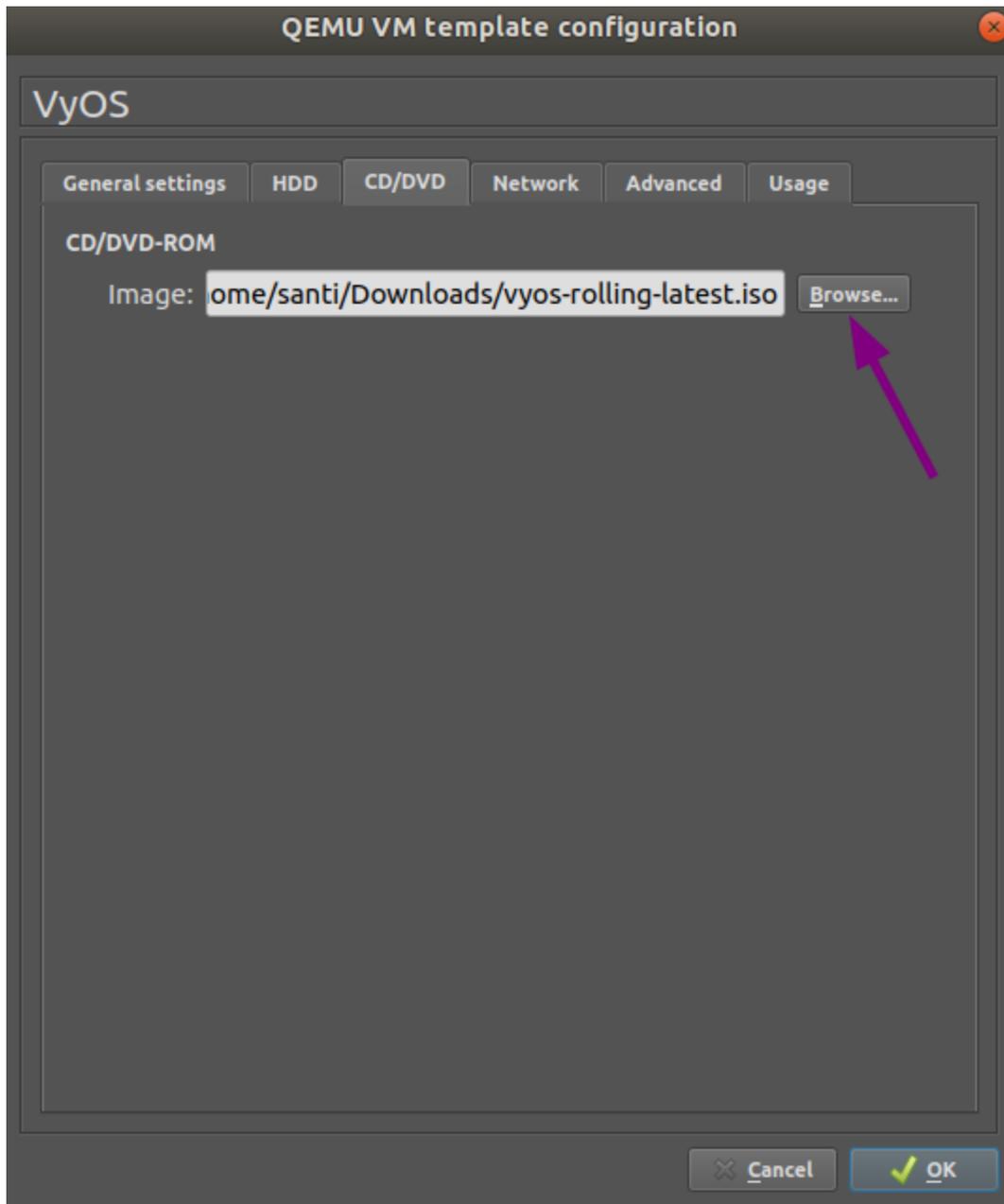
- Create a new project.
- Drag the newly created VyOS VM into it.
- Start the VM.
- Open a console. The console should show the system booting. It will ask for the login credentials, you are at the VyOS live system.
- *Install VyOS* as normal (that is, using the `install image` command).
- After a successful installation, shutdown the VM with the `poweroff` command.
- **Delete the VM** from the GNS3 project.

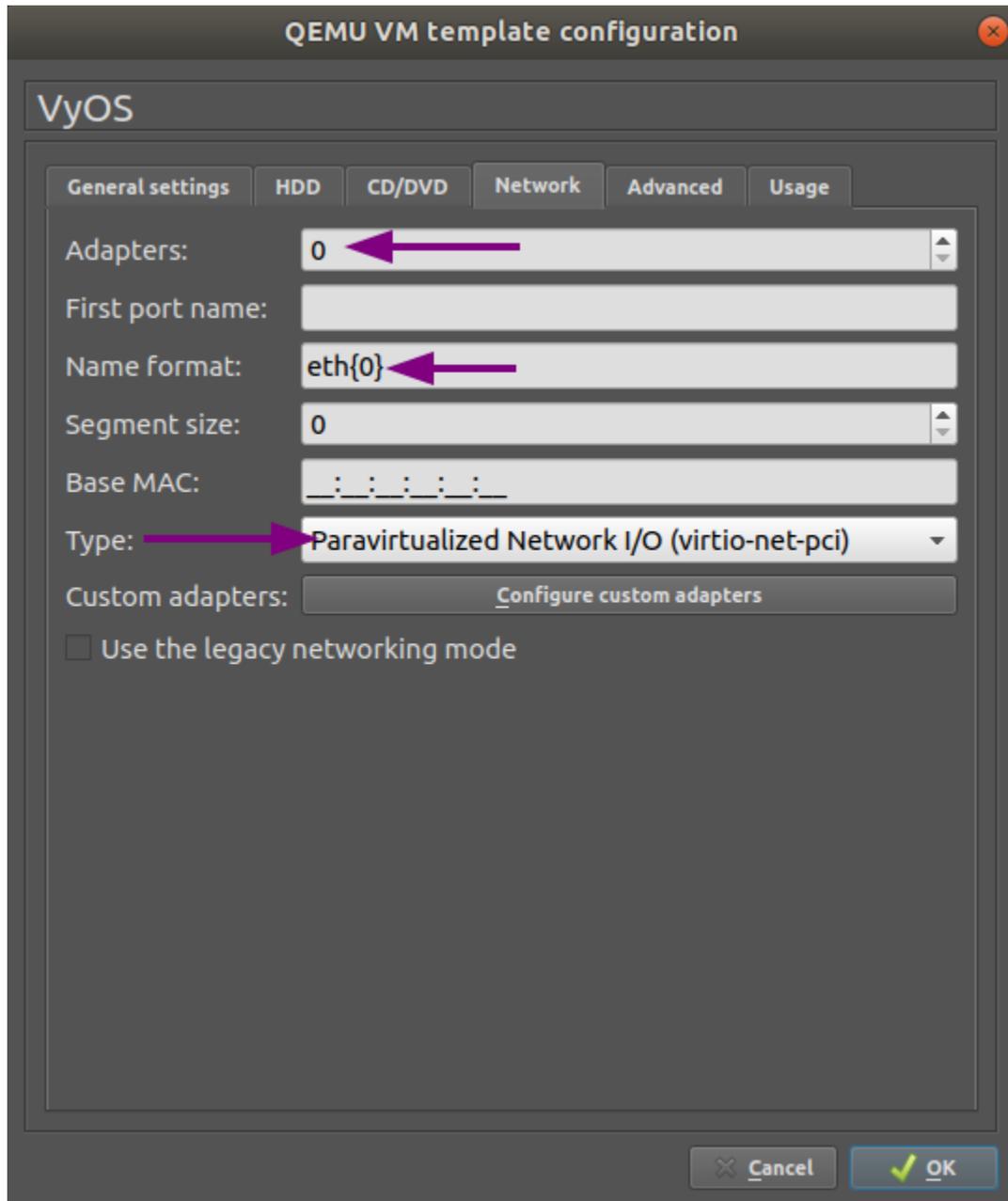
The `VyOS-hda.qcow2` file now contains a working VyOS image and can be used as a template. But it still needs some fixes before we can deploy VyOS in our labs.

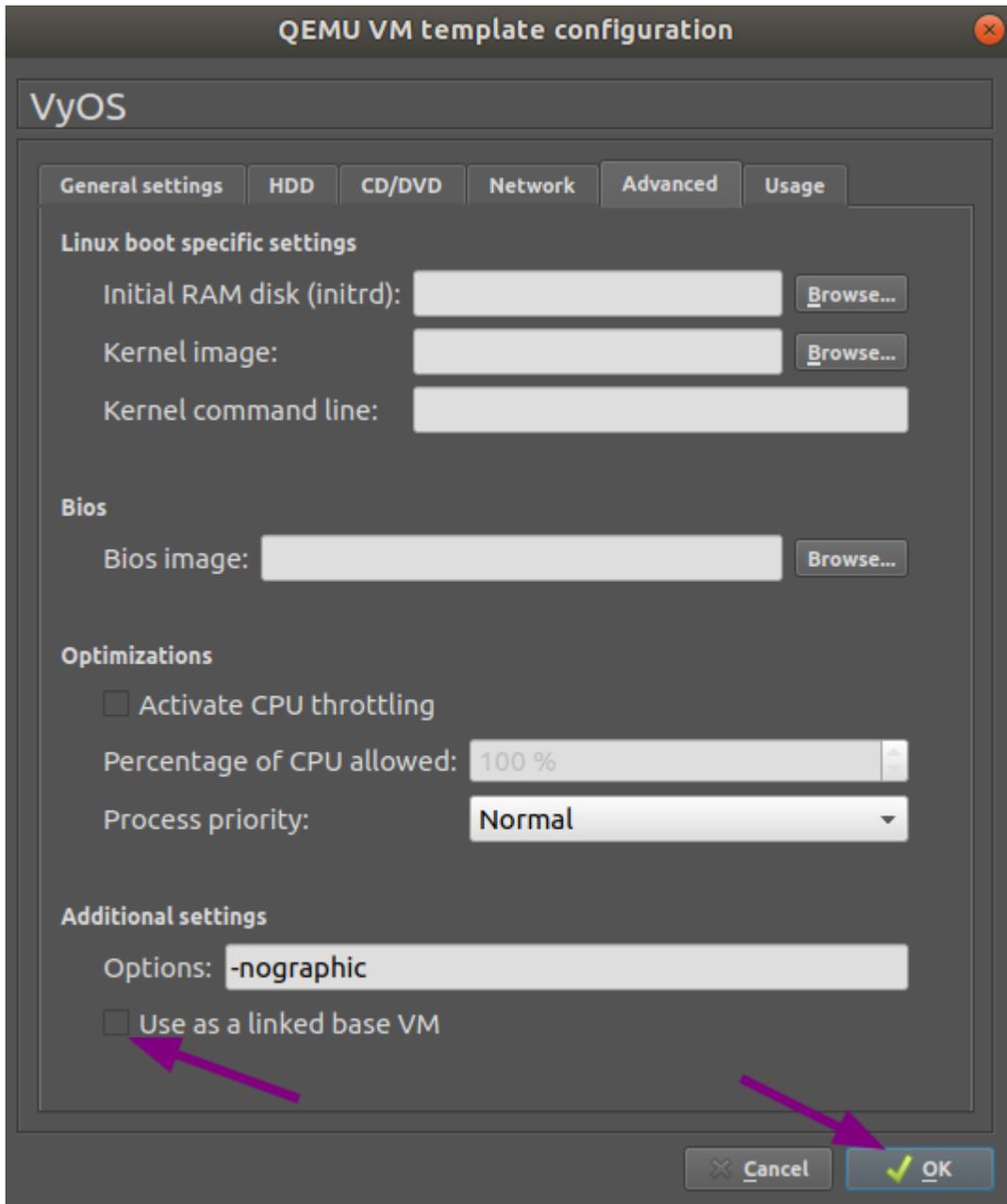


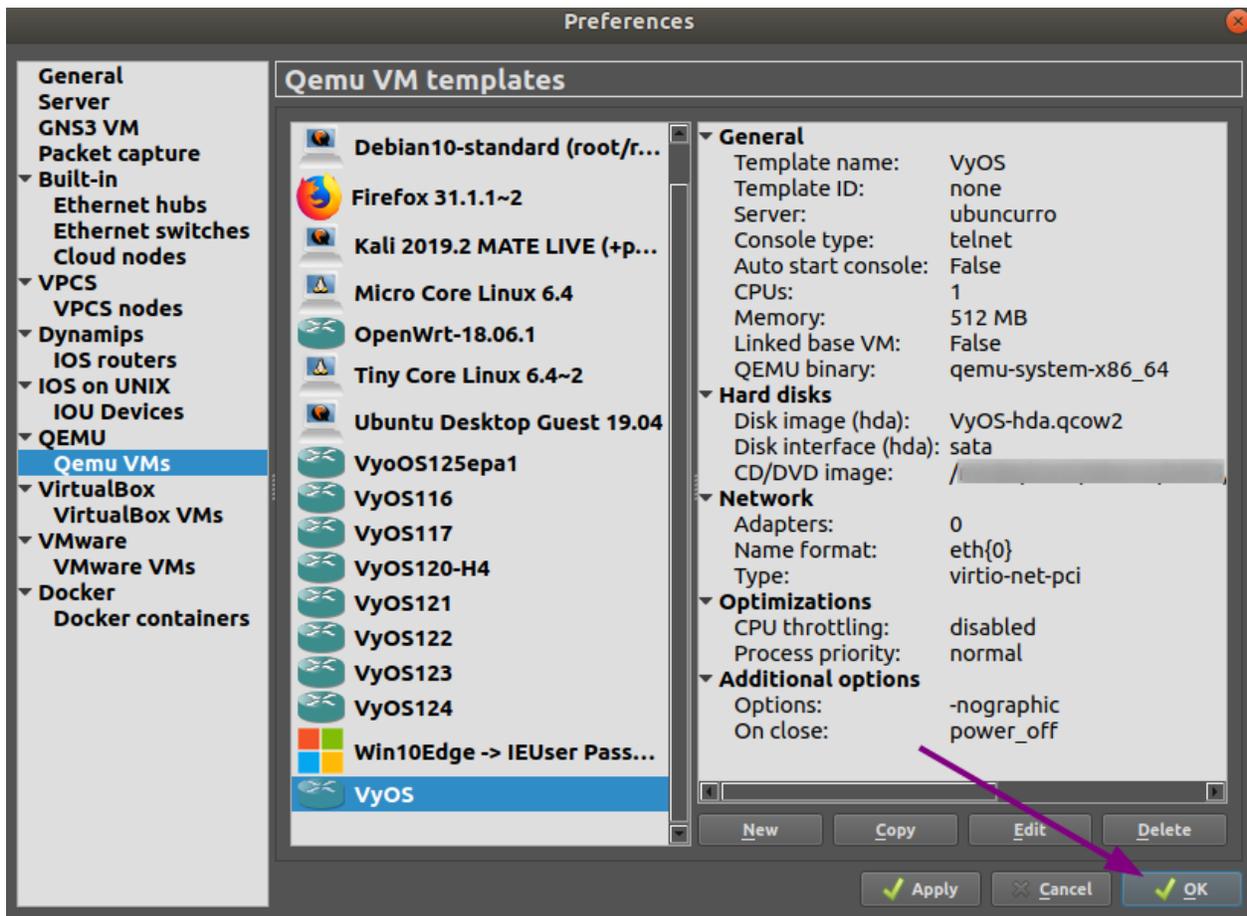








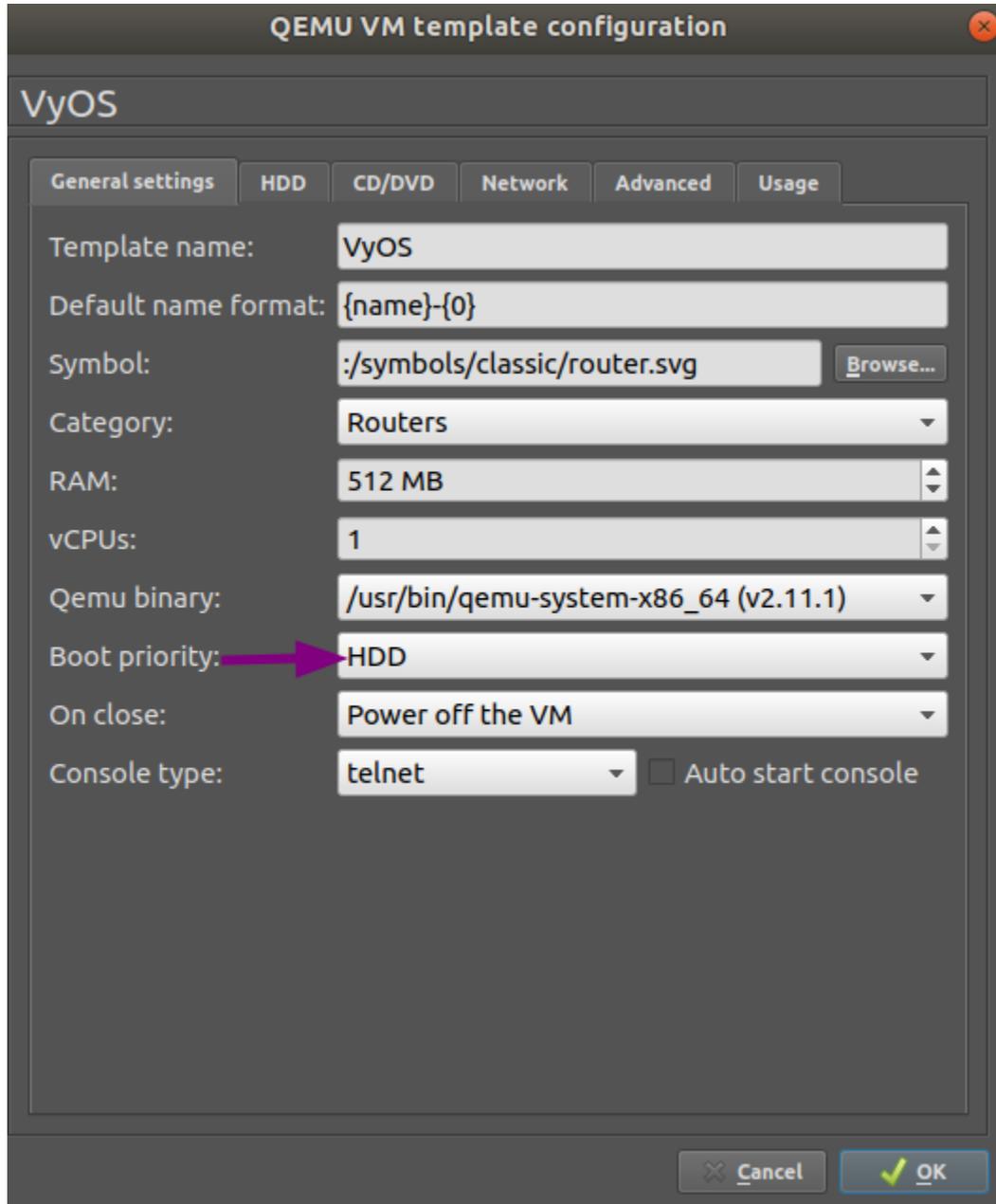




## VyOS VM configuration

To turn the template into a working VyOS machine, further steps are necessary as outlined below:

**General settings** tab: Set the boot priority to **HDD**

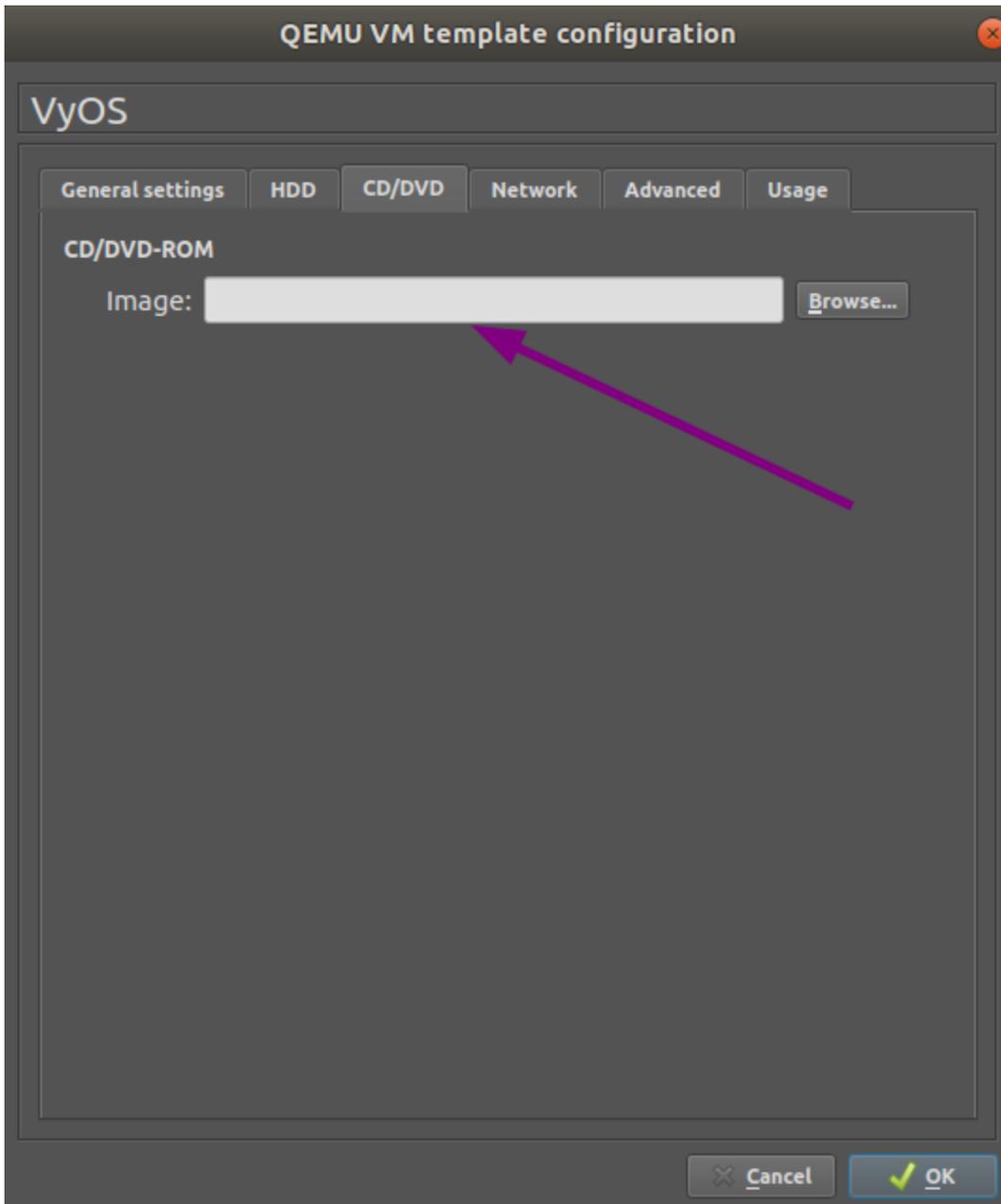


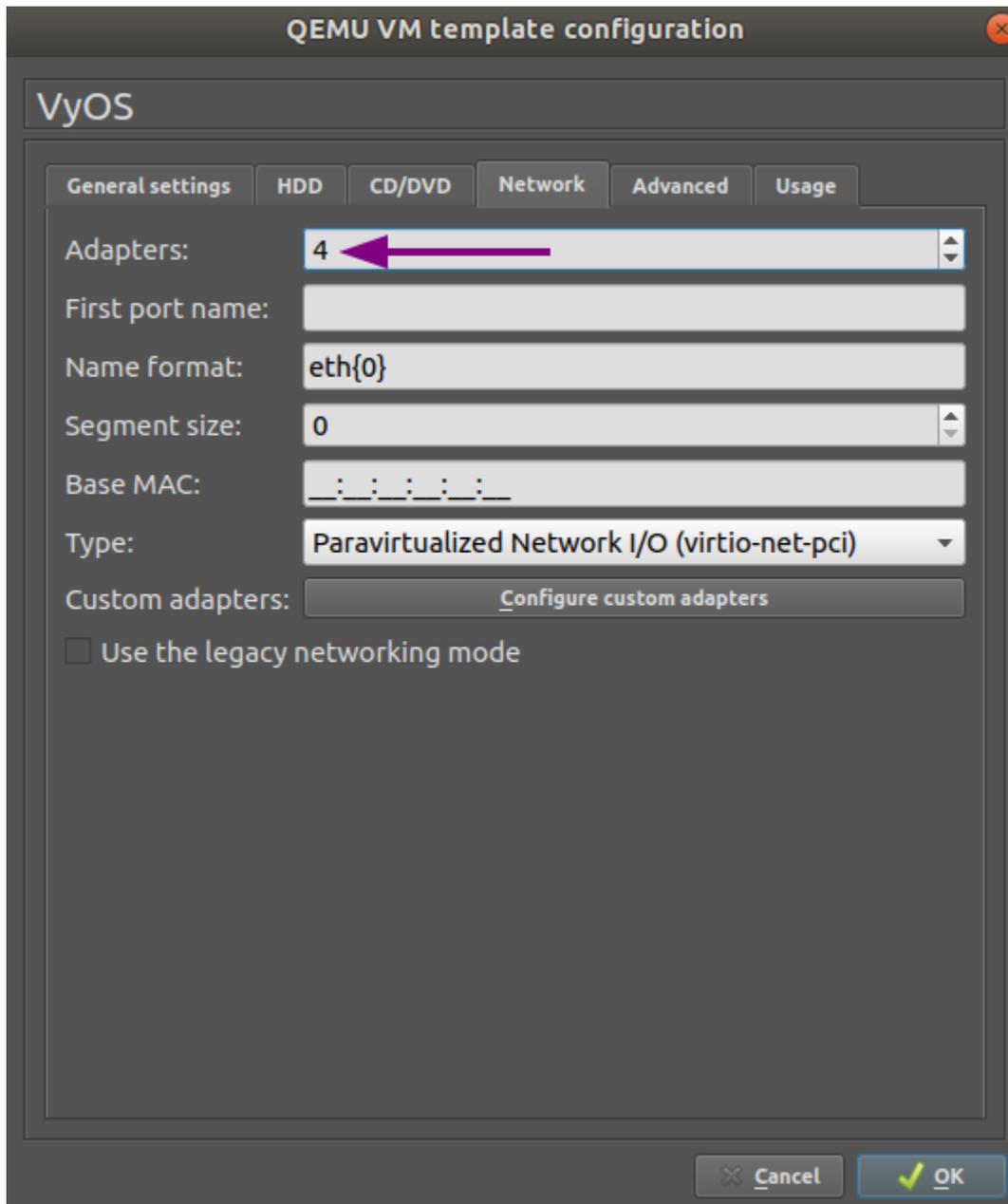
**CD/DVD** tab: Unmount the installation image file by clearing the **Image** entry field.

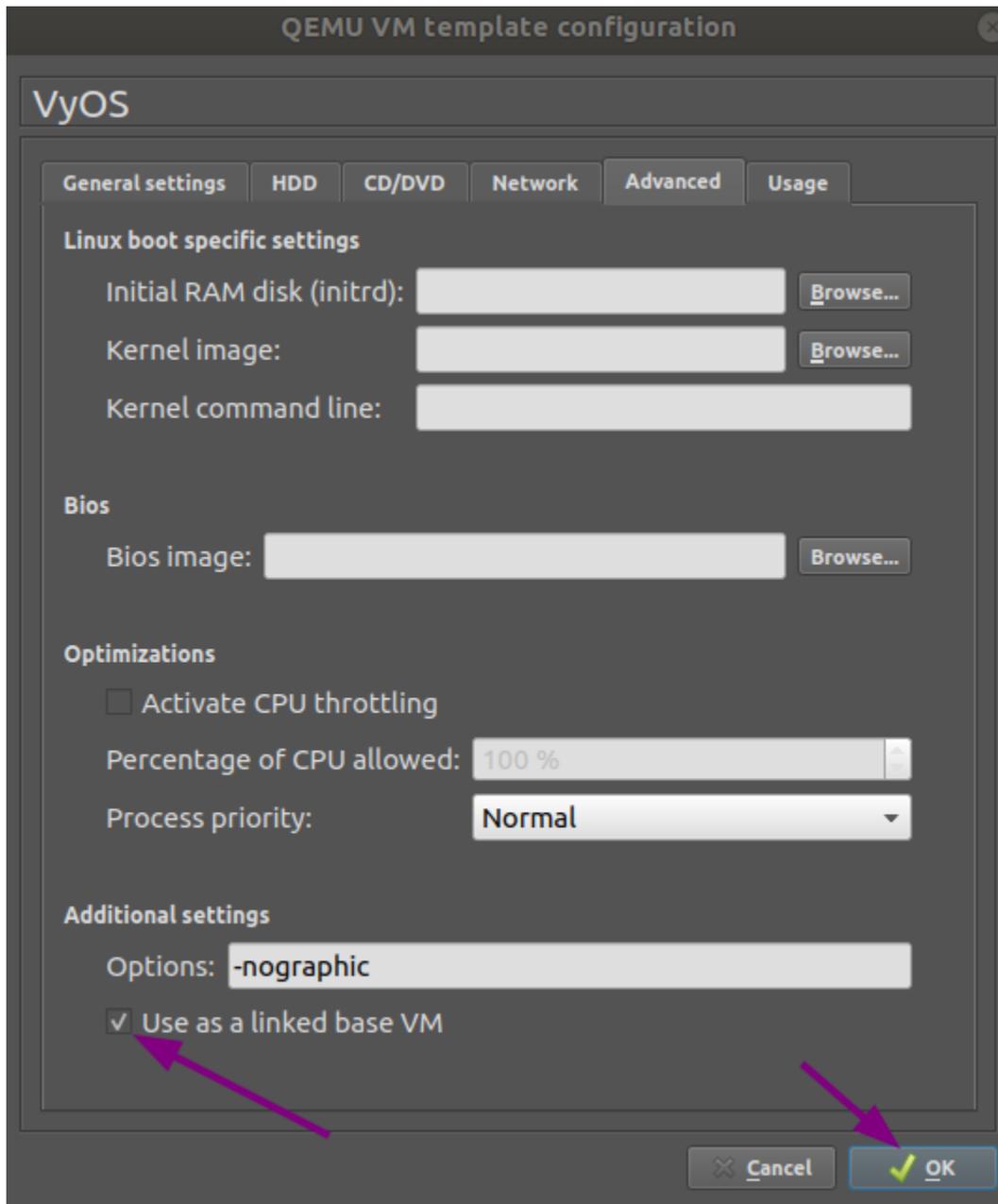
Set the number of required network adapters, for example **4**.

**Advanced** settings tab: Mark the checkbox **Use as a linked base VM** and click OK to save the changes.

The VyOS VM is now ready to be deployed.







## 4.2.5 EVE-NG

### References

<https://www.eve-ng.net/>

## 4.2.6 Running in Docker Container

Docker is an open-source project for deploying applications as standardized units called containers. Deploying VyOS in a container provides a simple and lightweight mechanism for both testing and packet routing for container workloads.

### IPv6 Support for docker

VyOS requires an IPv6-enabled docker network. Currently linux distributions do not enable docker IPv6 support by default. You can enable IPv6 support in two ways.

#### Method 1: Create a docker network with IPv6 support

Here is an example using the macvlan driver.

```
docker network create --ipv6 -d macvlan -o parent=eth0 --subnet 2001:db8::/64 --subnet-
↳ 192.0.2.0/24 mynet
```

#### Method 2: Add IPv6 support to the docker daemon

Edit `/etc/docker/daemon.json` to set the `ipv6` key to `true` and to specify the `fixed-cidr-v6` to your desired IPv6 subnet.

```
{
  "ipv6": true,
  "fixed-cidr-v6": "2001:db8::/64"
}
```

Reload the docker configuration.

```
$ sudo systemctl reload docker
```

### Deploy container from ISO

Download the ISO on which you want to base the container. In this example, the name of the ISO is `vyos-1.4-rolling-202308240020-amd64.iso`. If you created a custom IPv6-enabled network, the `docker run` command below will require that this network be included as the `--net` parameter to `docker run`.

```
$ mkdir vyos && cd vyos
$ curl -o vyos-1.4-rolling-202308240020-amd64.iso https://github.com/vyos/vyos-rolling-
↳ nightly-builds/releases/download/1.4-rolling-202308240020/vyos-1.4-rolling-
↳ 202308240020-amd64.iso
$ mkdir rootfs
```

(continues on next page)

(continued from previous page)

```
$ sudo mount -o loop vyos-1.4-rolling-202308240020-amd64.iso rootfs
$ sudo apt-get install -y squashfs-tools
$ mkdir unsquashfs
$ sudo unsquashfs -f -d unsquashfs/ rootfs/live/filesystem.squashfs
$ sudo tar -C unsquashfs -c . | docker import - vyos:1.4-rolling-202111281249
$ sudo umount rootfs
$ cd ..
$ sudo rm -rf vyos
$ docker run -d --rm --name vyos --privileged -v /lib/modules:/lib/modules \
> vyos:1.4-rolling-202111281249 /sbin/init
$ docker exec -ti vyos su - vyos
```

You can execute `docker stop vyos` when you are finished with the container.

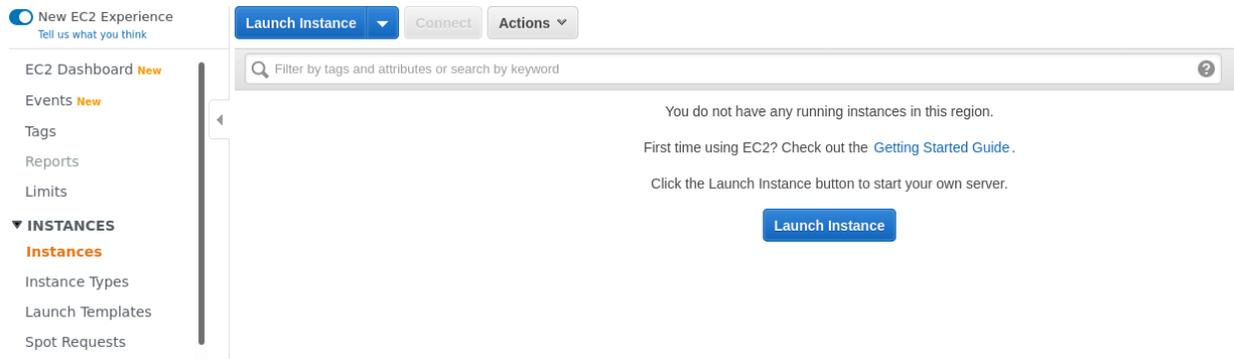
## 4.3 Running VyOS in Cloud Environments

### 4.3.1 Amazon AWS

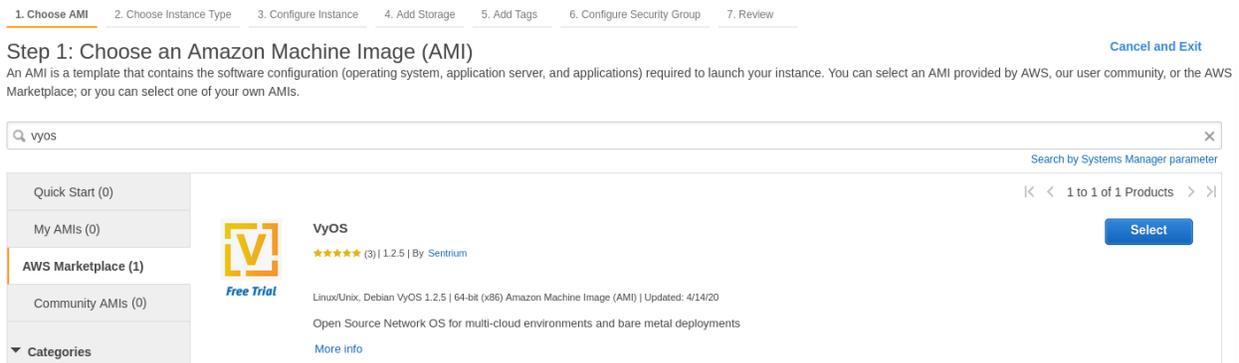
#### Deploy VM

Deploy VyOS on Amazon AWS (Amazon Web Services)

1. Click to Instances and Launch Instance



2. On the marketplace search “VyOS”



3. Choose the instance type. Minimum recommendation start from `m3.medium`

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

<input type="checkbox"/>	General purpose	m3.2xlarge	8	30	2 x 80 (SSD)	Yes	High	-
<input type="checkbox"/>	General purpose	m3.large	2	7.5	1 x 32 (SSD)	-	Moderate	-
<input checked="" type="checkbox"/>	General purpose	m3.medium	1	3.75	1 x 4 (SSD)	-	Moderate	-
<input type="checkbox"/>	General purpose	m3.xlarge	4	15	2 x 40 (SSD)	Yes	High	-

4. Configure instance for your requirements. Select number of instances / network / subnet

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances  [Launch into Auto Scaling Group](#)

Purchasing option  Request Spot instances

Network  [Create new VPC](#)

Subnet  [Create new subnet](#)

Auto-assign Public IP

Placement group  Add instance to placement group

Capacity Reservation  [Create new Capacity Reservation](#)

IAM role  [Create new IAM role](#)

Shutdown behavior

Stop - Hibernate behavior  Enable hibernation as an additional stop behavior

Enable termination protection  Protect against accidental termination

Monitoring  Enable CloudWatch detailed monitoring

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

- Additional storage. You can remove additional storage `/dev/sdb`. First root device will be `/dev/xvda`. You can skip this step.
- Configure Security Group. It's recommended that you configure ssh access only from certain address sources. Or permit any (by default).
- Select SSH key pair and click **Launch Instances**
- Find out your public IP address.
- Connect to the instance by SSH key.

```
ssh -i ~/.ssh/amazon.pem vyos@203.0.113.3
vyos@ip-192-0-2-10:~$
```

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/xvda	snap-0cddde1302124a73fc	4	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted
Instance Store 0	/dev/sdb	N/A	4	SSD	N/A	N/A	N/A	Not Encrypted

[Add New Volume](#)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group:  Create a new security group  
 Select an existing security group

Security group name:

Description:

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

[Add Rule](#)

**Warning**  
 Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

[Cancel](#) [Previous](#) [Review and Launch](#)

## Select an existing key pair or create a new key pair ✕

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair ▼

### Select a key pair

temp ▼

I acknowledge that I have access to the selected private key file (temp.pem), and that without this file, I won't be able to log into my instance.

Cancel

Launch Instances

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP
vyos	i-0a	m3.medium	us-east-1a	<span style="color: green;">●</span> running	⌚ Initializing	None	🚀 ec2	203.0.113.3

## Amazon CloudWatch Agent Usage

To use Amazon CloudWatch Agent, configure it within the Amazon SSM Parameter Store. If you don't have a configuration yet, do *CloudWatch SSM Configuration creation*.

1. Create an IAM (Identity and Access Management) role for the EC2 (Elastic Compute Cloud) instance to access CloudWatch service, and name it CloudWatchAgentServerRole. The role should contain two default policies: CloudWatchAgentServerPolicy and AmazonSSMManagedInstanceCore.
2. Attach the created role to your VyOS EC2 instance.
3. Ensure that amazon-cloudwatch-agent package is installed.

```
$ sudo apt list --installed | grep amazon-cloudwatch-agent
```

---

**Note:** The amazon-cloudwatch-agent package is normally included in VyOS 1.3.3+ and 1.4+

---

3. Retrieve an existing CloudWatch Agent configuration from the SSM (Systems Manager) Parameter Store.

```
$ sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-ctl -a ↵
↵fetch-config -m ec2 -s -c ssm:<your-configuration-name>
```

This step also enables systemd service and runs it.

---

**Note:** The VyOS platform-specific scripts feature is under development. Thus, this step should be repeated manually after changing system image (*Update VyOS*)

---

## CloudWatch SSM Configuration creation

Creating the Amazon Cloudwatch Agent Configuration in Amazon SSM Parameter Store.

1. Create an IAM role for your EC2 instance to access the CloudWatch service. Name it CloudWatchAgentAdminRole. The role should contain at two default policies: CloudWatchAgentAdminPolicy and AmazonSSMManagedInstanceCore.

---

**Note:** CloudWatchAgentServerRole is too permissive and should be used for single configuration creation and deployment. That's why after completion of step #3 highly recommended to replace instance CloudWatchAgentAdminRole role with CloudWatchAgentServerRole.

---

2. Run Cloudwatch configuration wizard.

```
$ sudo /opt/aws/amazon-cloudwatch-agent/bin/amazon-cloudwatch-agent-config- ↵
↵wizard
```

3. When prompted, answer "yes" to the question "Do you want to store the config in the SSM parameter store?".

## References

- <https://console.aws.amazon.com/>
- <https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/create-iam-roles-for-cloudwatch-agent.html>
- <https://docs.aws.amazon.com/AmazonCloudWatch/latest/monitoring/install-CloudWatch-Agent-on-EC2-Instance-fleet.html>

## 4.3.2 Azure

### Deploy VM

Deploy VyOS on Azure.

1. Go to the Azure services and Click to **Add new Virtual machine**
2. Choose vm name, resource group, region and click **Browse all public and private images**

[Home](#) > [Virtual machines](#) >

## Create a virtual machine

[Basics](#) [Disks](#) [Networking](#) [Management](#) [Advanced](#) [Tags](#) [Review + create](#)

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#) 

### Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * 	<input type="text" value="Microsoft"/> 
Resource group * 	<input type="text" value="(New) vyos_doc"/>  <a href="#">Create new</a>
<b>Instance details</b>	
Virtual machine name * 	<input type="text" value="vyos-doc-r1"/> 
Region * 	<input type="text" value="(US) Central US"/> 
Availability options 	<input type="text" value="No infrastructure redundancy required"/> 
Image * 	<input type="text" value="VyOS PAYG Subscription (Standard Support)"/>  <a href="#">Browse all public and private images</a>
Azure Spot instance 	<input type="radio"/> Yes <input checked="" type="radio"/> No

3. On the marketplace search VyOS and choose the appropriate subscription

Home > Virtual machines >

## Create a virtual machine

Basics | Disks | Networking | Management

Create a virtual machine that runs Linux or Windows image. Complete the Basics tab then Review + create for full customization. [Learn more](#)

**Project details**  
Select the subscription to manage deployed resources

### Select an image

Marketplace | My Items | Private Offers

AI + Machine Learning | Analytics | Blockchain | Compute

vyos

 VyOS PAYG Subscription (Standard Support)  
Sentrion S.L.  
Pay-as-you-go VyOS access subscription with standard support

4. Generate new SSH key pair or use existing.

#### Administrator account

Authentication type ⓘ

SSH public key  Password

Username \* ⓘ

vyos ✓

SSH public key \* ⓘ

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQgQDhX9620eLPg/b
/+HhVcobsrKCxAXEkjLUUA6DGyYgukXgpEuCkxupAlf+kVdfg8AzdGYVJqLW
ng9SYsDu/NX1/ilA6gxN5RfrEp0sd7i1ZTkz0bsbEXGj
/hR1/NorSwBRMoc731IAD6I8IE3Nvir7Cl eKRNSiv+u98cann+wpTv3leK28ca
```

[Learn more about creating and using SSH keys in Azure](#)

Review + create

< Previous

Next : Disks >

- Define network, subnet, Public IP. Or it will be created by default.
- Click Review + create. After a few seconds your deployment will be complete
- Click to your new vm and find out your Public IP address.
- Connect to the instance by SSH key.

```
ssh -i ~/.ssh/vyos_azure vyos@203.0.113.3
vyos@vyos-doc-r1:~$
```

#### Add interface

If instance was deployed with one **eth0** WAN interface and want to add new one. To add new interface an example **eth1** LAN you need shutdown the instance. Attach the interface in the Azure portal and then start the instance.

**Note:** Azure does not allow you attach interface when the instance in the **Running** state.

[Home](#) > [Virtual machines](#) >

## Create a virtual machine

Basics   Disks   Networking   Management   Advanced   Tags   Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution. [Learn more](#)

### Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * ⓘ	<input type="text" value="(new) vyos_doc-vnet"/> <a href="#">Create new</a>
Subnet * ⓘ	<input type="text" value="(new) default (10.0.4.0/24)"/>
Public IP ⓘ	<input type="text" value="(new) vyos-doc-r1-ip"/> <a href="#">Create new</a>
NIC network security group ⓘ	<input type="radio"/> None <input type="radio"/> Basic <input checked="" type="radio"/> Advanced
	<b>i</b> This VM image has preconfigured NSG rules
Configure network security group *	<input type="text" value="(new) vyos-doc-r1-nsg"/> <a href="#">Create new</a>
Accelerated networking ⓘ	<input type="radio"/> On <input checked="" type="radio"/> Off

The selected VM size does not support accelerated networking.

 Your deployment is complete

 Deployment name: CreateVm-sentriumsl.vyos-1-2-lts-on-azure-vy... Start time: 6/17  
 Subscription: Microsoft Correlation ID: f86  
 Resource group: vyos\_doc

Deployment details [\(Download\)](#)

Resource	Type	Status	Operation details
 <a href="#">vyos-doc-r1</a>	Microsoft.Compute/virtualM...	OK	<a href="#">Operation details</a>
 <a href="#">vyos-doc-r1449</a>	Microsoft.Network/networkl...	Created	<a href="#">Operation details</a>
 <a href="#">vyos_doc-vnet</a>	Microsoft.Network/virtualNet...	OK	<a href="#">Operation details</a>
 <a href="#">vyos-doc-r1-ip</a>	Microsoft.Network/publicIpA...	OK	<a href="#">Operation details</a>
 <a href="#">vyos-doc-r1-nsg</a>	Microsoft.Network/networkS...	OK	<a href="#">Operation details</a>
 <a href="#">vyosdocdiag</a>	Microsoft.Storage/storageAc...	OK	<a href="#">Operation details</a>

 Connect  Start  Restart  Stop  Capture  Delete  Refresh

Resource group <a href="#">(change)</a> : <a href="#">vyos_doc</a>	Azure Spot : N/A
Status : Running	Public IP address : <a href="#">203.0.113.3</a>
Location : Central US	Private IP address : <a href="#">192.0.2.5</a>
Subscription <a href="#">(change)</a> : <a href="#">Microsoft</a>	Public IP address (IPv6) : -
Subscription ID : <span style="background-color: #ccc; color: #ccc;">XXXXXXXXXX</span>	Private IP address (IPv6) : -
Computer name : <a href="#">vyos-doc-r1</a>	Colocation status : N/A
Operating system : Linux (debian 8.11)	Virtual network/subnet : <a href="#">vyos_doc-vnet/default</a>
Size : Standard D2s v3 (2 vcpus, 8 GiB memory)	DNS name : <a href="#">Configure</a>
Tags <a href="#">(change)</a> : <a href="#">Click here to add tags</a>	

## Absorbing Routes

If using as a router, you will want your LAN interface to absorb some or all of the traffic from your VNET by using a route table applied to the subnet.

1. Create a route table and browse to **Configuration**
2. Add one or more routes for networks you want to pass through the VyOS VM. Next hop type **Virtual Appliance** with the **Next Hop Address** of the VyOS LAN interface.

---

**Note:** If you want to create a new default route for VMs on the subnet, use **Address Prefix 0.0.0.0/0** Also note that if you want to use this as a typical edge device, you'll want masquerade NAT for the WAN interface.

---

## Serial Console

Azure has a way to access the serial console of a VM, but this needs to be configured on the VyOS. It's there by default, but keep it in mind if you are replacing config.boot and rebooting: `set system console device ttyS0 speed '9600'`

## References

<https://azure.microsoft.com>

## 4.3.3 Google Cloud Platform

### Deploy VM

To deploy VyOS on GCP (Google Cloud Platform)

1. Generate SSH key pair type **ssh-rsa** from the host that will connect to VyOS.

Example:

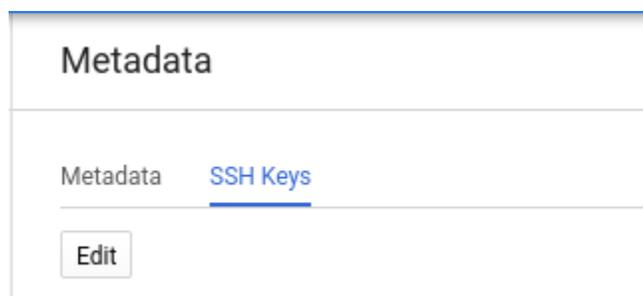
```
ssh-keygen -t rsa -f ~/.ssh/vyos_gcp -C "vyos@mypc"
```

---

**Note:** In name “vyos@mypc” The first value must be “vyos”. Because default user is vyos and google api uses this option.

---

2. Open GCP console and navigate to the menu **Metadata**. Choose **SSH Keys** and click edit.



Click **Add item** and paste your public ssh key. Click Save.

```
vyos ssh -rsa AAAAB3NzaC1yc2EAAAADAQABAAQgQDgiUOoctMCHb/8AVNndXiFkbuDGKmD00FoY4gS8uLXx0V
Db16oFQ+UwMhayhG1ZAMa5Sp+agmT1paaMA1//jMYSwEnMNH5HcwMSY6HFvMsJ PW4Jf4eSAMOUGBs7A
O9JZFGkTwKV6xf6EOGdH86yzf32PhVWzf393WhgZAUxVx6y5Kt6e5i1ysW1Ft1MKMdkQHh7C9wmHj90bXc
c350fwb061JQ/6CT9Fe2MwNrJaX3jHHJ8BeL+IZnhLHZUBJ3mR32 g3MjGjIi3ZkHYzZFv+Te/
ECyOyPtCtIYJ0MHE4FwEdfmRZcPLvC4q0mc5y5Z8tiNbBuox8T9phd1/D/+fwuvQnRx5iZ6xceZYWqH+WF
DR8f9R MBt11+MUQ4omUJzX/AL8ZLOyPGHCh1Hg7PYH0U1InRYenRvBFJp9mUOWymc8JbEmG
bjBLKuaGQ00HIzoTF/Q50grX5IUq7NziUC9yRd3y918EyLwnc86AfiG2Nts= vyos@mypc
```

+ Add item

Save Cancel

2. On marketplace search “VyOS”
3. Change Deployment name/Zone/Machine type and click Deploy

The screenshot shows the Google Cloud Platform console for a new VyOS deployment. The configuration is as follows:

- Deployment name:** vyos-r1
- Zone:** us-west1-b
- Machine type:** 1 vCPU, 3.75 GB memory
- Boot Disk:** Standard Persistent Disk, 10 GB
- Networking:** default default (10.138.0.0/20)

On the right side, the 'VyOS overview' section provides additional information:

- Software:** Operating System: VyOS (1.2.5)
- Documentation:** User Guide, Online User Guide
- Terms of Service:** By deploying the software or accessing the service you are agreeing to comply with the Sentrion S.L. terms of service, GCP Marketplace terms of service and the terms of applicable open source software licenses bundled with the software or service.

4. After few seconds click to instance
5. Find out your external IP address
6. Connect to the instance. SSH key was generated in the first step.

```
ssh -i ~/.ssh/vyos_gcp vyos@203.0.113.3
vyos@vyos-r1-vm:~$
```

**VyOS**  
Solution provided by Sentrinum S.L.

**Instance** `vyos-r1-vm`

**Instance zone** `us-west1-b`

**Instance machine type** `n1-standard-1`

[✓ MORE ABOUT THE SOFTWARE](#)

**Zone**

us-west1-b

**Labels**

goog-dm:vyos-r1

**Creation time**

Jun 11, 2020, 3:50:47 PM

**Network interfaces**

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier <sup>?</sup>	IP forwarding	Network details
nic0	default	default	10.138.0.4	—	203.0.113.3 (ephemeral)	Premium	On	<a href="#">View details</a>

## References

<https://console.cloud.google.com/>

### 4.3.4 Oracle

## References

<https://www.oracle.com/cloud/>

## 4.4 Running on Bare Metal

### 4.4.1 Supermicro A2SDi (Atom C3000)

I opted to get one of the new Intel Atom C3000 CPUs to spawn VyOS on it. Running VyOS on an UEFI only device is supported as of VyOS release 1.2.

## Shopping Cart

- 1x Supermicro CSE-505-203B (19" 1U chassis, inkl. 200W PSU)
- 1x Supermicro MCP-260-00085-0B (I/O Shield for A2SDi-2C-HLN4F)
- 1x Supermicro A2SDi-2C-HLN4F (Intel Atom C3338, 2C/2T, 4MB cache, Quad LAN with Intel C3000 SoC 1GbE)
- 1x Crucial CT4G4DFS824A (4GB DDR4 RAM 2400 MT/s, PC4-19200)
- 1x SanDisk Ultra Fit 32GB (USB-A 3.0 SDCZ43-032G-G46 mass storage for OS)
- 1x Supermicro MCP-320-81302-0B (optional FAN tray)

## Optional (10GE)

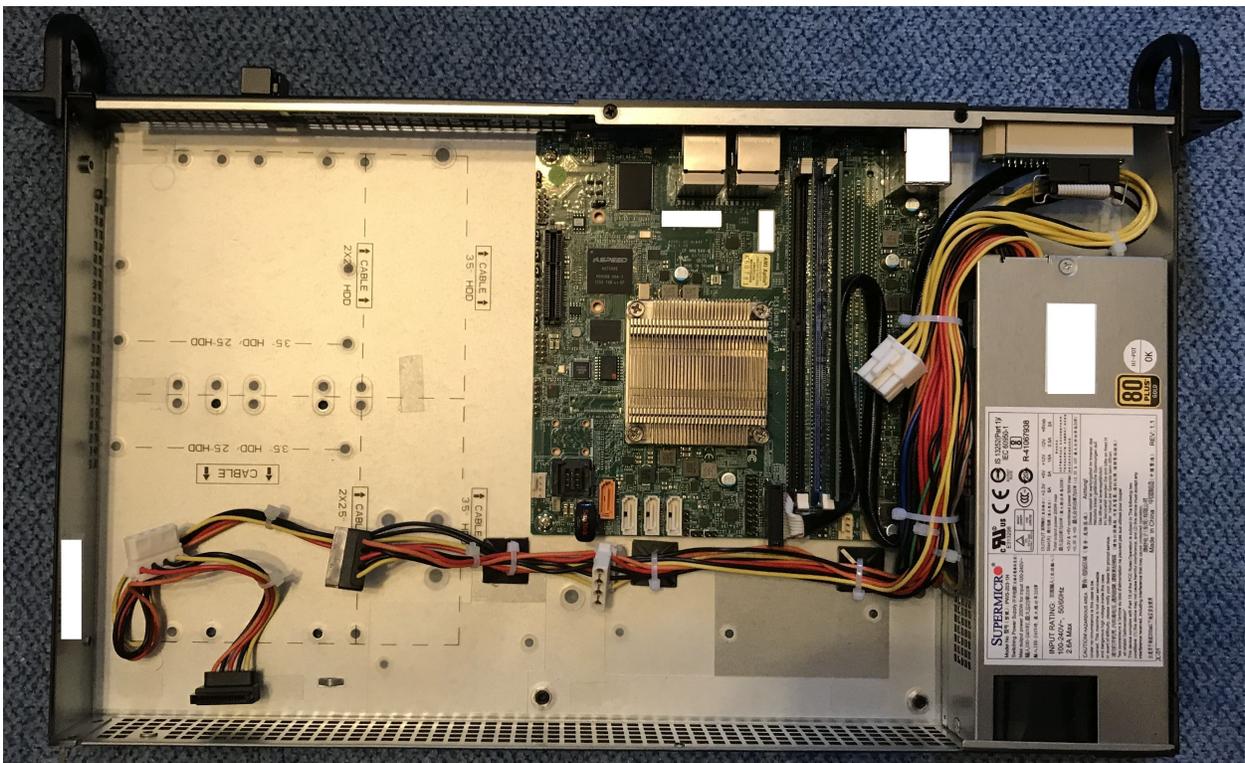
If you want to get additional ethernet ports or even 10GE connectivity the following optional parts will be required:

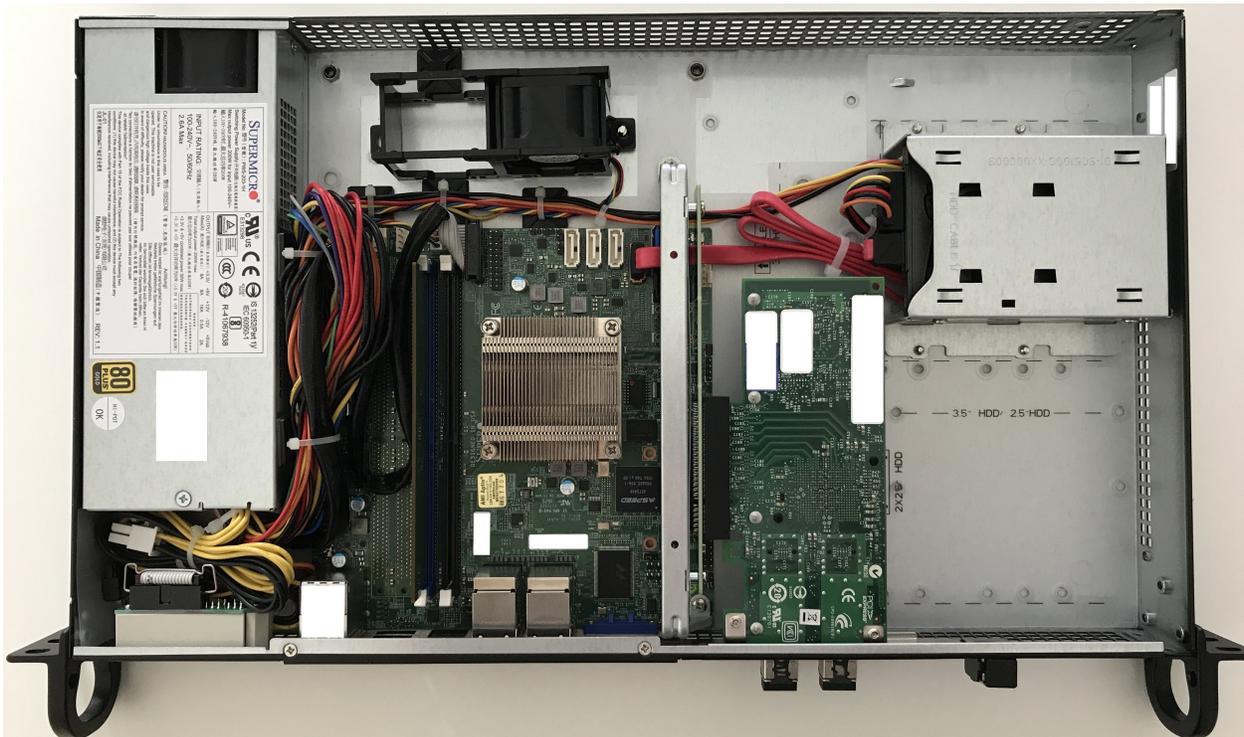
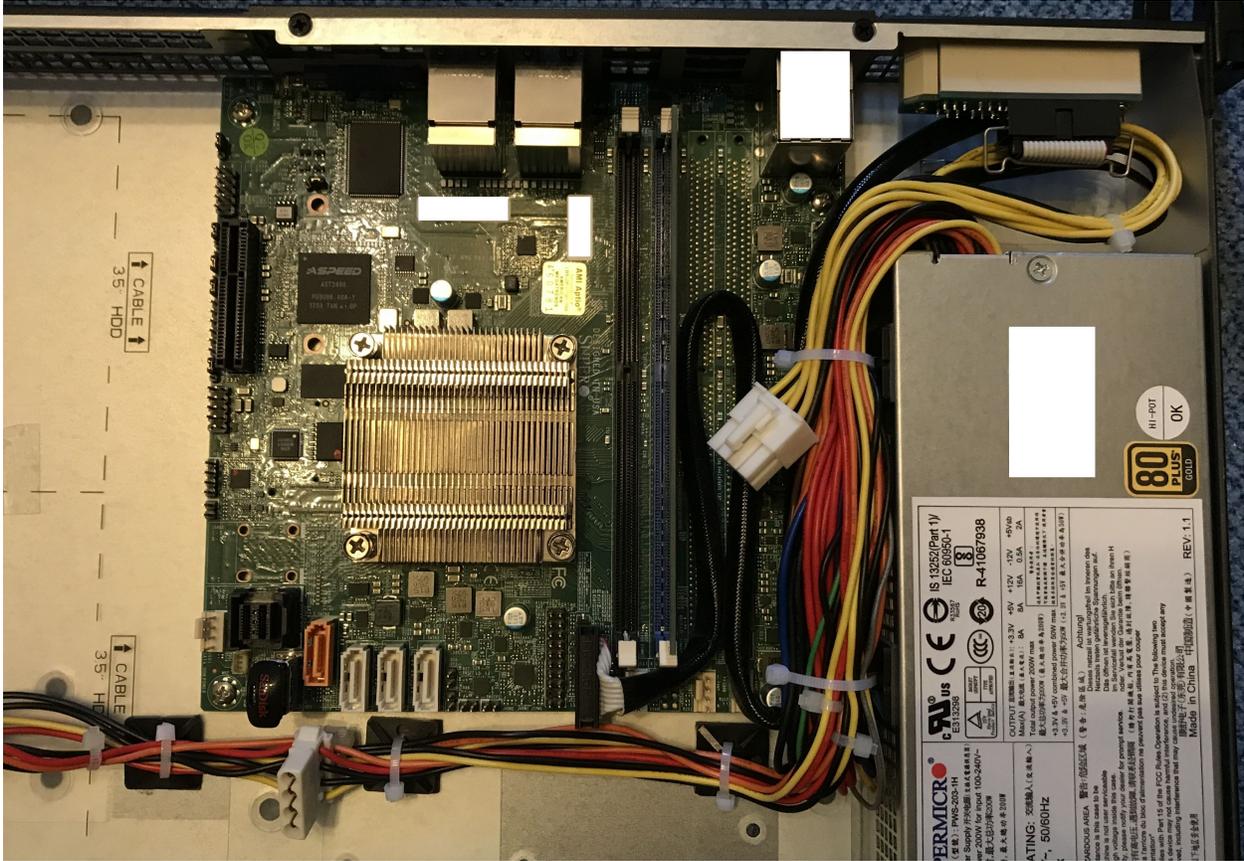
- 1x Supermicro RSC-RR1U-E8 (Riser Card)
- 1x Supermicro MCP-120-00063-0N (Riser Card Bracket)

Latest VyOS rolling releases boot without any problem on this board. You also receive a nice IPMI interface realized with an ASPEED AST2400 BMC (no information about [OpenBMC](#) so far on this motherboard).

## Pictures













## 4.4.2 PC Engines APU4

As this platform seems to be quite common in terms of noise, cost, power and performance it makes sense to write a small installation manual.

This guide was developed using an APU4C4 board with the following specs:

- AMD Embedded G series GX-412TC, 1 GHz quad Jaguar core with 64 bit and AES-NI support, 32K data + 32K instruction cache per core, shared 2MB L2 cache.
- 4 GB DDR3-1333 DRAM, with optional ECC support
- About 6 to 10W of 12V DC power depending on CPU load
- 2 miniPCI express (one with SIM socket for 3G modem).
- 4 Gigabit Ethernet channels using Intel i211AT NICs

The board can be powered via 12V from the front or via a 5V onboard connector.

### Shopping Cart

- 1x apu4c4 = 4 i211AT LAN / AMD GX-412TC CPU / 4 GB DRAM / dual SIM
- 1x Kingston SUV500MS/120G
- 1x VARIA Group Item 326745 19" dual rack for APU4

The 19" enclosure can accommodate up to two APU4 boards - there is a single and dual front cover.

### Extension Modules

#### WiFi

Refer to [WLAN/WIFI - Wireless LAN](#) for additional information, below listed modules have been tested successfully on this Hardware platform:

- Compex WLE900VX mini-PCIe WiFi module, only supported in mPCIe slot 1.
- Intel Corporation AX200 mini-PCIe WiFi module, only supported in mPCIe slot 1. (see [Intel AX200](#))

#### WWAN

Refer to [WWAN - Wireless Wide-Area-Network](#) for additional information, below listed modules have been tested successfully on this Hardware platform using VyOS 1.3 (equuleus):

- Sierra Wireless AirPrime MC7304 miniPCIe card (LTE)
- Sierra Wireless AirPrime MC7430 miniPCIe card (LTE)
- Sierra Wireless AirPrime MC7455 miniPCIe card (LTE)
- Sierra Wireless AirPrime MC7710 miniPCIe card (LTE)
- Huawei ME909u-521 miniPCIe card (LTE)



```
set system console device ttyS0 speed 115200
```

**Note:** Once you commit the above changes access to the serial interface is lost until you set your terminal emulator to 115200 8N1 again.

```
vyos@vyos# show system console
device ttyS0 {
  speed 115200
}
```

### VyOS 1.2 (rolling)

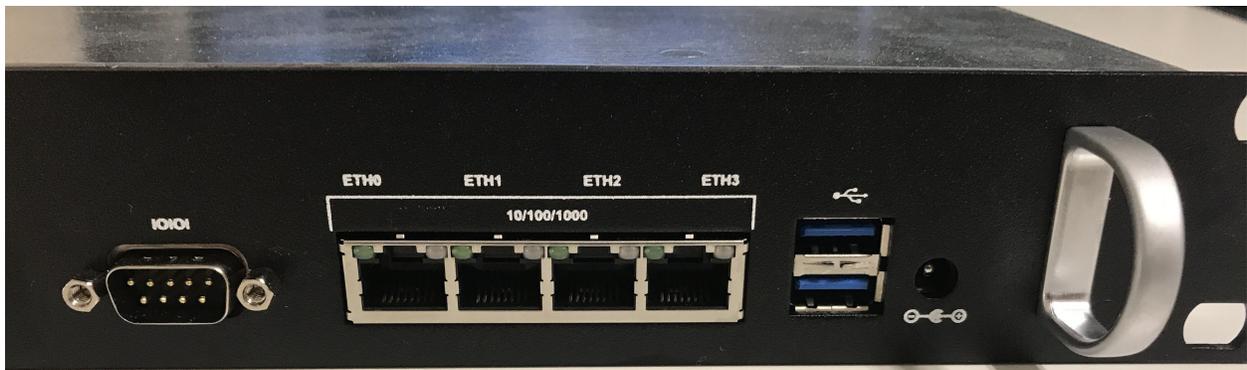
Installing the rolling release on an APU2 board does not require any change on the serial console from your host side as [T1327](#) was successfully implemented.

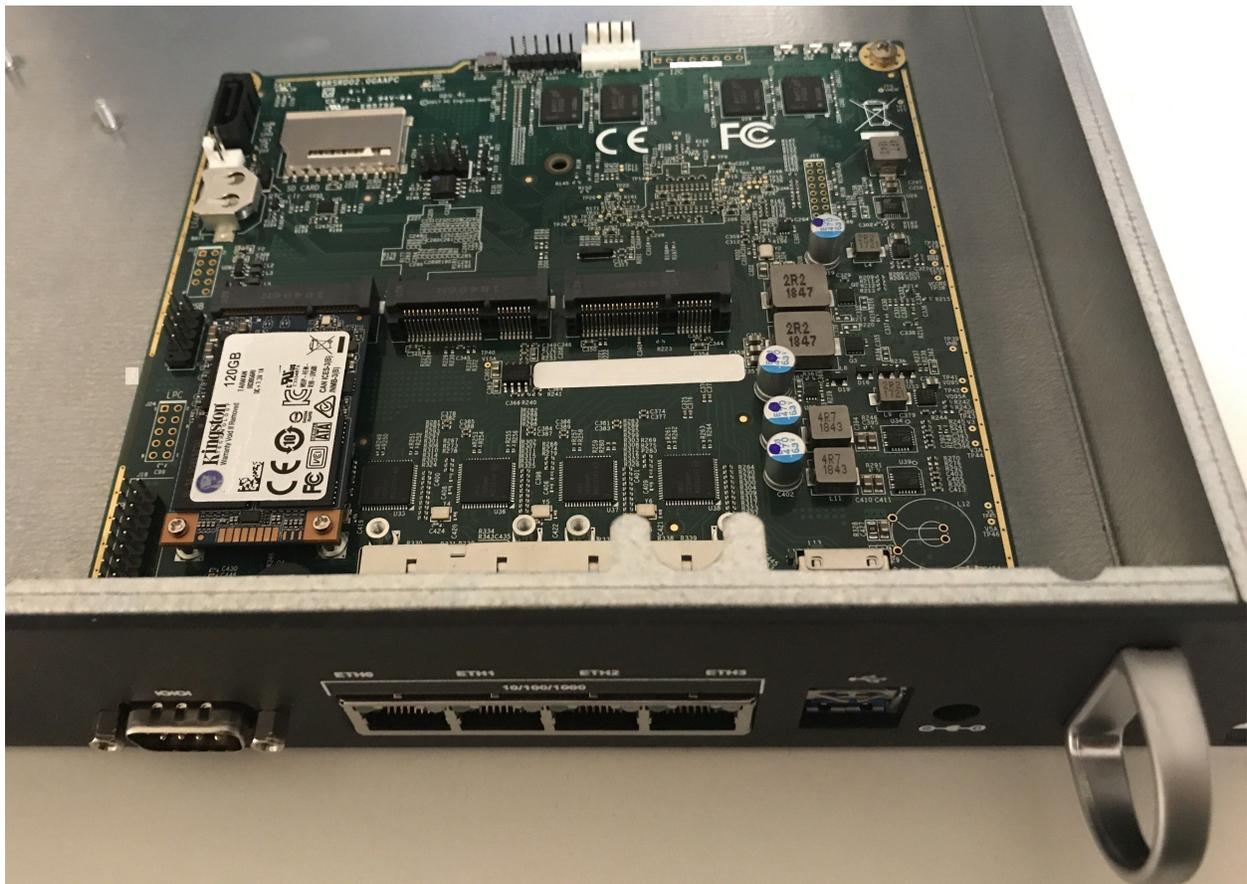
Simply proceed with a regular image installation as described in [Installation](#).

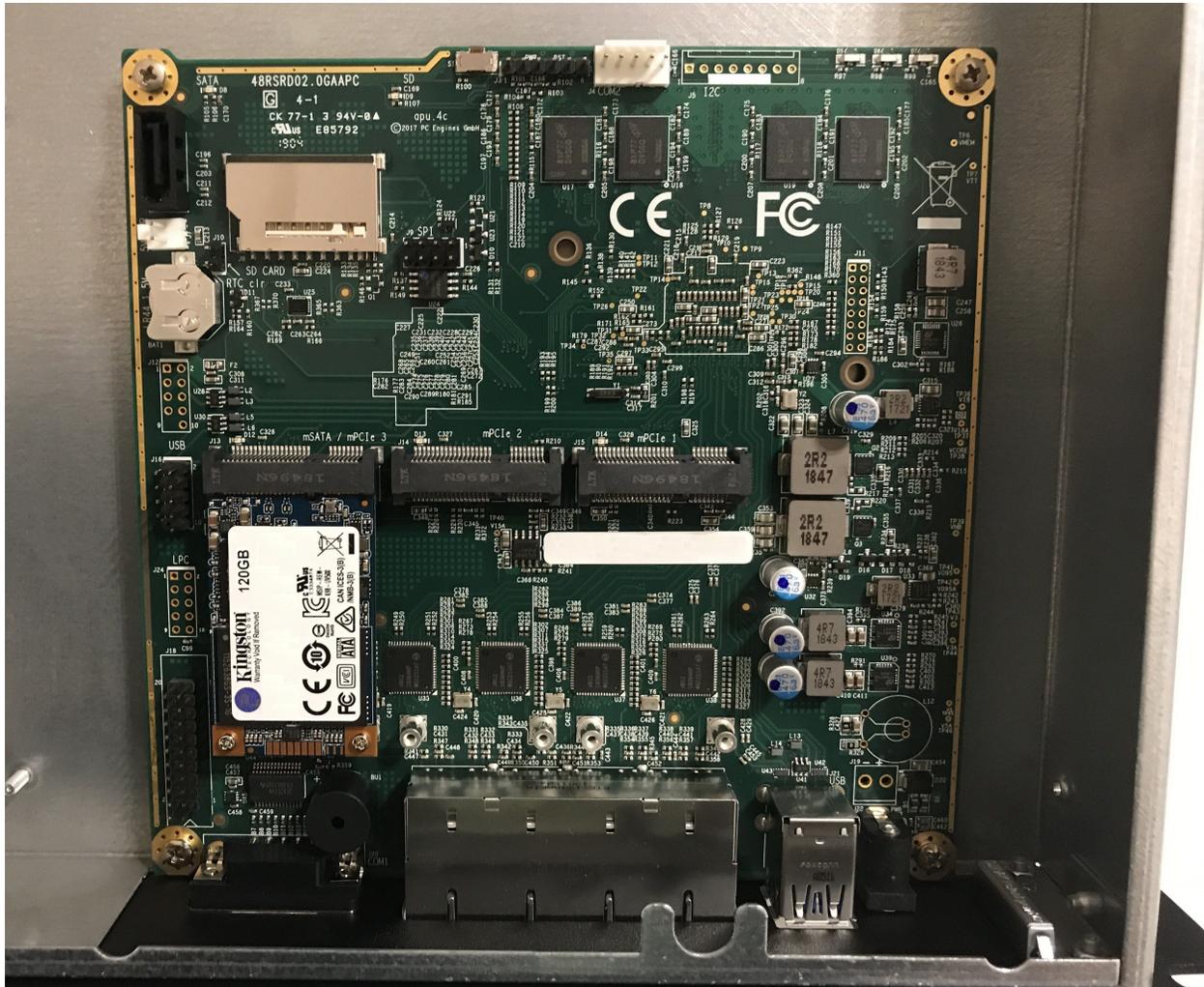
### Pictures

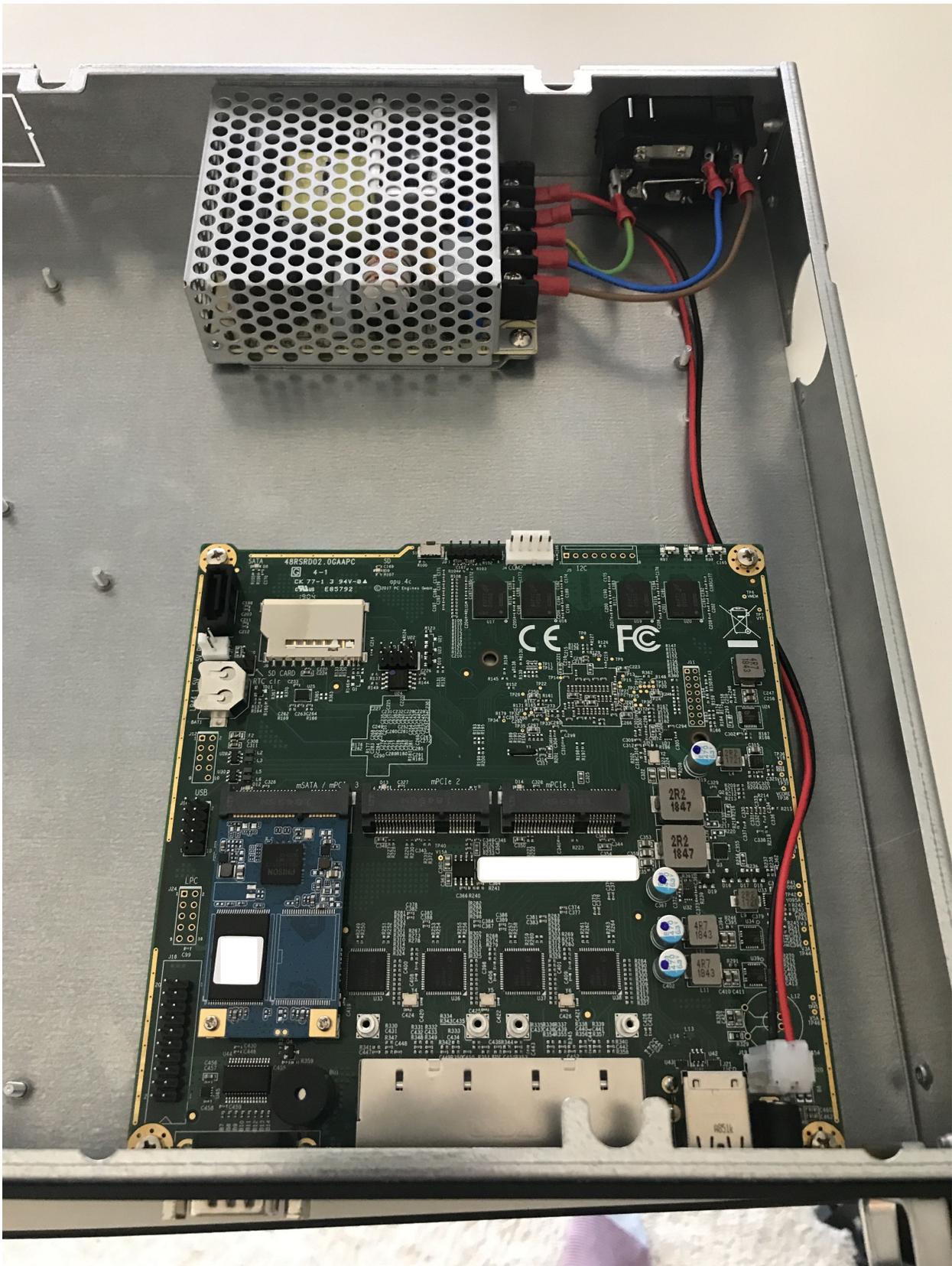
**Note:** Both device types operate without any moving parts and emit zero noise.

### Rack Mount









## VyOS custom print



## Desktop / Bench Top



### 4.4.3 Qotom Q355G4

The install on this Q355G4 box is pretty much plug and play. The port numbering the OS does might differ from the labels on the outside, but the UEFI firmware has a port blink test built in with MAC addresses so you can very quickly identify which is which. MAC labels are on the inside as well, and this test can be done from VyOS or plain Linux too. Default settings in the UEFI will make it boot, but depending on your installation wishes (i.e. storage type, boot type, console type) you might want to adjust them. This Qotom company seems to be the real OEM/ODM for many other relabelling companies like Protectli.





## Hardware

There are a number of other options, but they all seem to be close to Intel reference designs, with added features like more serial ports, more network interfaces and the likes. Because they don't deviate too much from standard designs all the hardware is well-supported by mainline. It accepts one LPDDR3 SO-DIMM, but chances are that if you need more than that, you'll also want something even beefier than an i5. There are options for antenna holes, and SIM slots, so you could in theory add an LTE/Cell modem (not tested so far).

The chassis is a U-shaped alu extrusion with removable I/O plates and removable bottom plate. Cooling is completely passive with a heatsink on the SoC with internal and external fins, a flat interface surface, thermal pad on top of that, which then directly attaches to the chassis, which has fins as well. It comes with mounting hardware and rubber feet, so you could place it like a desktop model or mount it on a VESA mount, or even wall mount it with the provided mounting plate. The closing plate doubles as internal 2.5" mounting place for an HDD or SSD, and comes supplied with a small SATA cable and SATA power cable.

Power supply is a 12VDC barrel jack, and included switching power supply, which is why SATA power regulation is on-board. Internally it has a NUC-board-style on-board 12V input header as well, the molex locking style.

There are WDT options and auto-boot on power enable, which is great for remote setups. Firmware is reasonably secure (no backdoors found, BootGuard is enabled in enforcement mode, which is good but also means no coreboot option), yet has most options available to configure (so it's not locked out like most firmwares are).

An external RS232 serial port is available, internally a GPIO header as well. It does have Realtek based audio on board for some reason, but you can disable that. Booting works on both USB2 and USB3 ports. Switching between serial BIOS mode and HDMI BIOS mode depends on what is connected at startup; it goes into serial mode if you disconnect HDMI and plug in serial, in all other cases it's HDMI mode.

#### 4.4.4 Partaker i5



I believe this is actually the same hardware as the Protectli. I purchased it in June 2018. It came pre-loaded with pfSense.

[Manufacturer product page.](#)

#### Installation

- Write VyOS ISO to USB drive of some sort
- Plug in VGA, power, USB keyboard, and USB drive
- Press “SW” button on the front (this is the power button; I don’t know what “SW” is supposed to mean).
- Begin rapidly pressing delete on the keyboard. The boot prompt is very quick, but with a few tries you should be able to get into the BIOS.
- Chipset > South Bridge > USB Configuration: set XHCI to Disabled and USB 2.0 (EHCI) to Enabled. Without doing this, the USB drive won’t boot.
- Boot to the VyOS installer and install as usual.

Warning the interface labels on my device are backwards; the left-most “LAN4” port is eth0 and the right-most “LAN1” port is eth3.

#### 4.4.5 Acrosser AND-J190N1

This microbox network appliance was build to create OpenVPN bridges. It can saturate a 100Mbps link. It is a small (serial console only) PC with 6 Gb LAN

You may have to add your own RAM and HDD/SSD. There is no VGA connector. But Acrosser provides a DB25 adapter for the VGA header on the motherboard (not used).



### BIOS Settings:

First thing you want to do is getting a more user friendly console to configure BIOS. Default VT100 brings a lot of issues. Configure VT100+ instead.

For practical issues change speed from 115200 to 9600. 9600 is the default speed at which both linux kernel and VyOS will reconfigure the serial port when loading.

Connect to serial (115200bps). Power on the appliance and press Del in the console when requested to enter BIOS settings.

Advanced > Serial Port Console Redirection > Console Redirection Settings:

- Terminal Type : VT100+
- Bits per second : 9600

Save, reboot and change serial speed to 9600 on your client.

Some options have to be changed for VyOS to boot correctly. With XHCI enabled the installer can't access the USB key. Enable EHCI instead.

Reboot into BIOS, Chipset > South Bridge > USB Configuration:

- Disable XHCI
- Enable USB 2.0 (EHCI) Support

## Install VyOS:

Create a VyOS bootable USB key. I used the 64-bit ISO (VyOS 1.1.7) and [LinuxLive USB Creator](#).

I'm not sure if it helps the process but I changed default option to live-serial (line "default xxxx") on the USB key under `syslinux/syslinux.cfg`.

I connected the key to one black USB port on the back and powered on. The first VyOS screen has some readability issues. Press **Enter** to continue.

Then VyOS should boot and you can perform the `install image`

## 4.5 Update VyOS

New system images can be added using the `add system image` command. The command will extract the chosen image and will prompt you to use the current system configuration and SSH security keys, allowing for the new image to boot using the current configuration.

---

**Note:** Only LTS releases are PGP-signed.

---

**add system image** <url | path> | [latest] [vrf name] [username user [password pass]]

Use this command to install a new system image. You can reach the image from the web (`http://`, `https://`) or from your local system, e.g. `/tmp/vyos-1.2.3-amd64.iso`.

The `add system image` command also supports installing new versions of VyOS through an optional given VRF. Also if URL in question requires authentication, you can specify an optional username and password via the commandline which will be passed as "Basic-Auth" to the server.

If there is not enough **free disk space available**, the installation will be canceled. To delete images use the `delete system image` command.

VyOS configuration is associated to each image, and **each image has a unique copy of its configuration**. This is different than a traditional network router where the configuration is shared across all images.

---

**Note:** If you have any personal files, like some scripts you created, and you don't want them to be lost during the upgrade, make sure those files are stored in `/config` as this directory is always copied to newer installed images.

---

You can access files from a previous installation and copy them to your current image if they were located in the `/config` directory. This can be done using the `copy` command. So, for instance, in order to copy `/config/config.boot` from VyOS 1.2.1 image, you would use the following command:

```
copy file 1.2.1://config/config.boot to /tmp/config.boot.1.2.1
```

### 4.5.1 Example

```
vyos@vyos:~$ add system image https://s3.amazonaws.com/s3-us.vyos.io/rolling/current/
↪vyos-1.4-rolling-202201120317-amd64.iso
Trying to fetch ISO file from https://s3.amazonaws.com/s3-us.vyos.io/rolling/current/
↪vyos-1.4-rolling-202201120317-amd64.iso
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 338M  100 338M    0     0 3837k      0  0:01:30  0:01:30  --:--:-- 3929k
ISO download succeeded.
Checking for digital signature file...
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
  0     0    0     0    0     0      0     0  --:--:--  --:--:--  --:--:--    0
curl: (22) The requested URL returned error: 404 Not Found

Unable to fetch digital signature file.
Do you want to continue without signature check? (yes/no) [yes]
Checking MD5 checksums of files on the ISO image...OK.
Done!

What would you like to name this image? [vyos-1.3-rolling-201912201452]:
OK. This image will be named: vyos-1.3-rolling-201912201452
```

You can use `latest` option. It loads the latest available Rolling release.

```
vyos@vyos:~$ add system image latest
```

---

**Note:** To use the `latest` option the “system update-check url” must be configured.

---

**Hint:** The most up-do-date Rolling Release for AMD64 can be accessed using the following URL:

<https://vyos.net/get/nightly-builds/>

---

After reboot you might want to verify the version you are running with the `show version` command.

## 4.6 Image Management

The VyOS image-based installation is implemented by creating a directory for each image on the storage device selected during the install process.

The directory structure of the boot device:

```
/
/boot
/boot/grub
/boot/1.2.0-rolling+201810021347
```

The image directory contains the system kernel, a compressed image of the root filesystem for the OS, and a directory for persistent storage, such as configuration. On boot, the system will extract the OS image into memory and mount the appropriate live-rw sub-directories to provide persistent storage system configuration.

This process allows for a system to always boot to a known working state, as the OS image is fixed and non-persistent. It also allows for multiple releases of VyOS to be installed on the same storage device. The image can be selected manually at boot if needed, but the system will otherwise boot the image configured to be the default.

### show system image

List all available system images which can be booted on the current system.

```
vyos@vyos:~$ show system image
The system currently has the following image(s) installed:

 1: 1.2.0-rolling+201810021347 (default boot)
 2: 1.2.0-rolling+201810021217
 3: 1.2.0-rolling+201809252218
```

### delete system image [image-name]

Delete no longer needed images from the system. You can specify an optional image name to delete, the image name can be retrieved via a list of available images can be shown using the `show system image`.

```
vyos@vyos:~$ delete system image
The following image(s) can be deleted:

 1: 1.3-rolling-201912181733 (default boot) (running image)
 2: 1.3-rolling-201912180242
 3: 1.2.2
 4: 1.2.1

Select the image to delete: 2

Are you sure you want to delete the
"1.3-rolling-201912180242" image? (Yes/No) [No]: y
Deleting the "1.3-rolling-201912180242" image...
Done
```

### show version

Show current system image version.

```
vyos@vyos:~$ show version
Version:          VyOS 1.3-rolling-201912181733
Built by:         autobuild@vyos.net
Built on:         Wed 18 Dec 2019 17:33 UTC
Build UUID:       bccde2c3-261c-49cc-b421-9b257204e06c
Build Commit ID: f7ce0d8a692f2d

Architecture:    x86_64
Boot via:         installed image
System type:      bare metal

Hardware vendor:  VMware, Inc.
Hardware model:   VMware Virtual Platform
```

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Hardware S/N:	VMware-42 1d 83 b9 fe c1 bd b2-7d 3d 49 db 94 18 f5 c9
Hardware UUID:	b9831d42-c1fe-b2bd-7d3d-49db9418f5c9
Copyright:	VyOS maintainers and contributors

## 4.6.1 System rollback

If you need to rollback to a previous image, you can easily do so. First check the available images through the `show system image` command and then select your image with the following command:

```
set system image default-boot [image-name]
```

Select the default boot image which will be started on the next boot of the system.

Then reboot the system.

---

**Note:** VyOS automatically associates the configuration to the image, so you don't need to worry about that. Each image has a unique copy of its configuration.

---

If you have access to the console, there is another way to select your booting image: reboot and use the GRUB menu at startup.

## 4.7 Migrate from Vyatta Core

VyOS 1.x line aims to preserve backward compatibility and provide a safe upgrade path for existing Vyatta Core users. You may think of VyOS 1.0.0 as VC7.0.

### 4.7.1 Vyatta release compatibility

Vyatta Core releases from 6.5 to 6.6 should be 100% compatible.

Vyatta Core 6.4 and earlier may have incompatibilities. In Vyatta 6.5 the “modify” firewall was removed and replaced with the `set policy route` command family, old configs can not be automatically converted. You will have to adapt it to post-6.5 Vyatta syntax manually.

---

**Note:** Also, in Vyatta Core 6.5 remote access VPN interfaces have been renamed from `pppX` to `l2tpX` and `pptpX`. If you are using zone based firewalling in Vyatta Core pre-6.5 versions, make sure to change interface names in rules for remote access VPN.

---



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```
tviM6PRTVPrFcxijNeXiIMHZYrALYUvXxXGp1IZBP3IcOyuZnp2WLqF/f9a3cIr1
9b/LJPrwopGqV3K30lormk7hH0s3IXbhd0ZYVvRj+5kQ8TFRAFfPwj1ItzjYJmYX
AGJmM9PxJID/4LgWSfQ/ZfNu7MJ7+2goQLu9b6x7UC1F1E4q11cjBvHjVPM//S9G
lGAHaysyTjVu88W2wwBpBr01MQnDvqFRddXPOIWp0jecBMUd4E0fB36yuStsXZT3
RN4V8vKRBYXuqHhiTwZeh153cHZk2EZBwz5A6DJubMaGdJTesHW5Qf2goph0pmjC
+XuXn8J6tc5nFDf8DP4AFVMTqa3Brj2fodWd0Zzqx3AVsbX144c1oqJUh04t3+ie
8fD/6/jx4iuPCQTfyhHG+zGfyUb2LQ+OVLW1WYTxH5tzHaZUmZfV2I1kuhuvZ1t
WRlmTnHZOnEb3+t8KCRWzRMfweTzXfRRKBC0/QpeX1r5pbaMHH8zF/J5PKmL0+jg
+DSJsbSfv7Ke6rplf71HYaDumAFZfxXuQkajzLZbX0E5Xu5BNz4Vq6LGBj7LDXL
gswIK8FFgZB+W8zw0qUV1vjIr9wkdLiFXezKpTeYpFDGLdfsK+uNAtGyvI61TDi
Pr6fWpIruuc7Gg9rUF0L
=VQTr
-----END PGP PUBLIC KEY BLOCK-----
```

Next add the VyOS image.

This example uses VyOS 1.0.0, however, it's better to install the latest release.

```
vyatta@vyatta:~$ show system image
The system currently has the following image(s) installed:
  1: VC6.6R1 (default boot) (running image)

vyatta@vyatta:~$ add system image https://downloads.vyos.io/release/legacy/1.0.0/vyos-1.
->0.0-amd64.iso
Trying to fetch ISO file from https://downloads.vyos.io/release/legacy/1.0.0/vyos-1.0.0-
->amd64.iso
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 223M 100 223M    0     0   960k      0  0:03:57  0:03:57  ---:---:-- 657k
ISO download succeeded.
Checking for digital signature file...
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100  836 100  836    0     0   4197      0  --:--:--  --:--:--  --:--:--  4287
Found it. Checking digital signature...
gpg: directory `/root/.gnupg' created
gpg: new configuration file `/root/.gnupg/gpg.conf' created
gpg: WARNING: options in `/root/.gnupg/gpg.conf' are not yet active during this run
gpg: keyring `/root/.gnupg/pubring.gpg' created
gpg: Signature made Sun Dec 22 16:51:42 2013 GMT using RSA key ID A442E6E9
gpg: /root/.gnupg/trustdb.gpg: trustdb created
gpg: Good signature from "SO3 Group Maintainers <maintainers@so3group.net>"
gpg: WARNING: This key is not certified with a trusted signature!
gpg:          There is no indication that the signature belongs to the owner.
Primary key fingerprint: DD5B B405 35E7 F6E3 4278 1ABF B744 E25A A442 E6E9
Digital signature is valid.
Checking MD5 checksums of files on the ISO image...OK.
Done!

What would you like to name this image? [1.0.0]: [return]
OK. This image will be named: 1.0.0
Installing "1.0.0" image.
Copying new release files...
```

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```
Would you like to save the current configuration
directory and config file? (Yes/No) [Yes]: [return]
Copying current configuration...

Would you like to save the SSH host keys from your
current configuration? (Yes/No) [Yes]: [return]
Copying SSH keys...
Setting up grub configuration...
Done.

vyatta@vyatta:~$ show system image
The system currently has the following image(s) installed:

  1: 1.0.0 (default boot)
  2: VC6.6R1 (running image)
```

Upon reboot, you should have a working installation of VyOS.

You can go back to your Vyatta install using the `set system image default-boot` command and selecting the your previous Vyatta Core image.

---

**Note:** Future releases of VyOS will break the direct upgrade path from Vyatta core. Please upgrade through an intermediate VyOS version e.g. VyOS 1.2. After this you can continue upgrading to newer releases once you bootet into VyOS 1.2 once.

---

## QUICK START

This chapter will guide you on how to get up to speed quickly using your new VyOS system. It will show you a very basic configuration example that will provide a *NAT* gateway for a device with two network interfaces (*eth0* and *eth1*).

### 5.1 Configuration Mode

By default, VyOS is in operational mode, and the command prompt displays a `$`. To configure VyOS, you will need to enter configuration mode, resulting in the command prompt displaying a `#`, as demonstrated below:

```
vyos@vyos$ configure
vyos@vyos#
```

### 5.2 Commit and Save

After every configuration change, you need to apply the changes by using the following command:

```
commit
```

Once your configuration works as expected, you can save it permanently by using the following command:

```
save
```

### 5.3 Interface Configuration

- Your outside/WAN interface will be *eth0*. It will receive its interface address via DHCP.
- Your internal/LAN interface will be *eth1*. It will use a static IP address of `192.168.0.1/24`.

After switching to *Configuration Mode* issue the following commands:

```
set interfaces ethernet eth0 address dhcp
set interfaces ethernet eth0 description 'OUTSIDE'
set interfaces ethernet eth1 address '192.168.0.1/24'
set interfaces ethernet eth1 description 'LAN'
```

## 5.4 SSH Management

After switching to *Configuration Mode* issue the following commands, and your system will listen on every interface for incoming SSH connections. You might want to check the *SSH* chapter on how to listen on specific addresses only.

```
set service ssh port '22'
```

## 5.5 DHCP/DNS quick-start

The following settings will configure DHCP and DNS services on your internal/LAN network, where VyOS will act as the default gateway and DNS server.

- The default gateway and DNS recursor address will be 192.168.0.1/24
- The address range 192.168.0.2/24 - 192.168.0.8/24 will be reserved for static assignments
- DHCP clients will be assigned IP addresses within the range of 192.168.0.9 - 192.168.0.254 and have a domain name of `internal-network`
- DHCP leases will hold for one day (86400 seconds)
- VyOS will serve as a full DNS recursor, replacing the need to utilize Google, Cloudflare, or other public DNS servers (which is good for privacy)
- Only hosts from your internal/LAN network can use the DNS recursor

```
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 option default-
↪router '192.168.0.1'
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 option name-server
↪'192.168.0.1'
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 option domain-name
↪'vyos.net'
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 lease '86400'
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 range 0 start '192.
↪168.0.9'
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 range 0 stop '192.
↪168.0.254'
set service dhcp-server shared-network-name LAN subnet 192.168.0.0/24 subnet-id '1'

set service dns forwarding cache-size '0'
set service dns forwarding listen-address '192.168.0.1'
set service dns forwarding allow-from '192.168.0.0/24'
```

## 5.6 NAT

The following settings will configure *SNAT* rules for our internal/LAN network, allowing hosts to communicate through the outside/WAN network via IP masquerade.

```
set nat source rule 100 outbound-interface name 'eth0'
set nat source rule 100 source address '192.168.0.0/24'
set nat source rule 100 translation address masquerade
```

## 5.7 Firewall

A new firewall structure—which uses the `nftables` backend, rather than `iptables`—is available on all installations starting from VyOS 1.4-rolling-202308040557. The firewall supports creation of distinct, interlinked chains for each `Netfilter` hook and allows for more granular control over the packet filtering process.

The firewall begins with the base `filter` tables you define for each of the `forward`, `input`, and `output` `Netfilter` hooks. Each of these tables is populated with rules that are processed in order and can jump to other chains for more granular filtering.

### 5.7.1 Configure Firewall Groups

To make firewall configuration easier, we can create groups of interfaces, networks, addresses, ports, and domains that describe different parts of our network. We can then use them for filtering within our firewall rulesets, allowing for more concise and readable configuration.

In this case, we will create two interface groups — a `WAN` group for our interfaces connected to the public internet and a `LAN` group for the interfaces connected to our internal network. Additionally, we will create a network group, `NET-INSIDE-v4`, that contains our internal subnet.

```
set firewall group interface-group WAN interface eth0
set firewall group interface-group LAN interface eth1
set firewall group network-group NET-INSIDE-v4 network '192.168.0.0/24'
```

### 5.7.2 Configure Stateful Packet Filtering

With the new firewall structure, we have have a lot of flexibility in how we group and order our rules, as shown by the three alternative approaches below.

#### Option 1: Global State Policies

Using options defined in `set firewall global-options state-policy`, state policy rules that applies for both IPv4 and IPv6 are created. These global state policies also applies for all traffic that passes through the router (transit) and for traffic originated/destinated to/from the router itself, and will be evaluated before any other rule defined in the firewall.

Most installations would choose this option, and will contain:

```
set firewall global-options state-policy established action accept
set firewall global-options state-policy related action accept
set firewall global-options state-policy invalid action drop
```

## Option 2: Common/Custom Chain

We can create a common chain for stateful connection filtering of multiple interfaces (or multiple netfilter hooks on one interface). Those individual chains can then jump to the common chain for stateful connection filtering, returning to the original chain for further rule processing if no action is taken on the packet.

The chain we will create is called `CONN_FILTER` and has three rules:

- A default action of `return`, which returns the packet back to the original chain if no action is taken.
- A rule to `accept` packets from established and related connections.
- A rule to `drop` packets from invalid connections.

```
set firewall ipv4 name CONN_FILTER default-action 'return'

set firewall ipv4 name CONN_FILTER rule 10 action 'accept'
set firewall ipv4 name CONN_FILTER rule 10 state established
set firewall ipv4 name CONN_FILTER rule 10 state related

set firewall ipv4 name CONN_FILTER rule 20 action 'drop'
set firewall ipv4 name CONN_FILTER rule 20 state invalid
```

Then, we can jump to the common chain from both the `forward` and `input` hooks as the first filtering rule in the respective chains:

```
set firewall ipv4 forward filter rule 10 action 'jump'
set firewall ipv4 forward filter rule 10 jump-target CONN_FILTER

set firewall ipv4 input filter rule 10 action 'jump'
set firewall ipv4 input filter rule 10 jump-target CONN_FILTER
```

## Option 3: Per-Hook Chain

Alternatively, you can take the more traditional stateful connection filtering approach by creating rules on each base hook's chain:

```
set firewall ipv4 forward filter rule 5 action 'accept'
set firewall ipv4 forward filter rule 5 state established
set firewall ipv4 forward filter rule 5 state related
set firewall ipv4 forward filter rule 10 action 'drop'
set firewall ipv4 forward filter rule 10 state invalid

set firewall ipv4 input filter rule 5 action 'accept'
set firewall ipv4 input filter rule 5 state established
set firewall ipv4 input filter rule 5 state related
set firewall ipv4 input filter rule 10 action 'drop'
set firewall ipv4 input filter rule 10 state invalid
```

### 5.7.3 Block Incoming Traffic

Now that we have configured stateful connection filtering to allow traffic from established and related connections, we can block all other incoming traffic addressed to our local network.

Create a new chain (OUTSIDE-IN) which will drop all traffic that is not explicitly allowed at some point in the chain. Then, we can jump to that chain from the forward hook when traffic is coming from the WAN interface group and is addressed to our local network.

```
set firewall ipv4 name OUTSIDE-IN default-action 'drop'

set firewall ipv4 forward filter rule 100 action jump
set firewall ipv4 forward filter rule 100 jump-target OUTSIDE-IN
set firewall ipv4 forward filter rule 100 inbound-interface group WAN
set firewall ipv4 forward filter rule 100 destination group network-group NET-INSIDE-v4
```

We should also block all traffic destined to the router itself that isn't explicitly allowed at some point in the chain for the input hook. As we've already configured stateful packet filtering above, we only need to set the default action to drop:

```
set firewall ipv4 input filter default-action 'drop'
```

### 5.7.4 Allow Management Access

We can now configure access to the router itself, allowing SSH access from the inside/LAN network and rate limiting SSH access from the outside/WAN network.

First, create a new dedicated chain (VyOS\_MANAGEMENT) for management access, which returns to the parent chain if no action is taken. Add a rule to accept traffic from the LAN interface group:

```
set firewall ipv4 name VyOS_MANAGEMENT default-action 'return'
```

Configure a rule on the input hook filter to jump to the VyOS\_MANAGEMENT chain when new connections are addressed to port 22 (SSH) on the router itself:

```
set firewall ipv4 input filter rule 20 action jump
set firewall ipv4 input filter rule 20 jump-target VyOS_MANAGEMENT
set firewall ipv4 input filter rule 20 destination port 22
set firewall ipv4 input filter rule 20 protocol tcp
```

Finally, configure the VyOS\_MANAGEMENT chain to accept connection from the LAN interface group while limiting requests coming from the WAN interface group to 4 per minute:

```
set firewall ipv4 name VyOS_MANAGEMENT rule 15 action 'accept'
set firewall ipv4 name VyOS_MANAGEMENT rule 15 inbound-interface group 'LAN'

set firewall ipv4 name VyOS_MANAGEMENT rule 20 action 'drop'
set firewall ipv4 name VyOS_MANAGEMENT rule 20 recent count 4
set firewall ipv4 name VyOS_MANAGEMENT rule 20 recent time minute
set firewall ipv4 name VyOS_MANAGEMENT rule 20 state new
set firewall ipv4 name VyOS_MANAGEMENT rule 20 inbound-interface group 'WAN'

set firewall ipv4 name VyOS_MANAGEMENT rule 21 action 'accept'
```

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```
set firewall ipv4 name VyOS_MANAGEMENT rule 21 state new
set firewall ipv4 name VyOS_MANAGEMENT rule 21 inbound-interface group 'WAN'
```

## 5.7.5 Allow Access to Services

Here we're allowing the router to respond to pings. Then, we can allow access to the DNS recursor we configured earlier, accepting traffic bound for port 53 from all hosts on the NET-INSIDE-v4 network:

```
set firewall ipv4 input filter rule 30 action 'accept'
set firewall ipv4 input filter rule 30 icmp type-name 'echo-request'
set firewall ipv4 input filter rule 30 protocol 'icmp'
set firewall ipv4 input filter rule 30 state new

set firewall ipv4 input filter rule 40 action 'accept'
set firewall ipv4 input filter rule 40 destination port '53'
set firewall ipv4 input filter rule 40 protocol 'tcp_udp'
set firewall ipv4 input filter rule 40 source group network-group NET-INSIDE-v4
```

Finally, we can now configure access to the services running on this router, allowing all connections coming from localhost:

```
set firewall ipv4 input filter rule 50 action 'accept'
set firewall ipv4 input filter rule 50 source address 127.0.0.0/8
```

Commit changes, save the configuration, and exit configuration mode:

```
vyos@vyos# commit
vyos@vyos# save
Saving configuration to '/config/config.boot'...
Done
vyos@vyos# exit
vyos@vyos$
```

## 5.8 Hardening

Especially if you are allowing SSH remote access from the outside/WAN interface, there are a few additional configuration steps that should be taken.

Replace the default vyos system user:

```
set system login user myvyosuser authentication plaintext-password mysecurepassword
```

Set up *Key Based Authentication*:

```
set system login user myvyosuser authentication public-keys myusername@mydesktop type_
↪ssh-rsa
set system login user myvyosuser authentication public-keys myusername@mydesktop key_
↪contents_of_id_rsa.pub
```

Finally, try and SSH into the VyOS install as your new user. Once you have confirmed that your new user can access your router without a password, delete the original vyos user and completely disable password authentication for *SSH*:

```
delete system login user vyos
set service ssh disable-password-authentication
```

As above, commit your changes, save the configuration, and exit configuration mode:

```
vyos@vyos# commit
vyos@vyos# save
Saving configuration to '/config/config.boot'...
Done
vyos@vyos# exit
vyos@vyos$
```

You now should have a simple yet secure and functioning router to experiment with further. Enjoy!

## COMMAND LINE INTERFACE

The VyOS CLI (Command-Line Interface) comprises an operational and a configuration mode.

### 6.1 Operational Mode

Operational mode allows for commands to perform operational system tasks and view system and service status, while configuration mode allows for the modification of system configuration.

The CLI provides a built-in help system. In the CLI the ? key may be used to display available commands. The TAB key can be used to auto-complete commands and will present the help system upon a conflict or unknown value.

For example typing `sh` followed by the TAB key will complete to `show`. Pressing TAB a second time will display the possible sub-commands of the `show` command.

```
vyos@vyos:~$ s[tab]
set  show
```

Example showing possible show commands:

```
vyos@vyos:~$ show [tab]
Possible completions:
  arp          Show Address Resolution Protocol (ARP) information
  bridge       Show bridging information
  cluster      Show clustering information
  configuration Show running configuration
  contrack     Show contrack entries in the contrack table
  contrack-sync
               Show connection syncing information
  date         Show system date and time
  dhcp         Show Dynamic Host Configuration Protocol (DHCP) information
  dhcpv6       Show status related to DHCPv6
  disk         Show status of disk device
  dns          Show Domain Name Server (DNS) information
  file         Show files for a particular image
  firewall     Show firewall information
  flow-accounting
               Show flow accounting statistics
  hardware     Show system hardware details
  history      show command history
  host         Show host information
```

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```
incoming      Show ethernet input-policy information
: q
```

You can scroll up with the keys [Shift]+[PageUp] and scroll down with [Shift]+[PageDown].

When the output of a command results in more lines than can be displayed on the terminal screen the output is paginated as indicated by a : prompt.

**When viewing in page mode the following commands are available:**

- q key can be used to cancel output
- space will scroll down one page
- b will scroll back one page
- return will scroll down one line
- up-arrow and down-arrow will scroll up or down one line at a time respectively
- left-arrow and right-arrow can be used to scroll left or right in the event that the output has lines which exceed the terminal size.

## 6.2 Configuration Mode

To enter configuration mode use the `configure` command:

```
vyos@vyos:~$ configure
[edit]
vyos@vyos:~#
```

---

**Note:** Prompt changes from \$ to #. To exit configuration mode, type `exit`.

---

```
vyos@vyos:~# exit
exit
vyos@vyos:~$
```

See the configuration section of this document for more information on configuration mode.

## CONFIGURATION OVERVIEW

VyOS makes use of a unified configuration file for the entire system's configuration: `/config/config.boot`. This allows easy template creation, backup, and replication of system configuration. A system can thus also be easily cloned by simply copying the required configuration files.

### 7.1 Terminology

A VyOS system has three major types of configurations:

- **Active or running configuration** is the system configuration that is loaded and currently active (used by VyOS). Any change in the configuration will have to be committed to belong to the active/running configuration.
- **Working configuration** is the one that is currently being modified in configuration mode. Changes made to the working configuration do not go into effect until the changes are committed with the `commit` command. At which time the working configuration will become the active or running configuration.
- **Saved configuration** is the one saved to a file using the `save` command. It allows you to keep safe a configuration for future uses. There can be multiple configuration files. The default or “boot” configuration is saved and loaded from the file `/config/config.boot`.

#### 7.1.1 Seeing and navigating the configuration

##### **show configuration**

View the current active configuration, also known as the running configuration, from the operational mode.

```
vyos@vyos:~$ show configuration
interfaces {
  ethernet eth0 {
    address dhcp
    hw-id 00:53:00:00:aa:01
  }
  loopback lo {
  }
}
service {
  ssh {
    port 22
  }
}
system {
```

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```

config-management {
    commit-revisions 20
}
console {
    device ttyS0 {
        speed 9600
    }
}
login {
    user vyos {
        authentication {
            encrypted-password *****
        }
        level admin
    }
}
ntp {
    server 0.pool.ntp.org {
    }
    server 1.pool.ntp.org {
    }
    server 2.pool.ntp.org {
    }
}
syslog {
    global {
        facility all {
            level notice
        }
        facility protocols {
            level debug
        }
    }
}
}

```

By default, the configuration is displayed in a hierarchy like the above example, this is only one of the possible ways to display the configuration. When the configuration is generated and the device is configured, changes are added through a collection of set and delete commands.

### show configuration commands

Get a collection of all the set commands required which led to the running configuration.

```

vyos@vyos:~$ show configuration commands
set interfaces ethernet eth0 address 'dhcp'
set interfaces ethernet eth0 hw-id '00:53:dd:44:3b:0f'
set interfaces loopback 'lo'
set service ssh port '22'
set system config-management commit-revisions '20'
set system console device ttyS0 speed '9600'
set system login user vyos authentication encrypted-password '$6$Vt68...QzF0'
set system login user vyos level 'admin'

```

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```

set system ntp server '0.pool.ntp.org'
set system ntp server '1.pool.ntp.org'
set system ntp server '2.pool.ntp.org'
set system syslog global facility all level 'notice'
set system syslog global facility protocols level 'debug'

```

Both these show commands should be executed when in operational mode, they do not work directly in configuration mode. There is a special way on how to *Access omode from config mode*.

**Hint:** Use the show configuration commands | strip-private command when you want to hide private data. You may want to do so if you want to share your configuration on the [forum](#).

### show configuration json

View the current active configuration in JSON format.

```

{"interfaces": {"ethernet": {"eth0": {"address": ["192.0.2.11/24", "192.0.2.35/24"],
  ↪ "hw-id": "52:54:00:48:a0:c6"}, "eth1": {"address": ["203.0.113.1/24"], "hw-id":
  ↪ "52:54:00:fc:50:0b"}}}, "loopback": {"lo": {}}, "protocols": {"static": {"route":
  ↪ {"0.0.0.0/0": {"next-hop": {"192.0.2.254": {}}}}}}, "service": {"ssh": {"disable-
  ↪ host-validation": {}}, "system": {"config-management": {"commit-revisions": "100
  ↪"}, "console": {"device": {"ttyS0": {"speed": "115200"}}}, "host-name": "r11-vyos
  ↪", "login": {"user": {"vyos": {"authentication": {"encrypted-password": "$6$Vt68..
  ↪.F0", "plaintext-password": "", "public-keys": {"vyos@vyos": {"key": "AAAxxx=",
  ↪ "type": "ssh-rsa"}}}}}}, "name-server": ["203.0.113.254"], "ntp": {"server": {
  ↪ "time1.vyos.net": {}, "time2.vyos.net": {}, "time3.vyos.net": {}}, "syslog": {
  ↪ "global": {"facility": {"all": {"level": "info"}, "protocols": {"level": "debug"}}
  ↪}}, "time-zone": "America/New_York"}}}

```

### show configuration json pretty

View the current active configuration in readable JSON format.

```

{
  "interfaces": {
    "ethernet": {
      "eth0": {
        "address": [
          "192.0.2.11/24",
          "192.0.2.35/24"
        ],
        "hw-id": "52:54:00:48:a0:c6"
      },
      "eth1": {
        "address": [
          "203.0.113.1/24"
        ],
        "hw-id": "52:54:00:fc:50:0b"
      }
    },
    "loopback": {
      "lo": {}
    }
  }
}

```

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```

    }
  },
  "protocols": {
    "static": {
      "route": {
        "0.0.0.0/0": {
          "next-hop": {
            "192.0.2.254": {}
          }
        }
      }
    }
  },
  "service": {
    "ssh": {
      "disable-host-validation": {}
    }
  },
  "system": {
    "config-management": {
      "commit-revisions": "100"
    },
    "console": {
      "device": {
        "ttyS0": {
          "speed": "115200"
        }
      }
    },
    "host-name": "r11-vyos",
    "login": {
      "user": {
        "vyos": {
          "authentication": {
            "encrypted-password": "$6$Vt68...F0",
            "plaintext-password": "",
            "public-keys": {
              "vyos@vyos": {
                "key": "AAAAxxx=",
                "type": "ssh-rsa"
              }
            }
          }
        }
      }
    },
    "name-server": [
      "203.0.113.254"
    ],
    "ntp": {
      "server": {
        "time1.vyos.net": {},

```

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```

        "time2.vyos.net": {},
        "time3.vyos.net": {}
    }
},
"syslog": {
    "global": {
        "facility": {
            "all": {
                "level": "info"
            },
            "protocols": {
                "level": "debug"
            }
        }
    }
},
"time-zone": "America/New_York"
}
}

```

## The config mode

When entering the configuration mode you are navigating inside a tree structure, to enter configuration mode enter the command `configure` when in operational mode.

```

vyos@vyos$ configure
[edit]
vyos@vyos#

```

**Note:** When going into configuration mode, prompt changes from `$` to `#`.

All commands executed here are relative to the configuration level you have entered. You can do everything from the top level, but commands will be quite lengthy when manually typing them.

The current hierarchy level can be changed by the `edit` command.

```

[edit]
vyos@vyos# edit interfaces ethernet eth0

[edit interfaces ethernet eth0]
vyos@vyos#

```

You are now in a sublevel relative to `interfaces ethernet eth0`, all commands executed from this point on are relative to this sublevel. Use either the `top` or `exit` command to go back to the top of the hierarchy. You can also use the `up` command to move only one level up at a time.

### show

The `show` command within configuration mode will show the working configuration indicating line changes with `+` for additions, `>` for replacements and `-` for deletions.

### Example:

```

vyos@vyos:~$ configure
[edit]
vyos@vyos# show interfaces
  ethernet eth0 {
    description MY_OLD_DESCRIPTION
    disable
    hw-id 00:53:dd:44:3b:03
  }
  loopback lo {
  }
[edit]
vyos@vyos# set interfaces ethernet eth0 address dhcp
[edit]
vyos@vyos# set interfaces ethernet eth0 description MY_NEW_DESCRIPTION
[edit]
vyos@vyos# delete interfaces ethernet eth0 disable
[edit]
vyos@vyos# show interfaces
  ethernet eth0 {
+   address dhcp
>   description MY_NEW_DESCRIPTION
-   disable
    hw-id 00:53:dd:44:3b:03
  }
  loopback lo {
  }

```

It is also possible to display all set commands within configuration mode using `show | commands`

```

vyos@vyos# show interfaces ethernet eth0 | commands
set address dhcp
set hw-id 00:53:ad:44:3b:03

```

These commands are also relative to the level you are inside and only relevant configuration blocks will be displayed when entering a sub-level.

```

[edit interfaces ethernet eth0]
vyos@vyos# show
  address dhcp
  hw-id 00:53:ad:44:3b:03

```

Exiting from the configuration mode is done via the `exit` command from the top level, executing `exit` from within a sub-level takes you back to the top level.

```

[edit interfaces ethernet eth0]
vyos@vyos# exit
[edit]
vyos@vyos# exit
Warning: configuration changes have not been saved.

```

## 7.1.2 Editing the configuration

The configuration can be edited by the use of `set` and `delete` commands from within configuration mode.

### set

Use this command to set the value of a parameter or to create a new element.

Configuration commands are flattened from the tree into ‘one-liner’ commands shown in `show configuration` commands from operation mode. Commands are relative to the level where they are executed and all redundant information from the current level is removed from the command entered.

```
[edit]
vyos@vyos# set interface ethernet eth0 address 192.0.2.100/24
```

```
[edit interfaces ethernet eth0]
vyos@vyos# set address 203.0.113.6/24
```

These two commands above are essentially the same, just executed from different levels in the hierarchy.

### delete

To delete a configuration entry use the `delete` command, this also deletes all sub-levels under the current level you’ve specified in the `delete` command. Deleting an entry will also result in the element reverting back to its default value if one exists.

```
[edit interfaces ethernet eth0]
vyos@vyos# delete address 192.0.2.100/24
```

### commit

Any change you do on the configuration, will not take effect until committed using the `commit` command in configuration mode.

```
vyos@vyos# commit
[edit]
vyos@vyos# exit
Warning: configuration changes have not been saved.
vyos@vyos:~$
```

---

**Hint:** You can specify a commit message with `commit comment <message>`.

---

### save

Use this command to preserve configuration changes upon reboot. By default it is stored at `/config/config.boot`. In the case you want to store the configuration file somewhere else, you can add a local path, a SCP address, a FTP address or a TFTP address.

```
vyos@vyos# save
Saving configuration to '/config/config.boot'...
Done
```

```
vyos@vyos# save [tab]
Possible completions:
<Enter>      Save to system config file
```

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```

<file>          Save to file on local machine
scp://<user>:<passwd>@<host>:</file> Save to file on remote machine
ftp://<user>:<passwd>@<host>:</file> Save to file on remote machine
tftp://<host>:</file>          Save to file on remote machine
vyos@vyos# save tftp://192.168.0.100/vyos-test.config.boot
Saving configuration to 'tftp://192.168.0.100/vyos-test.config.boot'...
##### 100.0%
Done

```

**exit [discard]**

Configuration mode can not be exited while uncommitted changes exist. To exit configuration mode without applying changes, the `exit discard` command must be used.

All changes in the working config will thus be lost.

```

vyos@vyos# exit
Cannot exit: configuration modified.
Use 'exit discard' to discard the changes and exit.
[edit]
vyos@vyos# exit discard

```

**commit-confirm <minutes>**

Use this command to temporarily commit your changes and set the number of minutes available for validation. `confirm` must be entered within those minutes, otherwise the system will reboot into the previous configuration. The default value is 10 minutes.

What if you are doing something dangerous? Suppose you want to setup a firewall, and you are not sure there are no mistakes that will lock you out of your system. You can use confirmed commit. If you issue the `commit-confirm` command, your changes will be committed, and if you don't issue the `confirm` command in 10 minutes, your system will reboot into previous config revision.

```

vyos@router# set firewall interface eth0 local name FromWorld
vyos@router# commit-confirm
commit confirm will be automatically reboot in 10 minutes unless confirmed
Proceed? [confirm]y
[edit]
vyos@router# confirm
[edit]

```

---

**Note:** A reboot because you did not enter `confirm` will not take you necessarily to the *saved configuration*, but to the point before the unfortunate commit.

---

**copy**

Copy a configuration element.

You can copy and remove configuration subtrees. Suppose you set up a firewall ruleset `FromWorld` with one rule that allows traffic from specific subnet. Now you want to setup a similar rule, but for different subnet. Change your edit level to `firewall name FromWorld` and use `copy rule 10 to rule 20`, then modify rule 20.

```

vyos@router# show firewall name FromWorld
default-action drop

```

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```

rule 10 {
    action accept
    source {
        address 203.0.113.0/24
    }
}
[edit]
vyos@router# edit firewall name FromWorld
[edit firewall name FromWorld]
vyos@router# copy rule 10 to rule 20
[edit firewall name FromWorld]
vyos@router# set rule 20 source address 198.51.100.0/24
[edit firewall name FromWorld]
vyos@router# commit
[edit firewall name FromWorld]

```

**rename**

Rename a configuration element.

You can also rename config subtrees:

```

vyos@router# rename rule 10 to rule 5
[edit firewall name FromWorld]
vyos@router# commit
[edit firewall name FromWorld]

```

Note that `show` command respects your edit level and from this level you can view the modified firewall ruleset with just `show` with no parameters.

```

vyos@router# show
default-action drop
rule 5 {
    action accept
    source {
        address 203.0.113.0/24
    }
}
rule 20 {
    action accept
    source {
        address 198.51.100.0/24
    }
}

```

**comment <config node> "comment text"**

Add comment as an annotation to a configuration node.

The `comment` command allows you to insert a comment above the `<config node>` configuration section. When shown, comments are enclosed with `/*` and `*/` as open/close delimiters. Comments need to be committed, just like other config changes.

To remove an existing comment from your current configuration, specify an empty string enclosed in double quote marks (`""`) as the comment text.

Example:

```
vyos@vyos# comment firewall all-ping "Yes I know this VyOS is cool"
vyos@vyos# commit
vyos@vyos# show
firewall {
    /* Yes I know this VyOS is cool */
    all-ping enable
    broadcast-ping disable
    ...
}
```

**Note:** An important thing to note is that since the comment is added on top of the section, it will not appear if the `show <section>` command is used. With the above example, the `show firewall` command would return starting after the `firewall {` line, hiding the comment.

### 7.1.3 Access opmode from config mode

When inside configuration mode you are not directly able to execute operational commands.

#### run

Access to these commands are possible through the use of the `run [command]` command. From this command you will have access to everything accessible from operational mode.

Command completion and syntax help with `?` and `[tab]` will also work.

```
[edit]
vyos@vyos# run show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           0.0.0.0/0       u/u
```

### 7.1.4 Managing configurations

VyOS comes with an integrated versioning system for the system configuration. It automatically maintains a backup of every previous configuration which has been committed to the system. The configurations are versioned locally for rollback but they can also be stored on a remote host for archiving/backup reasons.

#### Local Archive

Revisions are stored on disk. You can view, compare and rollback them to any previous revisions if something goes wrong.

#### show system commit

View all existing revisions on the local system.

```
vyos@vyos:~$ show system commit
0 2015-03-30 08:53:03 by vyos via cli
```

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```

1 2015-03-30 08:52:20 by vyos via cli
2 2015-03-26 21:26:01 by root via boot-config-loader
3 2015-03-26 20:43:18 by root via boot-config-loader
4 2015-03-25 11:06:14 by root via boot-config-loader
5 2015-03-25 01:04:28 by root via boot-config-loader
6 2015-03-25 00:16:47 by vyos via cli
7 2015-03-24 23:43:45 by root via boot-config-loader

```

**set system config-management commit-revisions <N>**

You can specify the number of revisions stored on disk. N can be in the range of 0 - 65535. When the number of revisions exceeds the configured value, the oldest revision is removed. The default setting for this value is to store 100 revisions locally.

**Compare configurations**

VyOS lets you compare different configurations.

**compare <saved | N> <M>**

Use this command to spot what the differences are between different configurations.

```

vyos@vyos# compare [tab]
Possible completions:
<Enter> Compare working & active configurations
saved      Compare working & saved configurations
<N>        Compare working with revision N
<N> <M>    Compare revision N with M
Revisions:
 0      2013-12-17 20:01:37 root by boot-config-loader
 1      2013-12-13 15:59:31 root by boot-config-loader
 2      2013-12-12 21:56:22 vyos by cli
 3      2013-12-12 21:55:11 vyos by cli
 4      2013-12-12 21:27:54 vyos by cli
 5      2013-12-12 21:23:29 vyos by cli
 6      2013-12-12 21:13:59 root by boot-config-loader
 7      2013-12-12 16:25:19 vyos by cli
 8      2013-12-12 15:44:36 vyos by cli
 9      2013-12-12 15:42:07 root by boot-config-loader
10     2013-12-12 15:42:06 root by init

```

The command `compare` allows you to compare different type of configurations. It also lets you compare different revisions through the `compare N M` command, where N and M are revision numbers. The output will describe how the configuration N is when compared to M indicating with a plus sign (+) the additional parts N has when compared to M, and indicating with a minus sign (-) the lacking parts N misses when compared to M.

```

vyos@vyos# compare 0 6
[edit interfaces]
+dummy dum1 {
+  address 10.189.0.1/31
+}
[edit interfaces ethernet eth0]
+vif 99 {

```

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```

+   address 10.199.0.1/31
+}
-vif 900 {
-   address 192.0.2.4/24
-}

```

**show system commit diff <number>**

Show commit revision difference.

The command above also lets you see the difference between two commits. By default the difference with the running config is shown.

```

vyos@router# run show system commit diff 4
[edit system]
+ipv6 {
+   disable-forwarding
+}

```

This means four commits ago we did set `system ipv6 disable-forwarding`.

**Rollback Changes**

You can rollback configuration changes using the `rollback` command. This will apply the selected revision and trigger a system reboot.

**rollback <N>**

Rollback to revision N (currently requires reboot)

```

vyos@vyos# compare 1
[edit system]
>host-name vyos-1
[edit]

vyos@vyos# rollback 1
Proceed with reboot? [confirm][y]
Broadcast message from root@vyos-1 (pts/0) (Tue Dec 17 21:07:45 2013):
The system is going down for reboot NOW!

```

**Remote Archive**

VyOS can upload the configuration to a remote location after each call to `commit`. You will have to set the commit-archive location. TFTP, FTP, SCP and SFTP servers are supported. Every time a `commit` is successful the `config.boot` file will be copied to the defined destination(s). The filename used on the remote host will be `config.boot-hostname.YYYYMMDD_HHMMSS`.

**set system config-management commit-archive location <URI>**

Specify remote location of commit archive as any of the below URI (Uniform Resource Identifier)

- `http://<user>:<passwd>@<host>:/<dir>`
- `https://<user>:<passwd>@<host>:/<dir>`
- `ftp://<user>:<passwd>@<host>:/<dir>`

- `sftp://<user>:<passwd>@<host>/<dir>`
- `scp://<user>:<passwd>@<host>:/<dir>`
- `tftp://<host>/<dir>`
- `git+https://<user>:<passwd>@<host>/<path>`

---

**Note:** The number of revisions don't affect the commit-archive.

---



---

**Note:** You may find VyOS not allowing the secure connection because it cannot verify the legitimacy of the remote server. You can use the workaround below to quickly add the remote host's SSH fingerprint to your `~/.ssh/known_hosts` file:

---

```
vyos@vyos# ssh-keyscan <host> >> ~/.ssh/known_hosts
```

## Saving and loading manually

You can use the `save` and `load` commands if you want to manually manage specific configuration files.

When using the `save` command, you can add a specific location where to store your configuration file. And, when needed it, you will be able to load it with the `load` command:

### load <URI>

Use this command to load a configuration which will replace the running configuration. Define the location of the configuration file to be loaded. You can use a path to a local file, an SCP address, an SFTP address, an FTP address, an HTTP address, an HTTPS address or a TFTP address.

```
vyos@vyos# load
Possible completions:
<Enter>                Load from system config file
<file>                 Load from file on local machine
scp://<user>:<passwd>@<host>:/<file>  Load from file on remote machine
sftp://<user>:<passwd>@<host>/<file>  Load from file on remote machine
ftp://<user>:<passwd>@<host>/<file>  Load from file on remote machine
http://<host>/<file>             Load from file on remote machine
https://<host>/<file>            Load from file on remote machine
tftp://<host>/<file>            Load from file on remote machine
```

## Restore Default

In the case you want to completely delete your configuration and restore the default one, you can enter the following command in configuration mode:

```
load /opt/vyatta/etc/config.boot.default
```

You will be asked if you want to continue. If you accept, you will have to use `commit` if you want to make the changes active.

Then you may want to `save` in order to delete the saved configuration too.

---

**Note:** If you are remotely connected, you will lose your connection. You may want to copy first the config, edit it to ensure connectivity, and load the edited config.

---

## CONFIGURATION GUIDE

The following structure represent the cli structure.

### 8.1 Container

The VyOS container implementation is based on *Podman*<<https://podman.io/>> as a daemonless container engine.

#### 8.1.1 Configuration

**set container name <name> image**

Sets the image name in the hub registry

```
set container name mysql-server image mysql:8.0
```

If a registry is not specified, Docker.io will be used as the container registry unless an alternative registry is specified using **set container registry <name>** or the registry is included in the image name

```
set container name mysql-server image quay.io/mysql:8.0
```

**set container name <name> allow-host-networks**

Allow host networking in a container. The network stack of the container is not isolated from the host and will use the host IP.

The following commands translate to “-net host” when the container is created

---

**Note:** **allow-host-networks** cannot be used with **network**

---

**set container name <name> network <networkname>**

Attaches user-defined network to a container. Only one network must be specified and must already exist.

**set container name <name> network <networkname> address <address>**

Optionally set a specific static IPv4 or IPv6 address for the container. This address must be within the named network prefix.

---

**Note:** The first IP in the container network is reserved by the engine and cannot be used

---

**set container name <name> description <text>**

Set a container description

```
set container name <name> environment <key> value <value>
```

Add custom environment variables. Multiple environment variables are allowed. The following commands translate to “-e key=value” when the container is created.

```
set container name mysql-server environment MYSQL_DATABASE value 'zabbix'
set container name mysql-server environment MYSQL_USER value 'zabbix'
set container name mysql-server environment MYSQL_PASSWORD value 'zabbix_pwd'
set container name mysql-server environment MYSQL_ROOT_PASSWORD value 'root_pwd'
```

```
set container name <name> port <portname> source <portnumber>
```

```
set container name <name> port <portname> destination <portnumber>
```

```
set container name <name> port <portname> protocol <tcp | udp>
```

Publish a port for the container.

```
set container name zabbix-web-nginx-mysql port http source 80
set container name zabbix-web-nginx-mysql port http destination 8080
set container name zabbix-web-nginx-mysql port http protocol tcp
```

```
set container name <name> volume <volumename> source <path>
```

```
set container name <name> volume <volumename> destination <path>
```

Mount a volume into the container

```
set container name coredns volume 'corefile' source /config/coredns/Corefile
set container name coredns volume 'corefile' destination /etc/Corefile
```

```
set container name <name> volume <volumename> mode <ro | rw>
```

Volume is either mounted as rw (read-write - default) or ro (read-only)

```
set container name <name> uid <number>
```

```
set container name <name> gid <number>
```

Set the User ID or Group ID of the container

```
set container name <name> restart [no | on-failure | always]
```

Set the restart behavior of the container.

- **no**: Do not restart containers on exit
- **on-failure**: Restart containers when they exit with a non-zero exit code, retrying indefinitely (default)
- **always**: Restart containers when they exit, regardless of status, retrying indefinitely

```
set container name <name> memory <MB>
```

Constrain the memory available to the container.

Default is 512 MB. Use 0 MB for unlimited memory.

```
set container name <name> device <devicename> source <path>
```

```
set container name <name> device <devicename> destination <path>
```

Add a host device to the container.

```
set container name <name> capability <text>
```

Set container capabilities or permissions.

- **net-admin**: Network operations (interface, firewall, routing tables)
- **net-bind-service**: Bind a socket to privileged ports (port numbers less than 1024)
- **net-raw**: Permission to create raw network sockets
- **setpcap**: Capability sets (from bounded or inherited set)
- **sys-admin**: Administration operations (quotactl, mount, sethostname, setdomainname)
- **sys-time**: Permission to set system clock

**set container name <name> disable**

Disable a container.

## Container Networks

**set container network <name>**

Creates a named container network

**set container network <name> description**

A brief description what this network is all about.

**set container network <name> prefix <ipv4|ipv6>**

Define IPv4 or IPv6 prefix for a given network name. Only one IPv4 and one IPv6 prefix can be used per network name.

**set container network <name> vrf <vme>**

Bind container network to a given VRF instance.

## Container Registry

**set container registry <name>**

Adds registry to list of unqualified-search-registries. By default, for any image that does not include the registry in the image name, VyOS will use docker.io and quay.io as the container registry.

**set container registry <name> disable**

Disable a given container registry

**set container registry <name> authentication username**

**set container registry <name> authentication password**

Some container registries require credentials to be used.

Credentials can be defined here and will only be used when adding a container image to the system.

## 8.1.2 Operation Commands

**add container image <containername>**

Pull a new image for container

**show container**

Show the list of all active containers.

**show container image**

Show the local container images.

**show container log <containername>**

Show logs from a given container

**show container network**

Show a list available container networks

**restart container <containername>**

Restart a given container

**update container image <containername>**

Update container image

**delete container image [image id|all]**

Delete a particular container image based on it's image ID. You can also delete all container images at once.

## 8.1.3 Example Configuration

For the sake of demonstration, [example #1 in the official documentation](#) to the declarative VyOS CLI syntax.

```
set container network zabbix prefix 172.20.0.0/16
set container network zabbix description 'Network for Zabbix component_
↪containers'

set container name mysql-server image mysql:8.0
set container name mysql-server network zabbix

set container name mysql-server environment 'MYSQL_DATABASE' value 'zabbix'
set container name mysql-server environment 'MYSQL_USER' value 'zabbix'
set container name mysql-server environment 'MYSQL_PASSWORD' value 'zabbix_pwd'
set container name mysql-server environment 'MYSQL_ROOT_PASSWORD' value 'root_
↪pwd'

set container name zabbix-java-gateway image zabbix/zabbix-java-gateway:alpine-
↪5.2-latest
set container name zabbix-java-gateway network zabbix

set container name zabbix-server-mysql image zabbix/zabbix-server-mysql:alpine-
↪5.2-latest
set container name zabbix-server-mysql network zabbix
```

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```

set container name zabbix-server-mysql environment 'DB_SERVER_HOST' value
↳ 'mysql-server'
set container name zabbix-server-mysql environment 'MYSQL_DATABASE' value
↳ 'zabbix'
set container name zabbix-server-mysql environment 'MYSQL_USER' value 'zabbix'
set container name zabbix-server-mysql environment 'MYSQL_PASSWORD' value
↳ 'zabbix_pwd'
set container name zabbix-server-mysql environment 'MYSQL_ROOT_PASSWORD' value
↳ 'root_pwd'
set container name zabbix-server-mysql environment 'ZBX_JAVAGATEWAY' value
↳ 'zabbix-java-gateway'

set container name zabbix-server-mysql port zabbix source 10051
set container name zabbix-server-mysql port zabbix destination 10051

set container name zabbix-web-nginx-mysql image zabbix/zabbix-web-nginx-
↳mysql:alpine-5.2-latest
set container name zabbix-web-nginx-mysql network zabbix

set container name zabbix-web-nginx-mysql environment 'MYSQL_DATABASE' value
↳ 'zabbix'
set container name zabbix-web-nginx-mysql environment 'ZBX_SERVER_HOST' value
↳ 'zabbix-server-mysql'
set container name zabbix-web-nginx-mysql environment 'DB_SERVER_HOST' value
↳ 'mysql-server'
set container name zabbix-web-nginx-mysql environment 'MYSQL_USER' value
↳ 'zabbix'
set container name zabbix-web-nginx-mysql environment 'MYSQL_PASSWORD' value
↳ 'zabbix_pwd'
set container name zabbix-web-nginx-mysql environment 'MYSQL_ROOT_PASSWORD'
↳value 'root_pwd'

set container name zabbix-web-nginx-mysql port http source 80
set container name zabbix-web-nginx-mysql port http destination 8080

```

## 8.2 Firewall

As VyOS is based on Linux it leverages its firewall. The Netfilter project created iptables and its successor nftables for the Linux kernel to work directly on packet data flows. This now extends the concept of zone-based security to allow for manipulating the data at multiple stages once accepted by the network interface and the driver before being handed off to the destination (e.g., a web server OR another device).

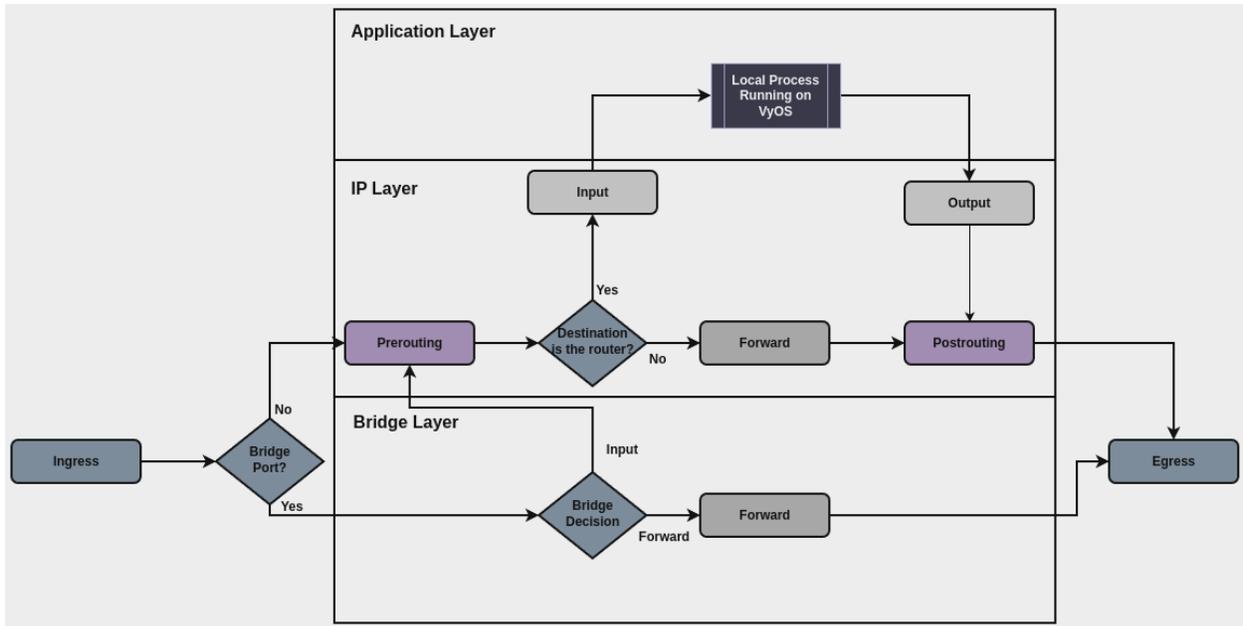
A simplified traffic flow diagram, based on Netfilter packet flow, is shown next, in order to have a full view and understanding of how packets are processed, and what possible paths traffic can take.

The main points regarding this packet flow and terminology used in VyOS firewall are covered below:

- **Bridge Port?:** choose appropriate path based on whether interface where the packet was received is part of a bridge, or not.

If the interface where the packet was received isn't part of a bridge, then packet is processed at the **IP Layer**:

- **Prerouting:** several actions can be done in this stage, and currently these actions are defined in different parts



in VyOS configuration. Order is important, and all these actions are performed before any actions defined under `firewall` section. Relevant configuration that acts in this stage are:

- **Conntrack Ignore:** rules defined under `set system conntrack ignore [ipv4 | ipv6] ....`
- **Policy Route:** rules defined under `set policy [route | route6] ....`
- **Destination NAT:** rules defined under `set [nat | nat66] destination....`
- **Destination is the router?:** choose appropriate path based on destination IP address. Transit forward continues to **forward**, while traffic that destination IP address is configured on the router continues to **input**.
- **Input:** stage where traffic destined for the router itself can be filtered and controlled. This is where all rules for securing the router should take place. This includes ipv4 and ipv6 filtering rules, defined in:
  - `set firewall ipv4 input filter ....`
  - `set firewall ipv6 input filter ....`
- **Forward:** stage where transit traffic can be filtered and controlled. This includes ipv4 and ipv6 filtering rules, defined in:
  - `set firewall ipv4 forward filter ....`
  - `set firewall ipv6 forward filter ....`
- **Output:** stage where traffic that originates from the router itself can be filtered and controlled. Bear in mind that this traffic can be a new connection originated by a internal process running on VyOS router, such as NTP, or a response to traffic received externally through **input** (for example response to an ssh login attempt to the router). This includes ipv4 and ipv6 filtering rules, defined in:
  - `set firewall ipv4 output filter ....`
  - `set firewall ipv6 output filter ....`
- **Postrouting:** as in **Prerouting**, several actions defined in different parts of VyOS configuration are performed in this stage. This includes:
  - **Source NAT:** rules defined under `set [nat | nat66] destination....`

If the interface where the packet was received is part of a bridge, then the packet is processed at the **Bridge Layer**, which contains a basic setup for bridge filtering:

- **Forward (Bridge)**: stage where traffic that is trespassing through the bridge is filtered and controlled:
  - set firewall bridge forward filter ....

The main structure of the VyOS firewall CLI is shown next:

```
- set firewall
  * bridge
    - forward
      + filter
  * flowtable
    - custom_flow_table
      + ...
  * global-options
    + all-ping
    + broadcast-ping
    + ...
  * group
    - address-group
    - ipv6-address-group
    - network-group
    - ipv6-network-group
    - interface-group
    - mac-group
    - port-group
    - domain-group
  * ipv4
    - forward
      + filter
    - input
      + filter
    - output
      + filter
    - name
      + custom_name
  * ipv6
    - forward
      + filter
    - input
      + filter
    - output
      + filter
    - ipv6-name
      + custom_name
  * zone
    - custom_zone_name
    + ...
```

Please, refer to appropriate section for more information about firewall configuration:

## 8.2.1 Global Options Firewall Configuration

### Overview

Some firewall settings are global and have an affect on the whole system. In this section there's useful information about these global-options that can be configured using vyos cli.

Configuration commands covered in this section:

```
set firewall global-options ...
```

### Configuration

```
set firewall global-options all-ping [enable | disable]
```

By default, when VyOS receives an ICMP echo request packet destined for itself, it will answer with an ICMP echo reply, unless you avoid it through its firewall.

With the firewall you can set rules to accept, drop or reject ICMP in, out or local traffic. You can also use the general **firewall all-ping** command. This command affects only to LOCAL (packets destined for your VyOS system), not to IN or OUT traffic.

---

**Note:** **firewall global-options all-ping** affects only to LOCAL and it always behaves in the most restrictive way

---

```
set firewall global-options all-ping enable
```

When the command above is set, VyOS will answer every ICMP echo request addressed to itself, but that will only happen if no other rule is applied dropping or rejecting local echo requests. In case of conflict, VyOS will not answer ICMP echo requests.

```
set firewall global-options all-ping disable
```

When the command above is set, VyOS will answer no ICMP echo request addressed to itself at all, no matter where it comes from or whether more specific rules are being applied to accept them.

```
set firewall global-options broadcast-ping [enable | disable]
```

This setting enable or disable the response of icmp broadcast messages. The following system parameter will be altered:

- net.ipv4.icmp\_echo\_ignore\_broadcasts

```
set firewall global-options ip-src-route [enable | disable]
```

```
set firewall global-options ipv6-src-route [enable | disable]
```

This setting handle if VyOS accept packets with a source route option. The following system parameter will be altered:

- net.ipv4.conf.all.accept\_source\_route
- net.ipv6.conf.all.accept\_source\_route

```
set firewall global-options receive-redirects [enable | disable]
```

```
set firewall global-options ipv6-receive-redirects [enable | disable]
```

enable or disable of ICMPv4 or ICMPv6 redirect messages accepted by VyOS. The following system parameter will be altered:

- `net.ipv4.conf.all.accept_redirects`
- `net.ipv6.conf.all.accept_redirects`

**set firewall global-options send-redirects [enable | disable]**

enable or disable ICMPv4 redirect messages send by VyOS The following system parameter will be altered:

- `net.ipv4.conf.all.send_redirects`

**set firewall global-options log-martians [enable | disable]**

enable or disable the logging of martian IPv4 packets. The following system parameter will be altered:

- `net.ipv4.conf.all.log_martians`

**set firewall global-options source-validation [strict | loose | disable]**

Set the IPv4 source validation mode. The following system parameter will be altered:

- `net.ipv4.conf.all.rp_filter`

**set firewall global-options syn-cookies [enable | disable]**

Enable or Disable if VyOS use IPv4 TCP SYN Cookies. The following system parameter will be altered:

- `net.ipv4.tcp_syncookies`

**set firewall global-options twa-hazards-protection [enable | disable]**

Enable or Disable VyOS to be [RFC 1337](#) conform. The following system parameter will be altered:

- `net.ipv4.tcp_rfc1337`

**set firewall global-options state-policy established action [accept | drop | reject]**

**set firewall global-options state-policy established log**

**set firewall global-options state-policy established log-level [emerg | alert | crit | err | warn | notice | info | debug]**

Set the global setting for an established connection.

**set firewall global-options state-policy invalid action [accept | drop | reject]**

**set firewall global-options state-policy invalid log**

**set firewall global-options state-policy invalid log-level [emerg | alert | crit | err | warn | notice | info | debug]**

Set the global setting for invalid packets.

**set firewall global-options state-policy related action [accept | drop | reject]**

**set firewall global-options state-policy related log**

**set firewall global-options state-policy related log-level [emerg | alert | crit | err | warn | notice | info | debug]**

Set the global setting for related connections.

## 8.2.2 Firewall groups

### Configuration

Firewall groups represent collections of IP addresses, networks, ports, mac addresses, domains or interfaces. Once created, a group can be referenced by firewall, nat and policy route rules as either a source or destination matcher, and/or as inbound/outbound in the case of interface group.

### Address Groups

In an **address group** a single IP address or IP address ranges are defined.

```
set firewall group address-group <name> address [address | address range]
```

```
set firewall group ipv6-address-group <name> address <address>
```

Define a IPv4 or a IPv6 address group

```
set firewall group address-group ADR-INSIDE-v4 address 192.168.0.1
set firewall group address-group ADR-INSIDE-v4 address 10.0.0.1-10.0.0.8
set firewall group ipv6-address-group ADR-INSIDE-v6 address 2001:db8::1
```

```
set firewall group address-group <name> description <text>
```

```
set firewall group ipv6-address-group <name> description <text>
```

Provide a IPv4 or IPv6 address group description

### Network Groups

While **network groups** accept IP networks in CIDR notation, specific IP addresses can be added as a 32-bit prefix. If you foresee the need to add a mix of addresses and networks, the network group is recommended.

```
set firewall group network-group <name> network <CIDR>
```

```
set firewall group ipv6-network-group <name> network <CIDR>
```

Define a IPv4 or IPv6 Network group.

```
set firewall group network-group NET-INSIDE-v4 network 192.168.0.0/24
set firewall group network-group NET-INSIDE-v4 network 192.168.1.0/24
set firewall group ipv6-network-group NET-INSIDE-v6 network 2001:db8::/64
```

```
set firewall group network-group <name> description <text>
```

```
set firewall group ipv6-network-group <name> description <text>
```

Provide an IPv4 or IPv6 network group description.

## Interface Groups

An **interface group** represents a collection of interfaces.

```
set firewall group interface-group <name> interface <text>
```

Define an interface group. Wildcard are accepted too.

```
set firewall group interface-group LAN interface bond1001
set firewall group interface-group LAN interface eth3*
```

```
set firewall group interface-group <name> description <text>
```

Provide an interface group description

## Port Groups

A **port group** represents only port numbers, not the protocol. Port groups can be referenced for either TCP or UDP. It is recommended that TCP and UDP groups are created separately to avoid accidentally filtering unnecessary ports. Ranges of ports can be specified by using -.

```
set firewall group port-group <name> port [portname | portnumber | startport-endport]
```

Define a port group. A port name can be any name defined in /etc/services. e.g.: http

```
set firewall group port-group PORT-TCP-SERVER1 port http
set firewall group port-group PORT-TCP-SERVER1 port 443
set firewall group port-group PORT-TCP-SERVER1 port 5000-5010
```

```
set firewall group port-group <name> description <text>
```

Provide a port group description.

## MAC Groups

A **mac group** represents a collection of mac addresses.

```
set firewall group mac-group <name> mac-address <mac-address>
```

Define a mac group.

```
set firewall group mac-group MAC-G01 mac-address 88:a4:c2:15:b6:4f
set firewall group mac-group MAC-G01 mac-address 4c:d5:77:c0:19:81
```

```
set firewall group mac-group <name> description <text>
```

Provide a mac group description.

## Domain Groups

A **domain group** represents a collection of domains.

```
set firewall group domain-group <name> address <domain>
```

Define a domain group.

```
set firewall group domain-group DOM address example.com
```

```
set firewall group domain-group <name> description <text>
```

Provide a domain group description.

## Examples

As said before, once firewall groups are created, they can be referenced either in firewall, nat, nat66 and/or policy-route rules.

Here is an example where multiple groups are created:

```
set firewall group address-group SERVERS address 198.51.100.101
set firewall group address-group SERVERS address 198.51.100.102
set firewall group network-group TRUSTEDv4 network 192.0.2.0/30
set firewall group network-group TRUSTEDv4 network 203.0.113.128/25
set firewall group ipv6-network-group TRUSTEDv6 network 2001:db8::/64
set firewall group interface-group LAN interface eth2.2001
set firewall group interface-group LAN interface bon0
set firewall group port-group PORT-SERVERS port http
set firewall group port-group PORT-SERVERS port 443
set firewall group port-group PORT-SERVERS port 5000-5010
```

And next, some configuration example where groups are used:

```
set firewall ipv4 input filter rule 10 action accept
set firewall ipv4 input filter rule 10 inbound-interface group !LAN
set firewall ipv4 forward filter rule 20 action accept
set firewall ipv4 forward filter rule 20 source group network-group TRUSTEDv4
set firewall ipv6 input filter rule 10 action accept
set firewall ipv6 input filter rule 10 source-group network-group TRUSTEDv6
set nat destination rule 101 inbound-interface group LAN
set nat destination rule 101 destination group address-group SERVERS
set nat destination rule 101 protocol tcp
set nat destination rule 101 destination group port-group PORT-SERVERS
set nat destination rule 101 translation address 203.0.113.250
set policy route PBR rule 201 destination group port-group PORT-SERVERS
set policy route PBR rule 201 protocol tcp
set policy route PBR rule 201 set table 15
```

## Operation-mode

### show firewall group <name>

Overview of defined groups. You see the type, the members, and where the group is used.

```
vyos@ZBF-15-Clean:~$ show firewall group
Firewall Groups
```

Name	Type	References	Members
SERVERS	address_group	nat-destination-101	198.51.100.101 198.51.100.102
LAN	interface_group	ipv4-input-filter-10 nat-destination-101	bon0 eth2.2001
TRUSTEDv6	ipv6_network_group	ipv6-input-filter-10	2001:db8::/64
TRUSTEDv4	network_group	ipv4-forward-filter-20	192.0.2.0/30 203.0.113.128/25
PORT-SERVERS	port_group	route-PBR-201 nat-destination-101	443 5000-5010 http

```
vyos@ZBF-15-Clean:~$
```

## 8.2.3 Bridge Firewall Configuration

### Note: Documentation under development

#### Overview

In this section there's useful information of all firewall configuration that can be done regarding bridge, and appropriate op-mode commands. Configuration commands covered in this section:

#### set firewall bridge ...

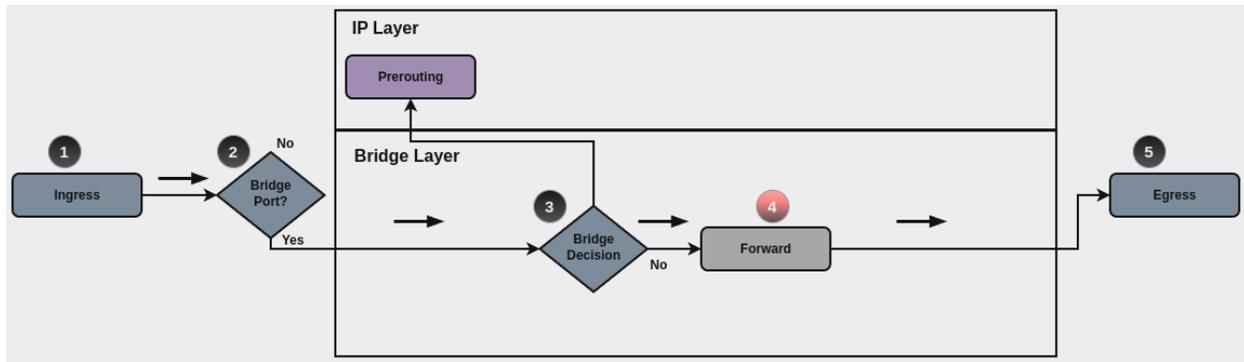
From main structure defined in *Firewall Overview* in this section you can find detailed information only for the next part of the general structure:

```
- set firewall
  * bridge
    - forward
      + filter
    - name
      + custom_name
```

Traffic which is received by the router on an interface which is member of a bridge is processed on the **Bridge Layer**. A simplified packet flow diagram for this layer is shown next:

For traffic that needs to be forwarded internally by the bridge, base chain is is **forward**, and it's base command for filtering is `set firewall bridge forward filter ...`, which happens in stage 4, highlighted with red color.

Custom bridge firewall chains can be create with command `set firewall bridge name <name> ...`. In order to use such custom chain, a rule with action jump, and the appropriate target should be defined in a base chain.



**Note: Layer 3 bridge:** When an IP address is assigned to the bridge interface, and if traffic is sent to the router to this IP (for example using such IP as default gateway), then rules defined for **bridge firewall** won't match, and firewall analysis continues at **IP layer**.

## Bridge Rules

For firewall filtering, firewall rules need to be created. Each rule is numbered, has an action to apply if the rule is matched, and the ability to specify multiple criteria matchers. Data packets go through the rules from 1 - 999999, so order is crucial. At the first match the action of the rule will be executed.

## Actions

If a rule is defined, then an action must be defined for it. This tells the firewall what to do if all criteria matchers defined for such rule do match.

In firewall bridge rules, the action can be:

- **accept:** accept the packet.
- **continue:** continue parsing next rule.
- **drop:** drop the packet.
- **jump:** jump to another custom chain.
- **return:** Return from the current chain and continue at the next rule of the last chain.
- **queue:** Enqueue packet to userspace.

```
set firewall bridge forward filter rule <1-999999> action [accept | continue | drop |
jump | queue | return]
```

```
set firewall bridge name <name> rule <1-999999> action [accept | continue | drop | jump |
queue | return]
```

This required setting defines the action of the current rule. If action is set to jump, then jump-target is also needed.

```
set firewall bridge forward filter rule <1-999999> jump-target <text>
```

```
set firewall bridge name <name> rule <1-999999> jump-target <text>
```

```
set firewall bridge forward filter rule <1-999999> queue <0-65535>
```

```
set firewall bridge name <name> rule <1-999999> queue <0-65535>
```

To be used only when action is set to queue. Use this command to specify queue target to use. Queue range is also supported.

```
set firewall bridge forward filter rule <1-999999> queue-options bypass
```

```
set firewall bridge name <name> rule <1-999999> queue-options bypass
```

To be used only when action is set to queue. Use this command to let packet go through firewall when no userspace software is connected to the queue.

```
set firewall bridge forward filter rule <1-999999> queue-options fanout
```

```
set firewall bridge name <name> rule <1-999999> queue-options fanout
```

To be used only when action is set to queue. Use this command to distribute packets between several queues.

Also, **default-action** is an action that takes place whenever a packet does not match any rule in it's chain. For base chains, possible options for **default-action** are **accept** or **drop**.

```
set firewall bridge forward filter default-action [accept | drop]
```

```
set firewall bridge name <name> default-action [accept | continue | drop | jump | queue | return]
```

This set the default action of the rule-set if no rule matched a packet criteria. If default-action is set to **jump**, then **default-jump-target** is also needed. Note that for base chains, default action can only be set to **accept** or **drop**, while on custom chain, more actions are available.

```
set firewall bridge name <name> default-jump-target <text>
```

To be used only when **default-action** is set to **jump**. Use this command to specify jump target for default rule.

---

**Note: Important note about default-actions:** If default action for any base chain is not defined, then the default action is set to **accept** for that chain. For custom chains, if default action is not defined, then the default-action is set to **drop**.

---

## Firewall Logs

Logging can be enable for every single firewall rule. If enabled, other log options can be defined.

```
set firewall bridge forward filter rule <1-999999> log
```

```
set firewall bridge name <name> rule <1-999999> log
```

Enable logging for the matched packet. If this configuration command is not present, then log is not enabled.

```
set firewall bridge forward filter enable-default-log
```

```
set firewall bridge name <name> enable-default-log
```

Use this command to enable the logging of the default action on the specified chain.

```
set firewall bridge forward filter rule <1-999999> log-options level [emerg | alert | crit | err | warn | notice | info | debug]
```

```
set firewall bridge name <name> rule <1-999999> log-options level [emerg | alert | crit | err | warn | notice | info | debug]
```

Define log-level. Only applicable if rule log is enable.

```
set firewall bridge forward filter rule <1-999999> log-options group <0-65535>
```

```
set firewall bridge name <name> rule <1-999999> log-options group <0-65535>
```

Define log group to send message to. Only applicable if rule log is enable.

```
set firewall bridge forward filter rule <1-999999> log-options snapshot-length <0-9000>
```

```
set firewall bridge name <name> rule <1-999999> log-options snapshot-length <0-9000>
```

Define length of packet payload to include in netlink message. Only applicable if rule log is enable and log group is defined.

```
set firewall bridge forward filter rule <1-999999> log-options queue-threshold <0-65535>
```

```
set firewall bridge name <name> rule <1-999999> log-options queue-threshold <0-65535>
```

Define number of packets to queue inside the kernel before sending them to userspace. Only applicable if rule log is enable and log group is defined.

## Firewall Description

For reference, a description can be defined for every defined custom chain.

```
set firewall bridge name <name> description <text>
```

Provide a rule-set description to a custom firewall chain.

## Rule Status

When defining a rule, it is enable by default. In some cases, it is useful to just disable the rule, rather than removing it.

```
set firewall bridge forward filter rule <1-999999> disable
```

```
set firewall bridge name <name> rule <1-999999> disable
```

Command for disabling a rule but keep it in the configuration.

## Matching criteria

There are a lot of matching criteria against which the packet can be tested.

```
set firewall bridge forward filter rule <1-999999> destination mac-address <mac-address>
```

```
set firewall bridge name <name> rule <1-999999> destination mac-address <mac-address>
```

```
set firewall bridge forward filter rule <1-999999> source mac-address <mac-address>
```

```
set firewall bridge name <name> rule <1-999999> source mac-address <mac-address>
```

Match criteria based on source and/or destination mac-address.

```
set firewall bridge forward filter rule <1-999999> inbound-interface name <iface>
```

```
set firewall bridge name <name> rule <1-999999> inbound-interface name <iface>
```

Match based on inbound interface. Wilcard \* can be used. For example: eth2\*. Prepending character ! for inverted matching criteria is also supported. For example !eth2

```
set firewall bridge forward filter rule <1-999999> inbound-interface group <iface_group>
```

```
set firewall bridge name <name> rule <1-999999> inbound-interface group <iface_group>
```

Match based on inbound interface group. Prepending character ! for inverted matching criteria is also supported.  
For example !IFACE\_GROUP

```
set firewall bridge forward filter rule <1-999999> outbound-interface name <iface>
```

```
set firewall bridge name <name> rule <1-999999> outbound-interface name <iface>
```

Match based on outbound interface. Wildcard \* can be used. For example: eth2\*. Prepending character ! for inverted matching criteria is also supported. For example !eth2

```
set firewall bridge forward filter rule <1-999999> outbound-interface group <iface_group>
```

```
set firewall bridge name <name> rule <1-999999> outbound-interface group <iface_group>
```

Match based on outbound interface group. Prepending character ! for inverted matching criteria is also supported.  
For example !IFACE\_GROUP

```
set firewall bridge forward filter rule <1-999999> vlan id <0-4096>
```

```
set firewall bridge name <name> rule <1-999999> vlan id <0-4096>
```

Match based on vlan ID. Range is also supported.

```
set firewall bridge forward filter rule <1-999999> vlan priority <0-7>
```

```
set firewall bridge name <name> rule <1-999999> vlan priority <0-7>
```

Match based on vlan priority(pcp). Range is also supported.

## Operation-mode Firewall

### Rule-set overview

In this section you can find all useful firewall op-mode commands.

General commands for firewall configuration, counter and statistics:

```
show firewall
```

```
show firewall summary
```

```
show firewall statistics
```

And, to print only bridge firewall information:

```
show firewall bridge
```

```
show firewall bridge forward filter
```

```
show firewall bridge forward filter rule <rule>
```

```
show firewall bridge name <name>
```

```
show firewall bridge name <name> rule <rule>
```

## Show Firewall log

```
show log firewall
show log firewall bridge
show log firewall bridge forward
show log firewall bridge forward filter
show log firewall bridge name <name>
show log firewall bridge forward filter rule <rule>
show log firewall bridge name <name> rule <rule>
```

Show the logs of all firewall; show all bridge firewall logs; show all logs for forward hook; show all logs for forward hook and priority filter; show all logs for particular custom chain; show logs for specific Rule-Set.

## Example

Configuration example:

```
set firewall bridge forward filter default-action 'drop'
set firewall bridge forward filter enable-default-log
set firewall bridge forward filter rule 10 action 'continue'
set firewall bridge forward filter rule 10 inbound-interface name 'eth2'
set firewall bridge forward filter rule 10 vlan id '22'
set firewall bridge forward filter rule 20 action 'drop'
set firewall bridge forward filter rule 20 inbound-interface group 'TRUNK-RIGHT'
set firewall bridge forward filter rule 20 vlan id '60'
set firewall bridge forward filter rule 30 action 'jump'
set firewall bridge forward filter rule 30 jump-target 'TEST'
set firewall bridge forward filter rule 30 outbound-interface name '!eth1'
set firewall bridge forward filter rule 35 action 'accept'
set firewall bridge forward filter rule 35 vlan id '11'
set firewall bridge forward filter rule 40 action 'continue'
set firewall bridge forward filter rule 40 destination mac-address '66:55:44:33:22:11'
set firewall bridge forward filter rule 40 source mac-address '11:22:33:44:55:66'
set firewall bridge name TEST default-action 'accept'
set firewall bridge name TEST enable-default-log
set firewall bridge name TEST rule 10 action 'continue'
set firewall bridge name TEST rule 10 log
set firewall bridge name TEST rule 10 vlan priority '0'
```

And op-mode commands:

```
vyos@BRI:~$ show firewall bridge
Rulesets bridge Information

-----
bridge Firewall "forward filter"

Rule      Action    Protocol  Packets  Bytes  Conditions
-----
↪
```

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```

10      continue all          0          0 iifname "eth2" vlan id 22 continue
20      drop      all          0          0 iifname @I_TRUNK-RIGHT vlan id 60
30      jump     all          2130      170688 oifname != "eth1" jump NAME_TEST
35      accept   all          2080      168616 vlan id 11 accept
40      continue all          0          0 ether daddr 66:55:44:33:22:11 ether_
↪saddr 11:22:33:44:55:66 continue
default drop      all          0          0

-----
bridge Firewall "name TEST"

Rule      Action  Protocol  Packets  Bytes  Conditions
-----
↪-----
10      continue all          2130      170688 vlan pcp 0 prefix "[bri-NAM-TEST-10-
↪C]" continue
default accept   all          2130      170688

vyos@BRI:~$
vyos@BRI:~$ show firewall bridge name TEST
Ruleset Information

-----
bridge Firewall "name TEST"

Rule      Action  Protocol  Packets  Bytes  Conditions
-----
↪-----
10      continue all          2130      170688 vlan pcp 0 prefix "[bri-NAM-TEST-10-
↪C]" continue
default accept   all          2130      170688

vyos@BRI:~$

```

Inspect logs:

```

vyos@BRI:~$ show log firewall bridge
Dec 05 14:37:47 kernel: [bri-NAM-TEST-10-C]IN=eth1 OUT=eth2 ARP HTYPE=1 PTYPE=0x0800_
↪OPCODE=1 MACSRC=50:00:00:04:00:00 IPSRC=10.11.11.101 MACDST=00:00:00:00:00:00 IPDST=10.
↪11.11.102
Dec 05 14:37:48 kernel: [bri-NAM-TEST-10-C]IN=eth1 OUT=eth2 ARP HTYPE=1 PTYPE=0x0800_
↪OPCODE=1 MACSRC=50:00:00:04:00:00 IPSRC=10.11.11.101 MACDST=00:00:00:00:00:00 IPDST=10.
↪11.11.102
Dec 05 14:37:49 kernel: [bri-NAM-TEST-10-C]IN=eth1 OUT=eth2 ARP HTYPE=1 PTYPE=0x0800_
↪OPCODE=1 MACSRC=50:00:00:04:00:00 IPSRC=10.11.11.101 MACDST=00:00:00:00:00:00 IPDST=10.
↪11.11.102
...
vyos@BRI:~$ show log firewall bridge forward filter
Dec 05 14:42:22 kernel: [bri-FWD-filter-default-D]IN=eth2 OUT=eth1_
↪MAC=33:33:00:00:00:16:50:00:00:06:00:00:86:dd_
↪SRC=0000:0000:0000:0000:0000:0000:0000:0000_
↪DST=ff02:0000:0000:0000:0000:0000:0016 LEN=96 TC=0 HOPLIMIT=1 FLOWLBL=0_

```

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```

↪PROTO=ICMPv6 TYPE=143 CODE=0
Dec 05 14:42:22 kernel: [bri-FWD-filter-default-D]IN=eth2 OUT=eth1
↪MAC=33:33:00:00:00:16:50:00:00:06:00:00:86:dd
↪SRC=0000:0000:0000:0000:0000:0000:0000:0000:0000
↪DST=ff02:0000:0000:0000:0000:0000:0000:0016 LEN=96 TC=0 HOPLIMIT=1 FLOWLBL=0
↪PROTO=ICMPv6 TYPE=143 CODE=0
    
```

## 8.2.4 IPv4 Firewall Configuration

### Overview

In this section there's useful information of all firewall configuration that can be done regarding IPv4, and appropriate op-mode commands. Configuration commands covered in this section:

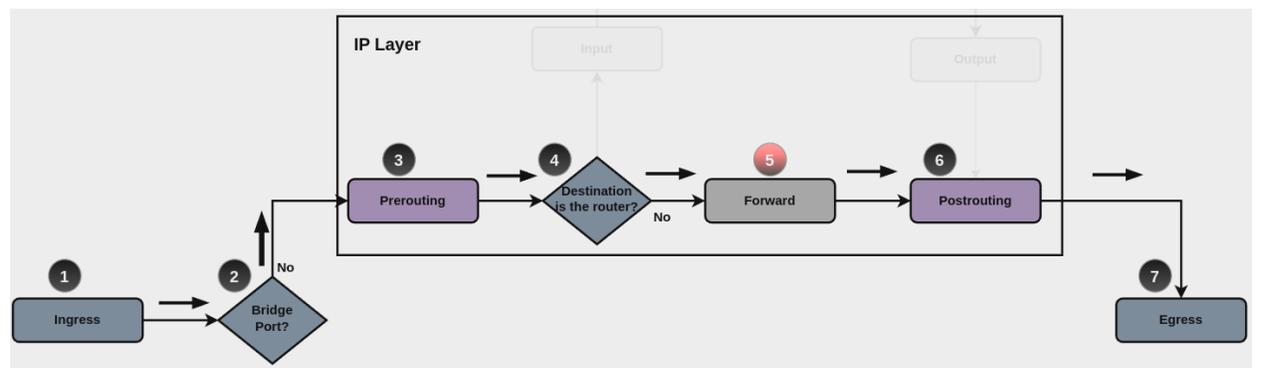
**set firewall ipv4 ...**

From main structure defined in *Firewall Overview* in this section you can find detailed information only for the next part of the general structure:

```

- set firewall
  * ipv4
    - forward
      + filter
    - input
      + filter
    - output
      + filter
    - name
      + custom_name
    
```

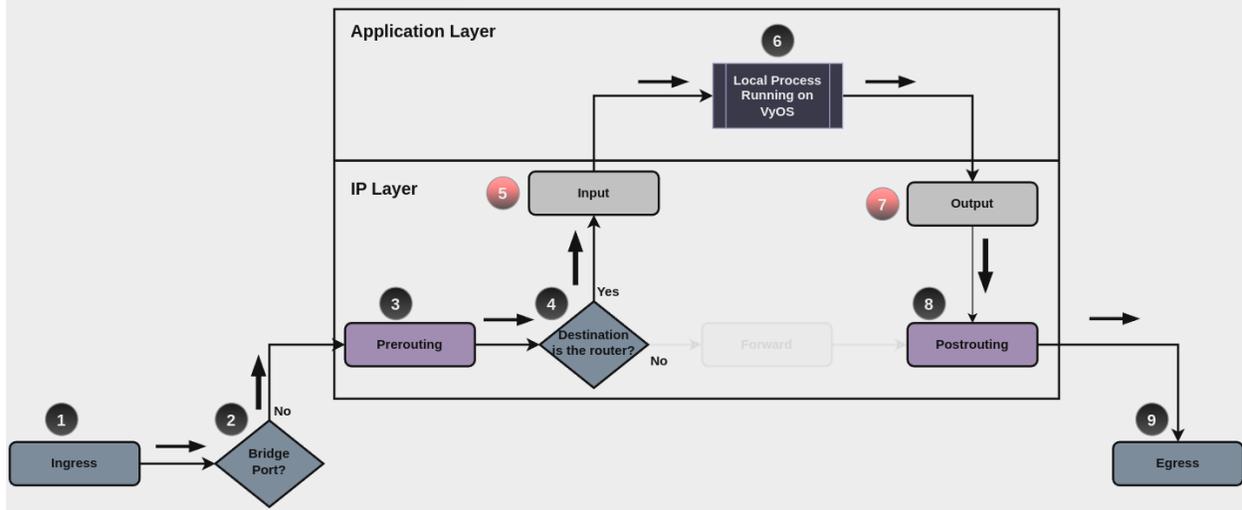
For transit traffic, which is received by the router and forwarded, base chain is **forward**. A simplified packet flow diagram for transit traffic is shown next:



Where firewall base chain to configure firewall filtering rules for transit traffic is **set firewall ipv4 forward filter ...**, which happens in stage 5, highlighted with red color.

For traffic towards the router itself, base chain is **input**, while traffic originated by the router, base chain is **output**. A new simplified packet flow diagram is shown next, which shows the path for traffic destined to the router itself, and traffic generated by the router (starting from circle number 6):

Base chain is for traffic toward the router is **set firewall ipv4 input filter ...**



And base chain for traffic generated by the router is `set firewall ipv4 output filter ...`

**Note: Important note about default-actions:** If default action for any base chain is not defined, then the default action is set to **accept** for that chain. For custom chains, if default action is not defined, then the default-action is set to **drop**

Custom firewall chains can be created, with commands `set firewall ipv4 name <name> ....` In order to use such custom chain, a rule with **action jump**, and the appropriate **target** should be defined in a base chain.

## Firewall - IPv4 Rules

For firewall filtering, firewall rules needs to be created. Each rule is numbered, has an action to apply if the rule is matched, and the ability to specify multiple criteria matchers. Data packets go through the rules from 1 - 999999, so order is crucial. At the first match the action of the rule will be executed.

## Actions

If a rule is defined, then an action must be defined for it. This tells the firewall what to do if all criteria matchers defined for such rule do match.

The action can be :

- **accept:** accept the packet.
- **continue:** continue parsing next rule.
- **drop:** drop the packet.
- **reject:** reject the packet.
- **jump:** jump to another custom chain.
- **return:** Return from the current chain and continue at the next rule of the last chain.
- **queue:** Enqueue packet to userspace.
- **synproxy:** synproxy the packet.

```
set firewall ipv4 forward filter rule <1-999999> action [accept | continue | drop | jump
| queue | reject | return | synproxy]
```

```
set firewall ipv4 input filter rule <1-999999> action [accept | continue | drop | jump |
queue | reject | return | synproxy]
```

```
set firewall ipv4 output filter rule <1-999999> action [accept | continue | drop | jump |
queue | reject | return]
```

```
set firewall ipv4 name <name> rule <1-999999> action [accept | continue | drop | jump |
queue | reject | return]
```

This required setting defines the action of the current rule. If action is set to jump, then jump-target is also needed.

```
set firewall ipv4 forward filter rule <1-999999> jump-target <text>
```

```
set firewall ipv4 input filter rule <1-999999> jump-target <text>
```

```
set firewall ipv4 output filter rule <1-999999> jump-target <text>
```

```
set firewall ipv4 name <name> rule <1-999999> jump-target <text>
```

To be used only when action is set to jump. Use this command to specify jump target.

```
set firewall ipv4 forward filter rule <1-999999> queue <0-65535>
```

```
set firewall ipv4 input filter rule <1-999999> queue <0-65535>
```

```
set firewall ipv4 output filter rule <1-999999> queue <0-65535>
```

```
set firewall ipv4 name <name> rule <1-999999> queue <0-65535>
```

To be used only when action is set to queue. Use this command to specify queue target to use. Queue range is also supported.

```
set firewall ipv4 forward filter rule <1-999999> queue-options bypass
```

```
set firewall ipv4 input filter rule <1-999999> queue-options bypass
```

```
set firewall ipv4 output filter rule <1-999999> queue-options bypass
```

```
set firewall ipv4 name <name> rule <1-999999> queue-options bypass
```

To be used only when action is set to queue. Use this command to let packet go through firewall when no userspace software is connected to the queue.

```
set firewall ipv4 forward filter rule <1-999999> queue-options fanout
```

```
set firewall ipv4 input filter rule <1-999999> queue-options fanout
```

```
set firewall ipv4 output filter rule <1-999999> queue-options fanout
```

```
set firewall ipv4 name <name> rule <1-999999> queue-options fanout
```

To be used only when action is set to queue. Use this command to distribute packets between several queues.

Also, **default-action** is an action that takes place whenever a packet does not match any rule in it's chain. For base chains, possible options for **default-action** are **accept** or **drop**.

```
set firewall ipv4 forward filter default-action [accept | drop]
```

```
set firewall ipv4 input filter default-action [accept | drop]
```

```
set firewall ipv4 output filter default-action [accept | drop]
```

```
set firewall ipv4 name <name> default-action [accept | drop | jump | queue | reject |
return]
```

This set the default action of the rule-set if no rule matched a packet criteria. If default-action is set to `jump`, then `default-jump-target` is also needed. Note that for base chains, default action can only be set to `accept` or `drop`, while on custom chain, more actions are available.

```
set firewall ipv4 name <name> default-jump-target <text>
```

To be used only when `default-action` is set to `jump`. Use this command to specify jump target for default rule.

---

**Note: Important note about default-actions:** If default action for any base chain is not defined, then the default action is set to `accept` for that chain. For custom chains, if default action is not defined, then the default-action is set to `drop`.

---

## Firewall Logs

Logging can be enable for every single firewall rule. If enabled, other log options can be defined.

```
set firewall ipv4 forward filter rule <1-999999> log
set firewall ipv4 input filter rule <1-999999> log
set firewall ipv4 output filter rule <1-999999> log
set firewall ipv4 name <name> rule <1-999999> log
```

Enable logging for the matched packet. If this configuration command is not present, then log is not enabled.

```
set firewall ipv4 forward filter enable-default-log
set firewall ipv4 input filter enable-default-log
set firewall ipv4 output filter enable-default-log
set firewall ipv4 name <name> enable-default-log
```

Use this command to enable the logging of the default action on the specified chain.

```
set firewall ipv4 forward filter rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
set firewall ipv4 input filter rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
set firewall ipv4 output filter rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
set firewall ipv4 name <name> rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
```

Define log-level. Only applicable if rule log is enable.

```
set firewall ipv4 forward filter rule <1-999999> log-options group <0-65535>
set firewall ipv4 input filter rule <1-999999> log-options group <0-65535>
set firewall ipv4 output filter rule <1-999999> log-options group <0-65535>
set firewall ipv4 name <name> rule <1-999999> log-options group <0-65535>
```

Define log group to send message to. Only applicable if rule log is enable.

```
set firewall ipv4 forward filter rule <1-999999> log-options snapshot-length <0-9000>
set firewall ipv4 input filter rule <1-999999> log-options snapshot-length <0-9000>
```

```
set firewall ipv4 output filter rule <1-999999> log-options snapshot-length <0-9000>
```

```
set firewall ipv4 name <name> rule <1-999999> log-options snapshot-length <0-9000>
```

Define length of packet payload to include in netlink message. Only applicable if rule log is enable and log group is defined.

```
set firewall ipv4 forward filter rule <1-999999> log-options queue-threshold <0-65535>
```

```
set firewall ipv4 input filter rule <1-999999> log-options queue-threshold <0-65535>
```

```
set firewall ipv4 output filter rule <1-999999> log-options queue-threshold <0-65535>
```

```
set firewall ipv4 name <name> rule <1-999999> log-options queue-threshold <0-65535>
```

Define number of packets to queue inside the kernel before sending them to userspace. Only applicable if rule log is enable and log group is defined.

## Firewall Description

For reference, a description can be defined for every single rule, and for every defined custom chain.

```
set firewall ipv4 name <name> description <text>
```

Provide a rule-set description to a custom firewall chain.

```
set firewall ipv4 forward filter rule <1-999999> description <text>
```

```
set firewall ipv4 input filter rule <1-999999> description <text>
```

```
set firewall ipv4 output filter rule <1-999999> description <text>
```

```
set firewall ipv4 name <name> rule <1-999999> description <text>
```

Provide a description for each rule.

## Rule Status

When defining a rule, it is enable by default. In some cases, it is useful to just disable the rule, rather than removing it.

```
set firewall ipv4 forward filter rule <1-999999> disable
```

```
set firewall ipv4 input filter rule <1-999999> disable
```

```
set firewall ipv4 output filter rule <1-999999> disable
```

```
set firewall ipv4 name <name> rule <1-999999> disable
```

Command for disabling a rule but keep it in the configuration.

## Matching criteria

There are a lot of matching criteria against which the packet can be tested.

```
set firewall ipv4 forward filter rule <1-999999> connection-status nat [destination | source]
```

```
set firewall ipv4 input filter rule <1-999999> connection-status nat [destination | source]
```

```
set firewall ipv4 output filter rule <1-999999> connection-status nat [destination | source]
```

```
set firewall ipv4 name <name> rule <1-999999> connection-status nat [destination |
source]
```

Match criteria based on nat connection status.

```
set firewall ipv4 forward filter rule <1-999999> connection-mark <1-2147483647>
set firewall ipv4 input filter rule <1-999999> connection-mark <1-2147483647>
set firewall ipv4 output filter rule <1-999999> connection-mark <1-2147483647>
set firewall ipv4 name <name> rule <1-999999> connection-mark <1-2147483647>
```

Match criteria based on connection mark.

```
set firewall ipv4 forward filter rule <1-999999> conntrack-helper <module>
set firewall ipv4 input filter rule <1-999999> conntrack-helper <module>
set firewall ipv4 output filter rule <1-999999> conntrack-helper <module>
set firewall ipv4 name <name> rule <1-999999> conntrack-helper <module>
```

Match based on connection tracking protocol helper module to secure use of that helper module. See below for possible completions *<module>*.

Possible completions:

ftp	Related traffic from FTP helper
h323	Related traffic from H.323 helper
pptp	Related traffic from PPTP helper
nfs	Related traffic from NFS helper
sip	Related traffic from SIP helper
tftp	Related traffic from TFTP helper
sqlnet	Related traffic from SQLNet helper

```
set firewall ipv4 forward filter rule <1-999999> source address [address | addressrange |
CIDR]
```

```
set firewall ipv4 input filter rule <1-999999> source address [address | addressrange |
CIDR]
```

```
set firewall ipv4 output filter rule <1-999999> source address [address | addressrange |
CIDR]
```

```
set firewall ipv4 name <name> rule <1-999999> source address [address | addressrange |
CIDR]
```

```
set firewall ipv4 forward filter rule <1-999999> destination address [address |
addressrange | CIDR]
```

```
set firewall ipv4 input filter rule <1-999999> destination address [address |
addressrange | CIDR]
```

```
set firewall ipv4 output filter rule <1-999999> destination address [address |
addressrange | CIDR]
```

```
set firewall ipv4 name <name> rule <1-999999> destination address [address | addressrange
| CIDR]
```

Match criteria based on source and/or destination address. This is similar to the network groups part, but here you are able to negate the matching addresses.

```
set firewall ipv4 name F00 rule 50 source address 192.0.2.10-192.0.2.11
# with a '!' the rule match everything except the specified subnet
set firewall ipv4 input filter F00 rule 51 source address !203.0.113.0/24
```

```
set firewall ipv4 forward filter rule <1-999999> source address-mask [address]
set firewall ipv4 input filter rule <1-999999> source address-mask [address]
set firewall ipv4 output filter rule <1-999999> source address-mask [address]
set firewall ipv4 name <name> rule <1-999999> source address-mask [address]
set firewall ipv4 forward filter rule <1-999999> destination address-mask [address]
set firewall ipv4 input filter rule <1-999999> destination address-mask [address]
set firewall ipv4 output filter rule <1-999999> destination address-mask [address]
set firewall ipv4 name <name> rule <1-999999> destination address-mask [address]
```

An arbitrary netmask can be applied to mask addresses to only match against a specific portion.

This functions for both individual addresses and address groups.

```
# Match any IPv4 address with `11` as the 2nd octet and `13` as the forth octet
set firewall ipv4 name F00 rule 100 destination address 0.11.0.13
set firewall ipv4 name F00 rule 100 destination address-mask 0.255.0.255
```

```
set firewall ipv4 forward filter rule <1-999999> source fqdn <fqdn>
set firewall ipv4 input filter rule <1-999999> source fqdn <fqdn>
set firewall ipv4 output filter rule <1-999999> source fqdn <fqdn>
set firewall ipv4 name <name> rule <1-999999> source fqdn <fqdn>
set firewall ipv4 forward filter rule <1-999999> destination fqdn <fqdn>
set firewall ipv4 input filter rule <1-999999> destination fqdn <fqdn>
set firewall ipv4 output filter rule <1-999999> destination fqdn <fqdn>
set firewall ipv4 name <name> rule <1-999999> destination fqdn <fqdn>
```

Specify a Fully Qualified Domain Name as source/destination matcher. Ensure router is able to resolve such dns query.

```
set firewall ipv4 forward filter rule <1-999999> source geoip country-code <country>
set firewall ipv4 input filter rule <1-999999> source geoip country-code <country>
set firewall ipv4 output filter rule <1-999999> source geoip country-code <country>
set firewall ipv4 name <name> rule <1-999999> source geoip country-code <country>
set firewall ipv4 forward filter rule <1-999999> destination geoip country-code <country>
set firewall ipv4 input filter rule <1-999999> destination geoip country-code <country>
set firewall ipv4 output filter rule <1-999999> destination geoip country-code <country>
set firewall ipv4 name <name> rule <1-999999> destination geoip country-code <country>
set firewall ipv4 forward filter rule <1-999999> source geoip inverse-match
set firewall ipv4 input filter rule <1-999999> source geoip inverse-match
set firewall ipv4 output filter rule <1-999999> source geoip inverse-match
```

```

set firewall ipv4 name <name> rule <1-999999> source geoip inverse-match
set firewall ipv4 forward filter rule <1-999999> destination geoip inverse-match
set firewall ipv4 input filter rule <1-999999> destination geoip inverse-match
set firewall ipv4 output filter rule <1-999999> destination geoip inverse-match
set firewall ipv4 name <name> rule <1-999999> destination geoip inverse-match

```

Match IP addresses based on its geolocation. More info: [geoip matching](#). Use inverse-match to match anything except the given country-codes.

Data is provided by DB-IP.com under CC-BY-4.0 license. Attribution required, permits redistribution so we can include a database in images(~3MB compressed). Includes cron script (manually callable by op-mode update geoip) to keep database and rules updated.

```

set firewall ipv4 forward filter rule <1-999999> source mac-address <mac-address>
set firewall ipv4 input filter rule <1-999999> source mac-address <mac-address>
set firewall ipv4 output filter rule <1-999999> source mac-address <mac-address>
set firewall ipv4 name <name> rule <1-999999> source mac-address <mac-address>

```

Only in the source criteria, you can specify a mac-address.

```

set firewall ipv4 input filter rule 100 source mac-address 00:53:00:11:22:33
set firewall ipv4 input filter rule 101 source mac-address !00:53:00:aa:12:34

```

```

set firewall ipv4 forward filter rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv4 input filter rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv4 output filter rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv4 name <name> rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv4 forward filter rule <1-999999> destination port [1-65535 | portname |
start-end]
set firewall ipv4 input filter rule <1-999999> destination port [1-65535 | portname |
start-end]
set firewall ipv4 output filter rule <1-999999> destination port [1-65535 | portname |
start-end]
set firewall ipv4 name <name> rule <1-999999> destination port [1-65535 | portname |
start-end]

```

A port can be set with a port number or a name which is here defined: /etc/services.

```

set firewall ipv4 forward filter rule 10 source port '22'
set firewall ipv4 forward filter rule 11 source port '!http'
set firewall ipv4 forward filter rule 12 source port 'https'

```

Multiple source ports can be specified as a comma-separated list. The whole list can also be “negated” using !. For example:

```

set firewall ipv4 forward filter rule <1-999999> source group address-group <name | !
name>
set firewall ipv4 input filter rule <1-999999> source group address-group <name | !name>
set firewall ipv4 output filter rule <1-999999> source group address-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> source group address-group <name | !name>
set firewall ipv4 forward filter rule <1-999999> destination group address-group <name |
!name>
set firewall ipv4 input filter rule <1-999999> destination group address-group <name |
!name>
set firewall ipv4 output filter rule <1-999999> destination group address-group <name |
!name>
set firewall ipv4 name <name> rule <1-999999> destination group address-group <name |
!name>

```

Use a specific address-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv4 forward filter rule <1-999999> source group network-group <name | !
name>
set firewall ipv4 input filter rule <1-999999> source group network-group <name | !name>
set firewall ipv4 output filter rule <1-999999> source group network-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> source group network-group <name | !name>
set firewall ipv4 forward filter rule <1-999999> destination group network-group <name |
!name>
set firewall ipv4 input filter rule <1-999999> destination group network-group <name |
!name>
set firewall ipv4 output filter rule <1-999999> destination group network-group <name |
!name>
set firewall ipv4 name <name> rule <1-999999> destination group network-group <name |
!name>

```

Use a specific network-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv4 forward filter rule <1-999999> source group port-group <name | !name>
set firewall ipv4 input filter rule <1-999999> source group port-group <name | !name>
set firewall ipv4 output filter rule <1-999999> source group port-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> source group port-group <name | !name>
set firewall ipv4 forward filter rule <1-999999> destination group port-group <name |
!name>
set firewall ipv4 input filter rule <1-999999> destination group port-group <name | !
name>
set firewall ipv4 output filter rule <1-999999> destination group port-group <name | !
name>
set firewall ipv4 name <name> rule <1-999999> destination group port-group <name | !name>

```

Use a specific port-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv4 forward filter rule <1-999999> source group domain-group <name | !name>
set firewall ipv4 input filter rule <1-999999> source group domain-group <name | !name>
set firewall ipv4 output filter rule <1-999999> source group domain-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> source group domain-group <name | !name>
set firewall ipv4 forward filter rule <1-999999> destination group domain-group <name | !name>
set firewall ipv4 input filter rule <1-999999> destination group domain-group <name | !name>
set firewall ipv4 output filter rule <1-999999> destination group domain-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> destination group domain-group <name | !name>

```

Use a specific domain-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv4 forward filter rule <1-999999> source group mac-group <name | !name>
set firewall ipv4 input filter rule <1-999999> source group mac-group <name | !name>
set firewall ipv4 output filter rule <1-999999> source group mac-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> source group mac-group <name | !name>
set firewall ipv4 forward filter rule <1-999999> destination group mac-group <name | !name>
set firewall ipv4 input filter rule <1-999999> destination group mac-group <name | !name>
set firewall ipv4 output filter rule <1-999999> destination group mac-group <name | !name>
set firewall ipv4 name <name> rule <1-999999> destination group mac-group <name | !name>

```

Use a specific mac-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv4 forward filter rule <1-999999> dscp [0-63 | start-end]
set firewall ipv4 input filter rule <1-999999> dscp [0-63 | start-end]
set firewall ipv4 output filter rule <1-999999> dscp [0-63 | start-end]
set firewall ipv4 name <name> rule <1-999999> dscp [0-63 | start-end]
set firewall ipv4 forward filter rule <1-999999> dscp-exclude [0-63 | start-end]
set firewall ipv4 input filter rule <1-999999> dscp-exclude [0-63 | start-end]
set firewall ipv4 output filter rule <1-999999> dscp-exclude [0-63 | start-end]
set firewall ipv4 name <name> rule <1-999999> dscp-exclude [0-63 | start-end]

```

Match based on dscp value.

```

set firewall ipv4 forward filter rule <1-999999> fragment [match-frag | match-non-frag]
set firewall ipv4 input filter rule <1-999999> fragment [match-frag | match-non-frag]
set firewall ipv4 output filter rule <1-999999> fragment [match-frag | match-non-frag]
set firewall ipv4 name <name> rule <1-999999> fragment [match-frag | match-non-frag]

```

Match based on fragment criteria.

```
set firewall ipv4 forward filter rule <1-999999> icmp [code | type] <0-255>
set firewall ipv4 input filter rule <1-999999> icmp [code | type] <0-255>
set firewall ipv4 output filter rule <1-999999> icmp [code | type] <0-255>
set firewall ipv4 name <name> rule <1-999999> icmp [code | type] <0-255>
```

Match based on icmp code and type.

```
set firewall ipv4 forward filter rule <1-999999> icmp type-name <text>
set firewall ipv4 input filter rule <1-999999> icmp type-name <text>
set firewall ipv4 output filter rule <1-999999> icmp type-name <text>
set firewall ipv4 name <name> rule <1-999999> icmp type-name <text>
```

Match based on icmp type-name criteria. Use tab for information about what **type-name** criteria are supported.

```
set firewall ipv4 forward filter rule <1-999999> inbound-interface name <iface>
set firewall ipv4 input filter rule <1-999999> inbound-interface name <iface>
set firewall ipv4 name <name> rule <1-999999> inbound-interface name <iface>
```

Match based on inbound interface. Wilcard \* can be used. For example: eth2\*. Prepending character ! for inverted matching criteria is also supported. For example !eth2

```
set firewall ipv4 forward filter rule <1-999999> inbound-interface group <iface_group>
set firewall ipv4 input filter rule <1-999999> inbound-interface group <iface_group>
set firewall ipv4 name <name> rule <1-999999> inbound-interface group <iface_group>
```

Match based on inbound interface group. Prepending character ! for inverted matching criteria is also supported. For example !IFACE\_GROUP

```
set firewall ipv4 forward filter rule <1-999999> outbound-interface name <iface>
set firewall ipv4 output filter rule <1-999999> outbound-interface name <iface>
set firewall ipv4 name <name> rule <1-999999> outbound-interface name <iface>
```

Match based on outbound interface. Wilcard \* can be used. For example: eth2\*. Prepending character ! for inverted matching criteria is also supported. For example !eth2

```
set firewall ipv4 forward filter rule <1-999999> outbound-interface group <iface_group>
set firewall ipv4 output filter rule <1-999999> outbound-interface group <iface_group>
set firewall ipv4 name <name> rule <1-999999> outbound-interface group <iface_group>
```

Match based on outbound interface group. Prepending character ! for inverted matching criteria is also supported. For example !IFACE\_GROUP

```
set firewall ipv4 forward filter rule <1-999999> ipsec [match-ipsec | match-none]
set firewall ipv4 input filter rule <1-999999> ipsec [match-ipsec | match-none]
set firewall ipv4 output filter rule <1-999999> ipsec [match-ipsec | match-none]
set firewall ipv4 name <name> rule <1-999999> ipsec [match-ipsec | match-none]
```

Match based on ipsec criteria.

```
set firewall ipv4 forward filter rule <1-999999> limit burst <0-4294967295>
set firewall ipv4 input filter rule <1-999999> limit burst <0-4294967295>
```

```
set firewall ipv4 output filter rule <1-999999> limit burst <0-4294967295>
```

```
set firewall ipv4 name <name> rule <1-999999> limit burst <0-4294967295>
```

Match based on the maximum number of packets to allow in excess of rate.

```
set firewall ipv4 forward filter rule <1-999999> limit rate <text>
```

```
set firewall ipv4 input filter rule <1-999999> limit rate <text>
```

```
set firewall ipv4 output filter rule <1-999999> limit rate <text>
```

```
set firewall ipv4 name <name> rule <1-999999> limit rate <text>
```

Match based on the maximum average rate, specified as **integer/unit**. For example **5/minutes**

```
set firewall ipv4 forward filter rule <1-999999> packet-length <text>
```

```
set firewall ipv4 input filter rule <1-999999> packet-length <text>
```

```
set firewall ipv4 output filter rule <1-999999> packet-length <text>
```

```
set firewall ipv4 name <name> rule <1-999999> packet-length <text>
```

```
set firewall ipv4 forward filter rule <1-999999> packet-length-exclude <text>
```

```
set firewall ipv4 input filter rule <1-999999> packet-length-exclude <text>
```

```
set firewall ipv4 output filter rule <1-999999> packet-length-exclude <text>
```

```
set firewall ipv4 name <name> rule <1-999999> packet-length-exclude <text>
```

Match based on packet length criteria. Multiple values from 1 to 65535 and ranges are supported.

```
set firewall ipv4 forward filter rule <1-999999> packet-type [broadcast | host |
multicast | other]
```

```
set firewall ipv4 input filter rule <1-999999> packet-type [broadcast | host | multicast
| other]
```

```
set firewall ipv4 output filter rule <1-999999> packet-type [broadcast | host | multicast
| other]
```

```
set firewall ipv4 name <name> rule <1-999999> packet-type [broadcast | host | multicast |
other]
```

Match based on packet type criteria.

```
set firewall ipv4 forward filter rule <1-999999> protocol [<text> | <0-255> | all |
tcp_udp]
```

```
set firewall ipv4 input filter rule <1-999999> protocol [<text> | <0-255> | all |
tcp_udp]
```

```
set firewall ipv4 output filter rule <1-999999> protocol [<text> | <0-255> | all |
tcp_udp]
```

```
set firewall ipv4 name <name> rule <1-999999> protocol [<text> | <0-255> | all | tcp_udp]
```

Match a protocol criteria. A protocol number or a name which is here defined: `/etc/protocols`. Special names are `all` for all protocols and `tcp_udp` for tcp and udp based packets. The `!` negate the selected protocol.

```
set firewall ipv4 forward filter rule 10 protocol tcp_udp
set firewall ipv4 forward filter rule 11 protocol !tcp_udp
```

```
set firewall ipv4 forward filter rule <1-999999> recent count <1-255>
```

```
set firewall ipv4 input filter rule <1-999999> recent count <1-255>
```

```

set firewall ipv4 output filter rule <1-999999> recent count <1-255>
set firewall ipv4 name <name> rule <1-999999> recent count <1-255>
set firewall ipv4 forward filter rule <1-999999> recent time [second | minute | hour]
set firewall ipv4 input filter rule <1-999999> recent time [second | minute | hour]
set firewall ipv4 output filter rule <1-999999> recent time [second | minute | hour]
set firewall ipv4 name <name> rule <1-999999> recent time [second | minute | hour]

```

Match bases on recently seen sources.

```

set firewall ipv4 forward filter rule <1-999999> tcp flags [not] <text>
set firewall ipv4 input filter rule <1-999999> tcp flags [not] <text>
set firewall ipv4 output filter rule <1-999999> tcp flags [not] <text>
set firewall ipv4 name <name> rule <1-999999> tcp flags [not] <text>

```

Allowed values for TCP flags: ack, cwr, ecn, fin, psh, rst, syn and urg. Multiple values are supported, and for inverted selection use not, as shown in the example.

```

set firewall ipv4 input filter rule 10 tcp flags 'ack'
set firewall ipv4 input filter rule 12 tcp flags 'syn'
set firewall ipv4 input filter rule 13 tcp flags not 'fin'

```

```

set firewall ipv4 forward filter rule <1-999999> state [established | invalid | new |
related] [enable | disable]
set firewall ipv4 input filter rule <1-999999> state [established | invalid | new |
related] [enable | disable]
set firewall ipv4 output filter rule <1-999999> state [established | invalid | new |
related] [enable | disable]
set firewall ipv4 name <name> rule <1-999999> state [established | invalid | new |
related] [enable | disable]

```

Match against the state of a packet.

```

set firewall ipv4 forward filter rule <1-999999> time startdate <text>
set firewall ipv4 input filter rule <1-999999> time startdate <text>
set firewall ipv4 output filter rule <1-999999> time startdate <text>
set firewall ipv4 name <name> rule <1-999999> time startdate <text>
set firewall ipv4 forward filter rule <1-999999> time starttime <text>
set firewall ipv4 input filter rule <1-999999> time starttime <text>
set firewall ipv4 output filter rule <1-999999> time starttime <text>
set firewall ipv4 name <name> rule <1-999999> time starttime <text>
set firewall ipv4 forward filter rule <1-999999> time stopdate <text>
set firewall ipv4 input filter rule <1-999999> time stopdate <text>
set firewall ipv4 output filter rule <1-999999> time stopdate <text>
set firewall ipv4 name <name> rule <1-999999> time stopdate <text>
set firewall ipv4 forward filter rule <1-999999> time stoptime <text>

```

```

set firewall ipv4 input filter rule <1-999999> time stoptime <text>
set firewall ipv4 output filter rule <1-999999> time stoptime <text>
set firewall ipv4 name <name> rule <1-999999> time stoptime <text>
set firewall ipv4 forward filter rule <1-999999> time weekdays <text>
set firewall ipv4 input filter rule <1-999999> time weekdays <text>
set firewall ipv4 output filter rule <1-999999> time weekdays <text>
set firewall ipv4 name <name> rule <1-999999> time weekdays <text>

```

Time to match the defined rule.

```

set firewall ipv4 forward filter rule <1-999999> ttl <eq | gt | lt> <0-255>
set firewall ipv4 input filter rule <1-999999> ttl <eq | gt | lt> <0-255>
set firewall ipv4 output filter rule <1-999999> ttl <eq | gt | lt> <0-255>
set firewall ipv4 name <name> rule <1-999999> ttl <eq | gt | lt> <0-255>

```

Match time to live parameter, where 'eq' stands for 'equal'; 'gt' stands for 'greater than', and 'lt' stands for 'less than'.

```

set firewall ipv4 forward filter rule <1-999999> recent count <1-255>
set firewall ipv4 input filter rule <1-999999> recent count <1-255>
set firewall ipv4 output filter rule <1-999999> recent count <1-255>
set firewall ipv4 name <name> rule <1-999999> recent count <1-255>
set firewall ipv4 forward filter rule <1-999999> recent time <second | minute | hour>
set firewall ipv4 input filter rule <1-999999> recent time <second | minute | hour>
set firewall ipv4 output filter rule <1-999999> recent time <second | minute | hour>
set firewall ipv4 name <name> rule <1-999999> recent time <second | minute | hour>

```

Match when 'count' amount of connections are seen within 'time'. These matching criteria can be used to block brute-force attempts.

## Synproxy

Synproxy connections

```

set firewall ipv4 [input | forward] filter rule <1-999999> action synproxy
set firewall ipv4 [input | forward] filter rule <1-999999> protocol tcp
set firewall ipv4 [input | forward] filter rule <1-999999> synproxy tcp mss <501-65535>

```

Set TCP-MSS (maximum segment size) for the connection

```

set firewall ipv4 [input | forward] filter rule <1-999999> synproxy tcp window-scale <1-14>

```

Set the window scale factor for TCP window scaling

## Example synproxy

Requirements to enable synproxy:

- Traffic must be symmetric
- Synproxy relies on syncookies and TCP timestamps, ensure these are enabled
- Disable conntrack loose track option

```
set system sysctl parameter net.ipv4.tcp_timestamps value '1'

set system conntrack tcp loose disable
set system conntrack ignore ipv4 rule 10 destination port '8080'
set system conntrack ignore ipv4 rule 10 protocol 'tcp'
set system conntrack ignore ipv4 rule 10 tcp flags syn

set firewall global-options syn-cookies 'enable'
set firewall ipv4 input filter rule 10 action 'synproxy'
set firewall ipv4 input filter rule 10 destination port '8080'
set firewall ipv4 input filter rule 10 inbound-interface interface-name 'eth1'
set firewall ipv4 input filter rule 10 protocol 'tcp'
set firewall ipv4 input filter rule 10 synproxy tcp mss '1460'
set firewall ipv4 input filter rule 10 synproxy tcp window-scale '7'
set firewall ipv4 input filter rule 1000 action 'drop'
set firewall ipv4 input filter rule 1000 state invalid 'enable'
```

## Operation-mode Firewall

### Rule-set overview

#### show firewall

This will show you a basic firewall overview, for all ruleset, and not only for ipv4

```
vyos@vyos:~$ show firewall
Rulesets Information

-----
ipv4 Firewall "forward filter"

Rule      Action  Protocol  Packets  Bytes  Conditions
-----
20        accept  all       0        0      ip saddr @N_TRUSTEDv4  accept
21        jump    all       0        0      jump NAME_AUX
default   accept  all       0        0

-----
ipv4 Firewall "input filter"

Rule      Action  Protocol  Packets  Bytes  Conditions
-----
10        accept  all       156     14377  iifname != @I_LAN  accept
default   accept  all       0        0
```

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```

-----
ipv4 Firewall "name AUX"

  Rule  Action  Protocol  Packets  Bytes  Conditions
-----
  10    accept  icmp     0        0    meta l4proto icmp accept
  20    accept  udp      0        0    meta l4proto udp ip saddr @A_
  →SERVERS accept
  30    drop    all      0        0    ip saddr != @A_SERVERS iifname
  →"eth2"

-----
ipv4 Firewall "output filter"

  Rule  Action  Protocol  Packets  Bytes  Conditions
-----
  10    reject  all       0        0    oifname @I_LAN
  20    accept  icmp      2       168   meta l4proto icmp oifname "eth0"
  → accept
  default accept  all      72      9258

-----
ipv6 Firewall "input filter"

  Rule  Action  Protocol  Packets  Bytes  Conditions
-----
  10    accept  all       0        0    ip6 saddr @N6_TRUSTEDv6 accept
  default accept  all      2       112

vyos@vyos:~$

```

**show firewall summary**

This will show you a summary of rule-sets and groups

```

vyos@vyos:~$ show firewall summary
Ruleset Summary

IPv6 Ruleset:

Ruleset Hook  Ruleset Priority  Description
-----
forward      filter
input        filter
ipv6_name    IPV6-VyOS_MANAGEMENT
ipv6_name    IPV6-WAN_IN      PUBLIC_INTERNET

IPv4 Ruleset:

Ruleset Hook  Ruleset Priority  Description

```

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```

-----
forward      filter
input        filter
name         VyOS_MANAGEMENT
name         WAN_IN          PUBLIC_INTERNET

Firewall Groups

Name          Type          References    Members
-----
↔-----
PBX           address_group WAN_IN-100    198.51.100.77
SERVERS      address_group WAN_IN-110    192.0.2.10
              address_group WAN_IN-111    192.0.2.11
              address_group WAN_IN-112    192.0.2.12
              address_group WAN_IN-120
              address_group WAN_IN-121
              address_group WAN_IN-122
SUPPORT      address_group VyOS_MANAGEMENT-20
              address_group WAN_IN-20
PHONE_VPN_SERVERS address_group WAN_IN-160    10.6.32.2
PINGABLE_ADRESSES address_group WAN_IN-170    192.168.5.2
              address_group WAN_IN-171
PBX           ipv6_address_group IPV6-WAN_IN-100 2001:db8::1
SERVERS      ipv6_address_group IPV6-WAN_IN-110 2001:db8::2
              ipv6_address_group IPV6-WAN_IN-111 2001:db8::3
              ipv6_address_group IPV6-WAN_IN-112 2001:db8::4
              ipv6_address_group IPV6-WAN_IN-120
              ipv6_address_group IPV6-WAN_IN-121
              ipv6_address_group IPV6-WAN_IN-122
SUPPORT      ipv6_address_group IPV6-VyOS_MANAGEMENT-20 2001:db8::5
              ipv6_address_group IPV6-WAN_IN-20

```

**show firewall ipv4 [forward | input | output] filter**

**show firewall ipv4 name <name>**

This command will give an overview of a single rule-set.

```

vyos@vyos:~$ show firewall ipv4 input filter
Ruleset Information

-----
IPv4 Firewall "input filter"

Rule      Action  Protocol  Packets  Bytes  Conditions
-----
↔-----
5         jump    all       0        0      iifname "eth2" jump NAME_VyOS_
↔MANAGEMENT
default   accept  all

```

**show firewall ipv4 [forward | input | output] filter rule <1-999999>**

**show firewall ipv4 name <name> rule <1-999999>**

This command will give an overview of a rule in a single rule-set, plus information for default action.

```
vyos@vyos:~$show firewall ipv4 output filter rule 20
Rule Information
-----
ipv4 Firewall "output filter"
Rule      Action    Protocol    Packets    Bytes    Conditions
-----
 20      accept    icmp        2          168     meta l4proto icmp oifname "eth0"
  default accept    all         286        47614
vyos@vyos:~$
```

**show firewall statistics**

This will show you a statistic of all rule-sets since the last boot.

### Show Firewall log

**show log firewall**

**show log firewall ipv4**

**show log firewall ipv4 [forward | input | output | name]**

**show log firewall ipv4 [forward | input | output] filter**

**show log firewall ipv4 name <name>**

**show log firewall ipv4 [forward | input | output] filter rule <rule>**

**show log firewall ipv4 name <name> rule <rule>**

Show the logs of all firewall; show all ipv4 firewall logs; show all logs for particular hook; show all logs for particular hook and priority; show all logs for particular custom chain; show logs for specific Rule-Set.

### Example Partial Config

```
firewall {
  group {
    network-group BAD-NETWORKS {
      network 198.51.100.0/24
      network 203.0.113.0/24
    }
    network-group GOOD-NETWORKS {
      network 192.0.2.0/24
    }
    port-group BAD-PORTS {
      port 65535
    }
  }
}
```

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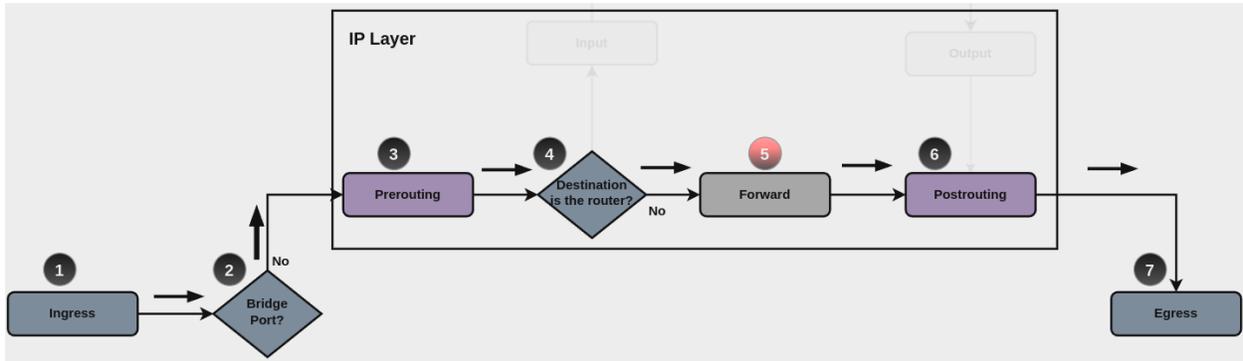


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```

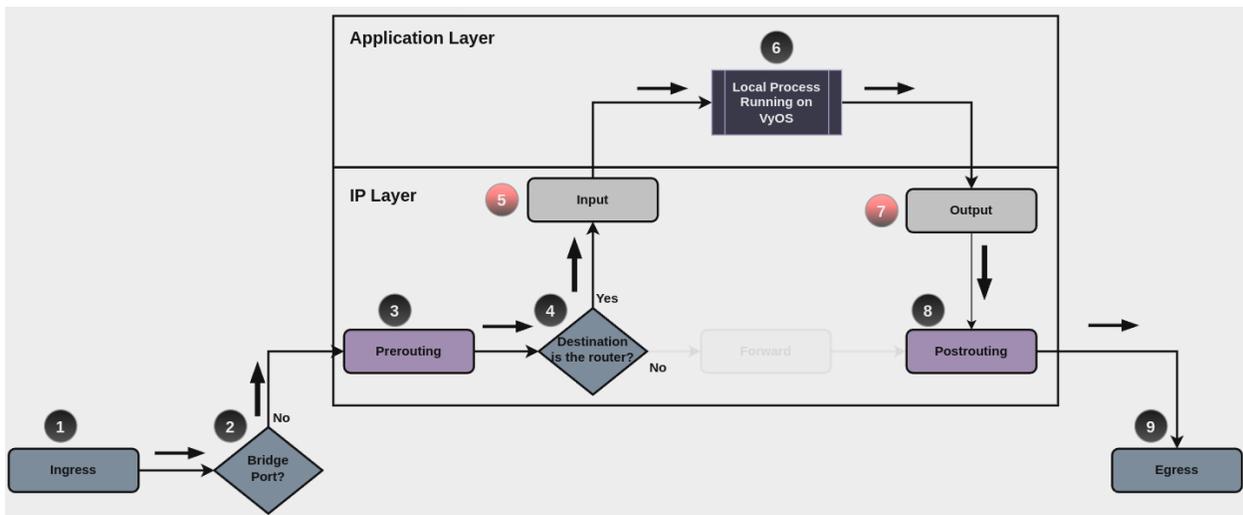
+ filter
- output
+ filter
- name
+ custom_name
    
```

For transit traffic, which is received by the router and forwarded, base chain is **forward**. A simplified packet flow diagram for transit traffic is shown next:



Where firewall base chain to configure firewall filtering rules for transit traffic is `set firewall ipv6 forward filter ...`, which happens in stage 5, highlighted with red color.

For traffic towards the router itself, base chain is **input**, while traffic originated by the router, base chain is **output**. A new simplified packet flow diagram is shown next, which shows the path for traffic destined to the router itself, and traffic generated by the router (starting from circle number 6):



Base chain is for traffic toward the router is `set firewall ipv6 input filter ...`

And base chain for traffic generated by the router is `set firewall ipv6 output filter ...`

**Note: Important note about default-actions:** If default action for any base chain is not defined, then the default action is set to **accept** for that chain. For custom chains, if default action is not defined, then the default-action is set to **drop**

Custom firewall chains can be created, with commands `set firewall ipv6 name <name> ...`. In order to use such custom chain, a rule with **action jump**, and the appropriate **target** should be defined in a base chain.

## Firewall - IPv6 Rules

For firewall filtering, firewall rules needs to be created. Each rule is numbered, has an action to apply if the rule is matched, and the ability to specify multiple criteria matchers. Data packets go through the rules from 1 - 999999, so order is crucial. At the first match the action of the rule will be executed.

### Actions

If a rule is defined, then an action must be defined for it. This tells the firewall what to do if all criteria matchers defined for such rule do match.

The action can be :

- **accept**: accept the packet.
- **continue**: continue parsing next rule.
- **drop**: drop the packet.
- **reject**: reject the packet.
- **jump**: jump to another custom chain.
- **return**: Return from the current chain and continue at the next rule of the last chain.
- **queue**: Enqueue packet to userspace.
- **synproxy**: synproxy the packet.

```
set firewall ipv6 forward filter rule <1-999999> action [accept | continue | drop | jump
| queue | reject | return | synproxy]
```

```
set firewall ipv6 input filter rule <1-999999> action [accept | continue | drop | jump |
queue | reject | return | synproxy]
```

```
set firewall ipv6 output filter rule <1-999999> action [accept | continue | drop | jump |
queue | reject | return]
```

```
set firewall ipv6 name <name> rule <1-999999> action [accept | continue | drop | jump |
queue | reject | return]
```

This required setting defines the action of the current rule. If action is set to jump, then jump-target is also needed.

```
set firewall ipv6 forward filter rule <1-999999> jump-target <text>
```

```
set firewall ipv6 input filter rule <1-999999> jump-target <text>
```

```
set firewall ipv6 output filter rule <1-999999> jump-target <text>
```

```
set firewall ipv6 name <name> rule <1-999999> jump-target <text>
```

To be used only when action is set to jump. Use this command to specify jump target.

```
set firewall ipv6 forward filter rule <1-999999> queue <0-65535>
```

```
set firewall ipv6 input filter rule <1-999999> queue <0-65535>
```

```
set firewall ipv6 output filter rule <1-999999> queue <0-65535>
```

```
set firewall ipv6 name <name> rule <1-999999> queue <0-65535>
```

To be used only when action is set to queue. Use this command to specify queue target to use. Queue range is also supported.

```
set firewall ipv6 forward filter rule <1-999999> queue-options bypass
set firewall ipv6 input filter rule <1-999999> queue-options bypass
set firewall ipv6 output filter rule <1-999999> queue-options bypass
set firewall ipv6 name <name> rule <1-999999> queue-options bypass
```

To be used only when action is set to queue. Use this command to let packet go through firewall when no userspace software is connected to the queue.

```
set firewall ipv6 forward filter rule <1-999999> queue-options fanout
set firewall ipv6 input filter rule <1-999999> queue-options fanout
set firewall ipv6 output filter rule <1-999999> queue-options fanout
set firewall ipv6 name <name> rule <1-999999> queue-options fanout
```

To be used only when action is set to queue. Use this command to distribute packets between several queues.

Also, **default-action** is an action that takes place whenever a packet does not match any rule in it's chain. For base chains, possible options for **default-action** are **accept** or **drop**.

```
set firewall ipv6 forward filter default-action [accept | drop]
set firewall ipv6 input filter default-action [accept | drop]
set firewall ipv6 output filter default-action [accept | drop]
set firewall ipv6 name <name> default-action [accept | drop | jump | queue | reject | return]
```

This set the default action of the rule-set if no rule matched a packet criteria. If default-action is set to **jump**, then **default-jump-target** is also needed. Note that for base chains, default action can only be set to **accept** or **drop**, while on custom chain, more actions are available.

```
set firewall ipv6 name <name> default-jump-target <text>
```

To be used only when **default-action** is set to **jump**. Use this command to specify jump target for default rule.

---

**Note: Important note about default-actions:** If default action for any base chain is not defined, then the default action is set to **accept** for that chain. For custom chains, if default action is not defined, then the default-action is set to **drop**.

---

## Firewall Logs

Logging can be enable for every single firewall rule. If enabled, other log options can be defined.

```
set firewall ipv6 forward filter rule <1-999999> log
set firewall ipv6 input filter rule <1-999999> log
set firewall ipv6 output filter rule <1-999999> log
set firewall ipv6 name <name> rule <1-999999> log
```

Enable logging for the matched packet. If this configuration command is not present, then log is not enabled.

```
set firewall ipv6 forward filter enable-default-log
```

```
set firewall ipv6 input filter enable-default-log
set firewall ipv6 output filter enable-default-log
set firewall ipv6 name <name> enable-default-log
```

Use this command to enable the logging of the default action on the specified chain.

```
set firewall ipv6 forward filter rule <1-999999> log-options level [emerg | alert | crit
| err | warn | notice | info | debug]
set firewall ipv6 input filter rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
set firewall ipv6 output filter rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
set firewall ipv6 name <name> rule <1-999999> log-options level [emerg | alert | crit |
err | warn | notice | info | debug]
```

Define log-level. Only applicable if rule log is enable.

```
set firewall ipv6 forward filter rule <1-999999> log-options group <0-65535>
set firewall ipv6 input filter rule <1-999999> log-options group <0-65535>
set firewall ipv6 output filter rule <1-999999> log-options group <0-65535>
set firewall ipv6 name <name> rule <1-999999> log-options group <0-65535>
```

Define log group to send message to. Only applicable if rule log is enable.

```
set firewall ipv6 forward filter rule <1-999999> log-options snapshot-length <0-9000>
set firewall ipv6 input filter rule <1-999999> log-options snapshot-length <0-9000>
set firewall ipv6 output filter rule <1-999999> log-options snapshot-length <0-9000>
set firewall ipv6 name <name> rule <1-999999> log-options snapshot-length <0-9000>
```

Define length of packet payload to include in netlink message. Only applicable if rule log is enable and log group is defined.

```
set firewall ipv6 forward filter rule <1-999999> log-options queue-threshold <0-65535>
set firewall ipv6 input filter rule <1-999999> log-options queue-threshold <0-65535>
set firewall ipv6 output filter rule <1-999999> log-options queue-threshold <0-65535>
set firewall ipv6 name <name> rule <1-999999> log-options queue-threshold <0-65535>
```

Define number of packets to queue inside the kernel before sending them to userspace. Only applicable if rule log is enable and log group is defined.

## Firewall Description

For reference, a description can be defined for every single rule, and for every defined custom chain.

```
set firewall ipv6 name <name> description <text>
```

Provide a rule-set description to a custom firewall chain.

```
set firewall ipv6 forward filter rule <1-999999> description <text>
set firewall ipv6 input filter rule <1-999999> description <text>
set firewall ipv6 output filter rule <1-999999> description <text>
```

```
set firewall ipv6 name <name> rule <1-999999> description <text>
```

Provide a description for each rule.

### Rule Status

When defining a rule, it is enable by default. In some cases, it is useful to just disable the rule, rather than removing it.

```
set firewall ipv6 forward filter rule <1-999999> disable
set firewall ipv6 input filter rule <1-999999> disable
set firewall ipv6 output filter rule <1-999999> disable
set firewall ipv6 name <name> rule <1-999999> disable
```

Command for disabling a rule but keep it in the configuration.

### Matching criteria

There are a lot of matching criteria against which the packet can be tested.

```
set firewall ipv6 forward filter rule <1-999999> connection-status nat [destination |
source]
set firewall ipv6 input filter rule <1-999999> connection-status nat [destination |
source]
set firewall ipv6 output filter rule <1-999999> connection-status nat [destination |
source]
set firewall ipv6 name <name> rule <1-999999> connection-status nat [destination |
source]
```

Match criteria based on nat connection status.

```
set firewall ipv6 forward filter rule <1-999999> connection-mark <1-2147483647>
set firewall ipv6 input filter rule <1-999999> connection-mark <1-2147483647>
set firewall ipv6 output filter rule <1-999999> connection-mark <1-2147483647>
set firewall ipv6 name <name> rule <1-999999> connection-mark <1-2147483647>
```

Match criteria based on connection mark.

```
set firewall ipv6 forward filter rule <1-999999> source address [address | addressrange |
CIDR]
set firewall ipv6 input filter rule <1-999999> source address [address | addressrange |
CIDR]
set firewall ipv6 output filter rule <1-999999> source address [address | addressrange |
CIDR]
set firewall ipv6 name <name> rule <1-999999> source address [address | addressrange |
CIDR]
set firewall ipv6 forward filter rule <1-999999> destination address [address |
addressrange | CIDR]
set firewall ipv6 input filter rule <1-999999> destination address [address |
addressrange | CIDR]
```

```
set firewall ipv6 output filter rule <1-999999> destination address [address |
addressrange | CIDR]
```

```
set firewall ipv6 name <name> rule <1-999999> destination address [address | addressrange
| CIDR]
```

Match criteria based on source and/or destination address. This is similar to the network groups part, but here you are able to negate the matching addresses.

```
set firewall ipv6 name F00 rule 100 source address 2001:db8::202
```

```
set firewall ipv6 forward filter rule <1-999999> source address-mask [address]
```

```
set firewall ipv6 input filter rule <1-999999> source address-mask [address]
```

```
set firewall ipv6 output filter rule <1-999999> source address-mask [address]
```

```
set firewall ipv6 name <name> rule <1-999999> source address-mask [address]
```

```
set firewall ipv6 forward filter rule <1-999999> destination address-mask [address]
```

```
set firewall ipv6 input filter rule <1-999999> destination address-mask [address]
```

```
set firewall ipv6 output filter rule <1-999999> destination address-mask [address]
```

```
set firewall ipv6 name <name> rule <1-999999> destination address-mask [address]
```

An arbitrary netmask can be applied to mask addresses to only match against a specific portion. This is particularly useful with IPv6 as rules will remain valid if the IPv6 prefix changes and the host portion of systems IPv6 address is static (for example, with SLAAC or [tokenised IPv6 addresses](#))

This functions for both individual addresses and address groups.

```
# Match any IPv6 address with the suffix ::0000:0000:0000:beef
set firewall ipv6 forward filter rule 100 destination address ::beef
set firewall ipv6 forward filter rule 100 destination address-mask
->::ffff:ffff:ffff:ffff
# Address groups
set firewall group ipv6-address-group WEBSERVERS address ::1000
set firewall group ipv6-address-group WEBSERVERS address ::2000
set firewall ipv6 forward filter rule 200 source group address-group WEBSERVERS
set firewall ipv6 forward filter rule 200 source address-mask ::ffff:ffff:ffff:ffff
```

```
set firewall ipv6 forward filter rule <1-999999> source fqdn <fqdn>
```

```
set firewall ipv6 input filter rule <1-999999> source fqdn <fqdn>
```

```
set firewall ipv6 output filter rule <1-999999> source fqdn <fqdn>
```

```
set firewall ipv6 name <name> rule <1-999999> source fqdn <fqdn>
```

```
set firewall ipv6 forward filter rule <1-999999> destination fqdn <fqdn>
```

```
set firewall ipv6 input filter rule <1-999999> destination fqdn <fqdn>
```

```
set firewall ipv6 output filter rule <1-999999> destination fqdn <fqdn>
```

```
set firewall ipv6 name <name> rule <1-999999> destination fqdn <fqdn>
```

Specify a Fully Qualified Domain Name as source/destination matcher. Ensure router is able to resolve such dns query.

```
set firewall ipv6 forward filter rule <1-999999> source geoip country-code <country>
```

```
set firewall ipv6 input filter rule <1-999999> source geoip country-code <country>
```

```

set firewall ipv6 output filter rule <1-999999> source geoip country-code <country>
set firewall ipv6 name <name> rule <1-999999> source geoip country-code <country>
set firewall ipv6 forward filter rule <1-999999> destination geoip country-code <country>
set firewall ipv6 input filter rule <1-999999> destination geoip country-code <country>
set firewall ipv6 output filter rule <1-999999> destination geoip country-code <country>
set firewall ipv6 name <name> rule <1-999999> destination geoip country-code <country>
set firewall ipv6 forward filter rule <1-999999> source geoip inverse-match
set firewall ipv6 input filter rule <1-999999> source geoip inverse-match
set firewall ipv6 output filter rule <1-999999> source geoip inverse-match
set firewall ipv6 name <name> rule <1-999999> source geoip inverse-match
set firewall ipv6 forward filter rule <1-999999> destination geoip inverse-match
set firewall ipv6 input filter rule <1-999999> destination geoip inverse-match
set firewall ipv6 output filter rule <1-999999> destination geoip inverse-match
set firewall ipv6 name <name> rule <1-999999> destination geoip inverse-match

```

Match IP addresses based on its geolocation. More info: [geoip matching](#). Use inverse-match to match anything except the given country-codes.

Data is provided by DB-IP.com under CC-BY-4.0 license. Attribution required, permits redistribution so we can include a database in images(~3MB compressed). Includes cron script (manually callable by op-mode update geoip) to keep database and rules updated.

```

set firewall ipv6 forward filter rule <1-999999> source mac-address <mac-address>
set firewall ipv6 input filter rule <1-999999> source mac-address <mac-address>
set firewall ipv6 output filter rule <1-999999> source mac-address <mac-address>
set firewall ipv6 name <name> rule <1-999999> source mac-address <mac-address>

```

Only in the source criteria, you can specify a mac-address.

```

set firewall ipv6 input filter rule 100 source mac-address 00:53:00:11:22:33
set firewall ipv6 input filter rule 101 source mac-address !00:53:00:aa:12:34

```

```

set firewall ipv6 forward filter rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv6 input filter rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv6 output filter rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv6 name <name> rule <1-999999> source port [1-65535 | portname |
start-end]
set firewall ipv6 forward filter rule <1-999999> destination port [1-65535 | portname |
start-end]
set firewall ipv6 input filter rule <1-999999> destination port [1-65535 | portname |
start-end]

```

```
set firewall ipv6 output filter rule <1-999999> destination port [1-65535 | portname |
start-end]
```

```
set firewall ipv6 name <name> rule <1-999999> destination port [1-65535 | portname |
start-end]
```

A port can be set with a port number or a name which is here defined: `/etc/services`.

```
set firewall ipv6 forward filter rule 10 source port '22'
set firewall ipv6 forward filter rule 11 source port '!http'
set firewall ipv6 forward filter rule 12 source port 'https'
```

Multiple source ports can be specified as a comma-separated list. The whole list can also be “negated” using `!`. For example:

```
set firewall ipv6 forward filter rule 10 source port '!22,https,3333-3338'
```

```
set firewall ipv6 forward filter rule <1-999999> source group address-group <name | !
name>
set firewall ipv6 input filter rule <1-999999> source group address-group <name | !name>
set firewall ipv6 output filter rule <1-999999> source group address-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> source group address-group <name | !name>
set firewall ipv6 forward filter rule <1-999999> destination group address-group <name |
!name>
set firewall ipv6 input filter rule <1-999999> destination group address-group <name |
!name>
set firewall ipv6 output filter rule <1-999999> destination group address-group <name |
!name>
set firewall ipv6 name <name> rule <1-999999> destination group address-group <name |
!name>
```

Use a specific address-group. Prepend character `!` for inverted matching criteria.

```
set firewall ipv6 forward filter rule <1-999999> source group network-group <name | !
name>
set firewall ipv6 input filter rule <1-999999> source group network-group <name | !name>
set firewall ipv6 output filter rule <1-999999> source group network-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> source group network-group <name | !name>
set firewall ipv6 forward filter rule <1-999999> destination group network-group <name |
!name>
set firewall ipv6 input filter rule <1-999999> destination group network-group <name |
!name>
set firewall ipv6 output filter rule <1-999999> destination group network-group <name |
!name>
set firewall ipv6 name <name> rule <1-999999> destination group network-group <name |
!name>
```

Use a specific network-group. Prepend character `!` for inverted matching criteria.

```
set firewall ipv6 forward filter rule <1-999999> source group port-group <name | !name>
```

```

set firewall ipv6 input filter rule <1-999999> source group port-group <name | !name>
set firewall ipv6 output filter rule <1-999999> source group port-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> source group port-group <name | !name>
set firewall ipv6 forward filter rule <1-999999> destination group port-group <name | !name>
set firewall ipv6 input filter rule <1-999999> destination group port-group <name | !name>
set firewall ipv6 output filter rule <1-999999> destination group port-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> destination group port-group <name | !name>

```

Use a specific port-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv6 forward filter rule <1-999999> source group domain-group <name | !name>
set firewall ipv6 input filter rule <1-999999> source group domain-group <name | !name>
set firewall ipv6 output filter rule <1-999999> source group domain-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> source group domain-group <name | !name>
set firewall ipv6 forward filter rule <1-999999> destination group domain-group <name | !name>
set firewall ipv6 input filter rule <1-999999> destination group domain-group <name | !name>
set firewall ipv6 output filter rule <1-999999> destination group domain-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> destination group domain-group <name | !name>

```

Use a specific domain-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv6 forward filter rule <1-999999> source group mac-group <name | !name>
set firewall ipv6 input filter rule <1-999999> source group mac-group <name | !name>
set firewall ipv6 output filter rule <1-999999> source group mac-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> source group mac-group <name | !name>
set firewall ipv6 forward filter rule <1-999999> destination group mac-group <name | !name>
set firewall ipv6 input filter rule <1-999999> destination group mac-group <name | !name>
set firewall ipv6 output filter rule <1-999999> destination group mac-group <name | !name>
set firewall ipv6 name <name> rule <1-999999> destination group mac-group <name | !name>

```

Use a specific mac-group. Prepend character ! for inverted matching criteria.

```

set firewall ipv6 forward filter rule <1-999999> dscp [0-63 | start-end]
set firewall ipv6 input filter rule <1-999999> dscp [0-63 | start-end]
set firewall ipv6 output filter rule <1-999999> dscp [0-63 | start-end]
set firewall ipv6 name <name> rule <1-999999> dscp [0-63 | start-end]

```

```
set firewall ipv6 forward filter rule <1-999999> dscp-exclude [0-63 | start-end]
set firewall ipv6 input filter rule <1-999999> dscp-exclude [0-63 | start-end]
set firewall ipv6 output filter rule <1-999999> dscp-exclude [0-63 | start-end]
set firewall ipv6 name <name> rule <1-999999> dscp-exclude [0-63 | start-end]
```

Match based on dscp value.

```
set firewall ipv6 forward filter rule <1-999999> fragment [match-frag | match-non-frag]
set firewall ipv6 input filter rule <1-999999> fragment [match-frag | match-non-frag]
set firewall ipv6 output filter rule <1-999999> fragment [match-frag | match-non-frag]
set firewall ipv6 name <name> rule <1-999999> fragment [match-frag | match-non-frag]
```

Match based on fragment criteria.

```
set firewall ipv6 forward filter rule <1-999999> icmpv6 [code | type] <0-255>
set firewall ipv6 input filter rule <1-999999> icmpv6 [code | type] <0-255>
set firewall ipv6 output filter rule <1-999999> icmpv6 [code | type] <0-255>
set firewall ipv6 name <name> rule <1-999999> icmpv6 [code | type] <0-255>
```

Match based on icmp|icmpv6 code and type.

```
set firewall ipv6 forward filter rule <1-999999> icmpv6 type-name <text>
set firewall ipv6 input filter rule <1-999999> icmpv6 type-name <text>
set firewall ipv6 output filter rule <1-999999> icmpv6 type-name <text>
set firewall ipv6 name <name> rule <1-999999> icmpv6 type-name <text>
```

Match based on icmpv6 type-name criteria. Use tab for information about what **type-name** criteria are supported.

```
set firewall ipv6 forward filter rule <1-999999> inbound-interface name <iface>
set firewall ipv6 input filter rule <1-999999> inbound-interface name <iface>
set firewall ipv6 name <name> rule <1-999999> inbound-interface name <iface>
```

Match based on inbound interface. Wilcard \* can be used. For example: eth2\*. Prepending character ! for inverted matching criteria is also supported. For example !eth2

```
set firewall ipv6 forward filter rule <1-999999> inbound-interface group <iface_group>
set firewall ipv6 input filter rule <1-999999> inbound-interface group <iface_group>
set firewall ipv6 name <name> rule <1-999999> inbound-interface group <iface_group>
```

Match based on inbound interface group. Prepending character ! for inverted matching criteria is also supported. For example !IFACE\_GROUP

```
set firewall ipv6 forward filter rule <1-999999> outbound-interface name <iface>
set firewall ipv6 output filter rule <1-999999> outbound-interface name <iface>
set firewall ipv6 name <name> rule <1-999999> outbound-interface name <iface>
```

Match based on outbound interface. Wilcard \* can be used. For example: eth2\*. Prepending character ! for inverted matching criteria is also supported. For example !eth2

```
set firewall ipv6 forward filter rule <1-999999> outbound-interface group <iface_group>
```

```
set firewall ipv6 output filter rule <1-999999> outbound-interface group <iface_group>
set firewall ipv6 name <name> rule <1-999999> outbound-interface group <iface_group>
```

Match based on outbound interface group. Prepending character ! for inverted matching criteria is also supported.  
For example !IFACE\_GROUP

```
set firewall ipv6 forward filter rule <1-999999> ipsec [match-ipsec | match-none]
set firewall ipv6 input filter rule <1-999999> ipsec [match-ipsec | match-none]
set firewall ipv6 output filter rule <1-999999> ipsec [match-ipsec | match-none]
set firewall ipv6 name <name> rule <1-999999> ipsec [match-ipsec | match-none]
```

Match based on ipsec criteria.

```
set firewall ipv6 forward filter rule <1-999999> limit burst <0-4294967295>
set firewall ipv6 input filter rule <1-999999> limit burst <0-4294967295>
set firewall ipv6 output filter rule <1-999999> limit burst <0-4294967295>
set firewall ipv6 name <name> rule <1-999999> limit burst <0-4294967295>
```

Match based on the maximum number of packets to allow in excess of rate.

```
set firewall ipv6 forward filter rule <1-999999> limit rate <text>
set firewall ipv6 input filter rule <1-999999> limit rate <text>
set firewall ipv6 output filter rule <1-999999> limit rate <text>
set firewall ipv6 name <name> rule <1-999999> limit rate <text>
```

Match based on the maximum average rate, specified as **integer/unit**. For example **5/minutes**

```
set firewall ipv6 forward filter rule <1-999999> packet-length <text>
set firewall ipv6 input filter rule <1-999999> packet-length <text>
set firewall ipv6 output filter rule <1-999999> packet-length <text>
set firewall ipv6 name <name> rule <1-999999> packet-length <text>
set firewall ipv6 forward filter rule <1-999999> packet-length-exclude <text>
set firewall ipv6 input filter rule <1-999999> packet-length-exclude <text>
set firewall ipv6 output filter rule <1-999999> packet-length-exclude <text>
set firewall ipv6 name <name> rule <1-999999> packet-length-exclude <text>
```

Match based on packet length criteria. Multiple values from 1 to 65535 and ranges are supported.

```
set firewall ipv6 forward filter rule <1-999999> packet-type [broadcast | host |
multicast | other]
set firewall ipv6 input filter rule <1-999999> packet-type [broadcast | host | multicast
| other]
set firewall ipv6 output filter rule <1-999999> packet-type [broadcast | host | multicast
| other]
set firewall ipv6 name <name> rule <1-999999> packet-type [broadcast | host | multicast |
other]
```

Match based on packet type criteria.

```
set firewall ipv6 forward filter rule <1-999999> protocol [<text> | <0-255> | all |
tcp_udp]
```

```
set firewall ipv6 input filter rule <1-999999> protocol [<text> | <0-255> | all |
tcp_udp]
```

```
set firewall ipv6 output filter rule <1-999999> protocol [<text> | <0-255> | all |
tcp_udp]
```

```
set firewall ipv6 name <name> rule <1-999999> protocol [<text> | <0-255> | all | tcp_udp]
```

Match a protocol criteria. A protocol number or a name which is here defined: /etc/protocols. Special names are all for all protocols and tcp\_udp for tcp and udp based packets. The ! negate the selected protocol.

```
set firewall ipv6 input filter rule 10 protocol tcp
```

```
set firewall ipv6 forward filter rule <1-999999> recent count <1-255>
```

```
set firewall ipv6 input filter rule <1-999999> recent count <1-255>
```

```
set firewall ipv6 output filter rule <1-999999> recent count <1-255>
```

```
set firewall ipv6 name <name> rule <1-999999> recent count <1-255>
```

```
set firewall ipv6 forward filter rule <1-999999> recent time [second | minute | hour]
```

```
set firewall ipv6 input filter rule <1-999999> recent time [second | minute | hour]
```

```
set firewall ipv6 output filter rule <1-999999> recent time [second | minute | hour]
```

```
set firewall ipv6 name <name> rule <1-999999> recent time [second | minute | hour]
```

Match bases on recently seen sources.

```
set firewall ipv6 forward filter rule <1-999999> tcp flags [not] <text>
```

```
set firewall ipv6 input filter rule <1-999999> tcp flags [not] <text>
```

```
set firewall ipv6 output filter rule <1-999999> tcp flags [not] <text>
```

```
set firewall ipv6 name <name> rule <1-999999> tcp flags [not] <text>
```

Allowed values for TCP flags: ack, cwr, ecn, fin, psh, rst, syn and urg. Multiple values are supported, and for inverted selection use not, as shown in the example.

```
set firewall ipv6 input filter rule 10 tcp flags 'ack'
set firewall ipv6 input filter rule 12 tcp flags 'syn'
set firewall ipv6 input filter rule 13 tcp flags not 'fin'
```

```
set firewall ipv6 forward filter rule <1-999999> state [established | invalid | new |
related] [enable | disable]
```

```
set firewall ipv6 input filter rule <1-999999> state [established | invalid | new |
related] [enable | disable]
```

```
set firewall ipv6 output filter rule <1-999999> state [established | invalid | new |
related] [enable | disable]
```

```
set firewall ipv6 name <name> rule <1-999999> state [established | invalid | new |
related] [enable | disable]
```

Match against the state of a packet.

```
set firewall ipv6 forward filter rule <1-999999> time startdate <text>
```

```
set firewall ipv6 input filter rule <1-999999> time startdate <text>
```

```

set firewall ipv6 output filter rule <1-999999> time startdate <text>
set firewall ipv6 name <name> rule <1-999999> time startdate <text>
set firewall ipv6 forward filter rule <1-999999> time starttime <text>
set firewall ipv6 input filter rule <1-999999> time starttime <text>
set firewall ipv6 output filter rule <1-999999> time starttime <text>
set firewall ipv6 name <name> rule <1-999999> time starttime <text>
set firewall ipv6 forward filter rule <1-999999> time stopdate <text>
set firewall ipv6 input filter rule <1-999999> time stopdate <text>
set firewall ipv6 output filter rule <1-999999> time stopdate <text>
set firewall ipv6 name <name> rule <1-999999> time stopdate <text>
set firewall ipv6 forward filter rule <1-999999> time stoptime <text>
set firewall ipv6 input filter rule <1-999999> time stoptime <text>
set firewall ipv6 output filter rule <1-999999> time stoptime <text>
set firewall ipv6 name <name> rule <1-999999> time stoptime <text>
set firewall ipv6 forward filter rule <1-999999> time weekdays <text>
set firewall ipv6 input filter rule <1-999999> time weekdays <text>
set firewall ipv6 output filter rule <1-999999> time weekdays <text>
set firewall ipv6 name <name> rule <1-999999> time weekdays <text>

```

Time to match the defined rule.

```

set firewall ipv6 forward filter rule <1-999999> hop-limit <eq | gt | lt> <0-255>
set firewall ipv6 input filter rule <1-999999> hop-limit <eq | gt | lt> <0-255>
set firewall ipv6 output filter rule <1-999999> hop-limit <eq | gt | lt> <0-255>
set firewall ipv6 name <name> rule <1-999999> hop-limit <eq | gt | lt> <0-255>

```

Match hop-limit parameter, where 'eq' stands for 'equal'; 'gt' stands for 'greater than', and 'lt' stands for 'less than'.

```

set firewall ipv6 forward filter rule <1-999999> recent count <1-255>
set firewall ipv6 input filter rule <1-999999> recent count <1-255>
set firewall ipv6 output filter rule <1-999999> recent count <1-255>
set firewall ipv6 name <name> rule <1-999999> recent count <1-255>
set firewall ipv6 forward filter rule <1-999999> recent time <second | minute | hour>
set firewall ipv6 input filter rule <1-999999> recent time <second | minute | hour>
set firewall ipv6 output filter rule <1-999999> recent time <second | minute | hour>
set firewall ipv6 name <name> rule <1-999999> recent time <second | minute | hour>

```

Match when 'count' amount of connections are seen within 'time'. These matching criteria can be used to block brute-force attempts.

## Synproxy

Synproxy connections

```
set firewall ipv6 [input | forward] filter rule <1-999999> action synproxy
set firewall ipv6 [input | forward] filter rule <1-999999> protocol tcp
set firewall ipv6 [input | forward] filter rule <1-999999> synproxy tcp mss <501-65535>
```

Set TCP-MSS (maximum segment size) for the connection

```
set firewall ipv6 [input | forward] filter rule <1-999999> synproxy tcp window-scale <1-14>
```

Set the window scale factor for TCP window scaling

## Example synproxy

Requirements to enable synproxy:

- Traffic must be symmetric
- Synproxy relies on syncookies and TCP timestamps, ensure these are enabled
- Disable contrack loose track option

```
set system sysctl parameter net.ipv4.tcp_timestamps value '1'

set system contrack tcp loose disable
set system contrack ignore ipv6 rule 10 destination port '8080'
set system contrack ignore ipv6 rule 10 protocol 'tcp'
set system contrack ignore ipv6 rule 10 tcp flags syn

set firewall global-options syn-cookies 'enable'
set firewall ipv6 input filter rule 10 action 'synproxy'
set firewall ipv6 input filter rule 10 destination port '8080'
set firewall ipv6 input filter rule 10 inbound-interface interface-name 'eth1'
set firewall ipv6 input filter rule 10 protocol 'tcp'
set firewall ipv6 input filter rule 10 synproxy tcp mss '1460'
set firewall ipv6 input filter rule 10 synproxy tcp window-scale '7'
set firewall ipv6 input filter rule 1000 action 'drop'
set firewall ipv6 input filter rule 1000 state invalid 'enable'
```

## Operation-mode Firewall

### Rule-set overview

#### show firewall

This will show you a basic firewall overview

```
vyos@vyos:~$ show firewall
Rulesets Information
```

-----

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```
IPv4 Firewall "forward filter"
Rule      Action  Protocol  Packets  Bytes  Conditions
-----
5         jump    all       0        0      iifname "eth1" jump NAME_VyOS_
→MANAGEMENT
10        jump    all       0        0      oifname "eth1" jump NAME_WAN_IN
15        jump    all       0        0      iifname "eth3" jump NAME_WAN_IN
default   accept  all
```

```
IPv4 Firewall "name VyOS_MANAGEMENT"
Rule      Action  Protocol  Packets  Bytes  Conditions
-----
5         accept  all       0        0      ct state established accept
10        drop    all       0        0      ct state invalid
20        accept  all       0        0      ip saddr @A_GOOD_GUYS accept
30        accept  all       0        0      ip saddr @N_ENTIRE_RANGE accept
40        accept  all       0        0      ip saddr @A_VyOS_SERVERS accept
50        accept  icmp      0        0      meta l4proto icmp accept
default   drop    all       0        0
```

```
IPv6 Firewall "forward filter"
Rule      Action  Protocol
-----
5         jump    all
10        jump    all
15        jump    all
default   accept  all
```

```
IPv6 Firewall "input filter"
Rule      Action  Protocol
-----
5         jump    all
default   accept  all
```

```
IPv6 Firewall "ipv6_name IPV6-VyOS_MANAGEMENT"
Rule      Action  Protocol
-----
5         accept  all
10        drop    all
20        accept  all
30        accept  all
40        accept  all
```

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```
50      accept  ipv6-icmp
default drop    all
```

**show firewall summary**

This will show you a summary of rule-sets and groups

```
vyos@vyos:~$ show firewall summary
Ruleset Summary

IPv6 Ruleset:

Ruleset Hook    Ruleset Priority    Description
-----
forward        filter
input          filter
ipv6_name      IPV6-VyOS_MANAGEMENT
ipv6_name      IPV6-WAN_IN        PUBLIC_INTERNET

IPv4 Ruleset:

Ruleset Hook    Ruleset Priority    Description
-----
forward        filter
input          filter
name           VyOS_MANAGEMENT
name           WAN_IN              PUBLIC_INTERNET

Firewall Groups

Name            Type                References          Members
-----
->--
PBX            address_group      WAN_IN-100          198.51.100.77
SERVERS       address_group      WAN_IN-110          192.0.2.10
               address_group      WAN_IN-111          192.0.2.11
               address_group      WAN_IN-112          192.0.2.12
               address_group      WAN_IN-120
               address_group      WAN_IN-121
               address_group      WAN_IN-122
SUPPORT       address_group      VyOS_MANAGEMENT-20  192.168.1.2
               address_group      WAN_IN-20
PHONE_VPN_SERVERS  address_group      WAN_IN-160          10.6.32.2
PINGABLE_ADDRESSES address_group      WAN_IN-170          192.168.5.2
               address_group      WAN_IN-171
PBX            ipv6_address_group IPV6-WAN_IN-100     2001:db8::1
SERVERS       ipv6_address_group IPV6-WAN_IN-110     2001:db8::2
               ipv6_address_group IPV6-WAN_IN-111     2001:db8::3
               ipv6_address_group IPV6-WAN_IN-112     2001:db8::4
               ipv6_address_group IPV6-WAN_IN-120
               ipv6_address_group IPV6-WAN_IN-121
               ipv6_address_group IPV6-WAN_IN-122
SUPPORT       ipv6_address_group IPV6-VyOS_MANAGEMENT-20 2001:db8::5
```

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IPV6-WAN\_IN-20

**show firewall ipv6 [forward | input | output] filter**

**show firewall ipv6 ipv6-name <name>**

This command will give an overview of a single rule-set.

```
vyos@vyos:~$ show firewall ipv6 input filter
Ruleset Information

-----
ipv6 Firewall "input filter"

Rule      Action    Protocol    Packets    Bytes    Conditions
-----
→-----
10        jump     all         13         1456    iifname "eth1"  jump NAME6_INP-
→ETH1
20        accept   ipv6-icmp   10         1112    meta l4proto ipv6-icmp iifname
→"eth0"  prefix "[ipv6-INP-filter-20-A]"  accept
default  accept   all         14         1584

vyos@vyos:~$
```

**show firewall ipv6 [forward | input | output] filter rule <1-999999>**

**show firewall ipv6 name <name> rule <1-999999>**

**show firewall ipv6 ipv6-name <name> rule <1-999999>**

This command will give an overview of a rule in a single rule-set

**show firewall group <name>**

Overview of defined groups. You see the type, the members, and where the group is used.

```
vyos@vyos:~$ show firewall group LAN
Firewall Groups

Name      Type                References                Members
-----
LAN       ipv6_network_group  IPV6-VyOS_MANAGEMENT-30  2001:db8::0/64
                            IPV6-WAN_IN-30
LAN       network_group       VyOS_MANAGEMENT-30       192.168.200.0/24
                            WAN_IN-30
```

**show firewall statistics**

This will show you a statistic of all rule-sets since the last boot.

## Show Firewall log

```
show log firewall
```

```
show log firewall ipv6
```

```
show log firewall ipv6 [forward | input | output | name]
```

```
show log firewall ipv6 [forward | input | output] filter
```

```
show log firewall ipv6 name <name>
```

```
show log firewall ipv6 [forward | input | output] filter rule <rule>
```

```
show log firewall ipv6 name <name> rule <rule>
```

Show the logs of all firewall; show all ipv6 firewall logs; show all logs for particular hook; show all logs for particular hook and priority; show all logs for particular custom chain; show logs for specific Rule-Set.

## Example Partial Config

```

firewall {
  ipv6 {
    input {
      filter {
        rule 10 {
          action jump
          inbound-interface {
            name eth1
          }
          jump-target INP-ETH1
        }
        rule 20 {
          action accept
          inbound-interface {
            name eth0
          }
          log
          protocol ipv6-icmp
        }
      }
    }
    name INP-ETH1 {
      default-action drop
      enable-default-log
      rule 10 {
        action accept
        protocol tcp_udp
      }
    }
  }
}

```

## Update geoup database

### update geoup

Command used to update GeoIP database and firewall sets.

## 8.2.6 Flowtables Firewall Configuration

**Note:** Documentation under development

### Overview

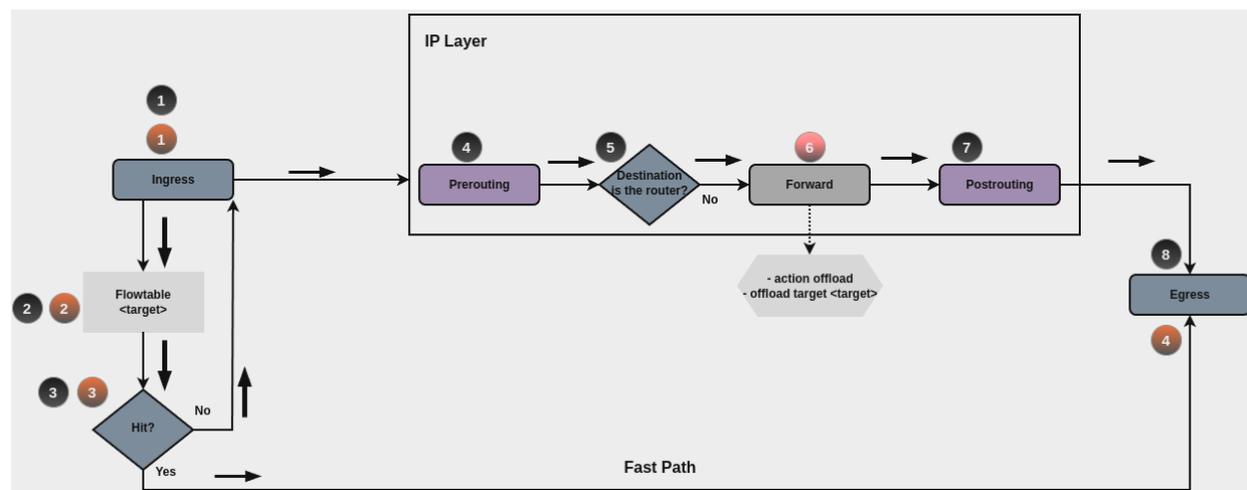
In this section there's useful information of all firewall configuration that can be done regarding flowtables.

#### set firewall flowtables ...

From main structure defined in *Firewall Overview* in this section you can find detailed information only for the next part of the general structure:

```
- set firewall
  * flowtable
    - custom_flow_table
      + ...
```

Flowtables allows you to define a fastpath through the flowtable datapath. The flowtable supports for the layer 3 IPv4 and IPv6 and the layer 4 TCP and UDP protocols.



Once the first packet of the flow successfully goes through the IP forwarding path (black circles path), from the second packet on, you might decide to offload the flow to the flowtable through your ruleset. The flowtable infrastructure provides a rule action that allows you to specify when to add a flow to the flowtable (On forward filtering, red circle number 6)

A packet that finds a matching entry in the flowtable (flowtable hit) is transmitted to the output netdevice, hence, packets bypass the classic IP forwarding path and uses the **Fast Path** (orange circles path). The visible effect is that you do not see these packets from any of the Netfilter hooks coming after ingress. In case that there is no matching entry in the flowtable (flowtable miss), the packet follows the classic IP forwarding path.

**Note: Flowtable Reference:** [https://docs.kernel.org/networking/nf\\_flowtable.html](https://docs.kernel.org/networking/nf_flowtable.html)

---

## Flowtable Configuration

In order to use flowtables, the minimal configuration needed includes:

- Create flowtable: create flowtable, which includes the interfaces that are going to be used by the flowtable.
- Create firewall rule: create a firewall rule, setting action to offload and using desired flowtable for offload-target.

Creating a flow table:

```
set firewall flowtable <flow_table_name> interface <iface>
```

Define interfaces to be used in the flowtable.

```
set firewall flowtable <flow_table_name> description <text>
```

Provide a description to the flow table.

```
set firewall flowtable <flow_table_name> offload <hardware | software>
```

Define type of offload to be used by the flowtable: hardware or software. By default, software offload is used.

---

**Note: Hardware offload:** should be supported by the NICs used.

---

Creating rules for using flow tables:

```
set firewall [ipv4 | ipv4] forward filter rule <1-999999> action offload
```

Create firewall rule in forward chain, and set action to offload.

```
set firewall [ipv4 | ipv4] forward filter rule <1-999999> offload-target <flowtable>
```

Create firewall rule in forward chain, and define which flowtable should be used. Only applicable if action is offload.

## Configuration Example

Things to be considered in this setup:

- Two interfaces are going to be used in the flowtables: eth0 and eth1
- Minimum firewall ruleset is provided, which includes some filtering rules, and appropriate rules for using flowtable offload capabilities.

As described, first packet will be evaluated by all the firewall path, so desired connection should be explicitly accepted. Same thing should be taken into account for traffic in reverse order. In most cases state policies are used in order to accept connection in reverse patch.

We will only accept traffic coming from interface eth0, protocol tcp and destination port 1122. All other traffic trespassing the router should be blocked.

## Commands

```
set firewall flowtable FT01 interface 'eth0'
set firewall flowtable FT01 interface 'eth1'
set firewall ipv4 forward filter default-action 'drop'
set firewall ipv4 forward filter rule 10 action 'offload'
set firewall ipv4 forward filter rule 10 offload-target 'FT01'
set firewall ipv4 forward filter rule 10 state 'established'
set firewall ipv4 forward filter rule 10 state 'related'
set firewall ipv4 forward filter rule 20 action 'accept'
set firewall ipv4 forward filter rule 20 state 'established'
set firewall ipv4 forward filter rule 20 state 'related'
set firewall ipv4 forward filter rule 110 action 'accept'
set firewall ipv4 forward filter rule 110 destination address '192.0.2.100'
set firewall ipv4 forward filter rule 110 destination port '1122'
set firewall ipv4 forward filter rule 110 inbound-interface name 'eth0'
set firewall ipv4 forward filter rule 110 protocol 'tcp'
```

## Explanation

Analysis on what happens for desired connection:

1. First packet is received on eth0, with destination address 192.0.2.100, protocol tcp and destination port 1122. Assume such destination address is reachable through interface eth1.
2. Since this is the first packet, connection status of this connection, so far is **new**. So neither rule 10 nor 20 are valid.
3. Rule 110 is hit, so connection is accepted.
4. Once answer from server 192.0.2.100 is seen in opposite direction, connection state will be triggered to **established**, so this reply is accepted in rule 10.
5. Second packet for this connection is received by the router. Since connection state is **established**, then rule 10 is hit, and a new entry in the flowtable FT01 is added for this connection.
6. All subsequent packets will skip traditional path, and will be offloaded and will use the **Fast Path**.

## Checks

It's time to check conntrack table, to see if any connection was accepted, and if was properly offloaded

```
vyos@FlowTables:~$ show firewall ipv4 forward filter
Ruleset Information
```

```
-----
ipv4 Firewall "forward filter"
```

Rule	Action	Protocol	Packets	Bytes	Conditions
10	offload	all	8	468	ct state { established, related } <span style="color:red">└</span>

```
↪flow add @VYOS_FLOWTABLE_FT01
```

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```

20      accept    all          8      468  ct state { established, related } ↵
↪accept
110     accept    tcp          2      120  ip daddr 192.0.2.100 tcp dport 1122 ↵
↪iifname "eth0" accept
default drop      all          7      420

vyos@FlowTables:~$ sudo conntrack -L | grep tcp
conntrack v1.4.6 (conntrack-tools): 5 flow entries have been shown.
tcp      6 src=198.51.100.100 dst=192.0.2.100 sport=41676 dport=1122 src=192.0.2.100 ↵
↪dst=198.51.100.100 sport=1122 dport=41676 [OFFLOAD] mark=0 use=2
vyos@FlowTables:~$

```

**Note:** For more information of Netfilter hooks and Linux networking packet flows can be found in [Netfilter-Hooks](#)

## 8.2.7 Zone-based firewall

### Zone Based Firewall

#### Overview

**Note:** Starting from VyOS 1.4-rolling-202308040557, a new firewall structure can be found on all vyos instalations. Zone based firewall was removed in that version, but re introduced in VyOS 1.4 and 1.5. All versions built after 2023-10-22 has this feature. Documentation for most of the new firewall CLI can be found in the [firewall](#) chapter. The legacy firewall is still available for versions before 1.4-rolling-202308040557 and can be found in the [legacy firewall configuration](#) chapter.

In this section there's useful information of all firewall configuration that is needed for zone-based firewall. Configuration commands covered in this section:

#### set firewall zone ...

From main structure defined in [Firewall Overview](#) in this section you can find detailed information only for the next part of the general structure:

```

- set firewall
  * zone
    - custom_zone_name
    + ...

```

In zone-based policy, interfaces are assigned to zones, and inspection policy is applied to traffic moving between the zones and acted on according to firewall rules. A zone is a group of interfaces that have similar functions or features. It establishes the security borders of a network. A zone defines a boundary where traffic is subjected to policy restrictions as it crosses to another region of a network.

#### Key Points:

- A zone must be configured before an interface is assigned to it and an interface can be assigned to only a single zone.
- All traffic to and from an interface within a zone is permitted.

- All traffic between zones is affected by existing policies
- Traffic cannot flow between zone member interface and any interface that is not a zone member.
- You need 2 separate firewalls to define traffic: one for each direction.

---

**Note:** In T2199 the syntax of the zone configuration was changed. The zone configuration moved from `zone-policy zone <name>` to `firewall zone <name>`.

---

## Configuration

As an alternative to applying policy to an interface directly, a zone-based firewall can be created to simplify configuration when multiple interfaces belong to the same security zone. Instead of applying rule-sets to interfaces, they are applied to source zone-destination zone pairs.

A basic introduction to zone-based firewalls can be found [here](#), and an example at *Zone-Policy example*.

## Define a Zone

To define a zone setup either one with interfaces or a local zone.

```
set firewall zone <name> interface <interface>
```

Set interfaces to a zone. A zone can have multiple interfaces. But an interface can only be a member in one zone.

```
set firewall zone <name> local-zone
```

Define the zone as a local zone. A local zone has no interfaces and will be applied to the router itself.

```
set firewall zone <name> default-action [drop | reject]
```

Change the default-action with this setting.

```
set firewall zone <name> description
```

Set a meaningful description.

## Applying a Rule-Set to a Zone

Before you are able to apply a rule-set to a zone you have to create the zones first.

It helps to think of the syntax as: (see below). The 'rule-set' should be written from the perspective of: *Source Zone-to->\*Destination Zone\**

```
set firewall zone <Destination Zone> from <Source Zone> firewall name <rule-set>
```

```
set firewall zone <name> from <name> firewall name <rule-set>
```

```
set firewall zone <name> from <name> firewall ipv6-name <rule-set>
```

You apply a rule-set always to a zone from an other zone, it is recommended to create one rule-set for each zone pair.

```
set firewall zone DMZ from LAN firewall name LANv4-to-DMZv4
set firewall zone LAN from DMZ firewall name DMZv4-to-LANv4
```

## Operation-mode

### show firewall zone-policy

This will show you a basic summary of zones configuration.

```
vyos@vyos:~$ show firewall zone-policy
Zone   Interfaces   From Zone   Firewall IPv4   Firewall IPv6
-----
LAN    eth1         WAN         WAN_to_LAN
      eth2
LOCAL  LOCAL        LAN         LAN_to_LOCAL
      LOCAL        WAN         WAN_to_LOCAL    WAN_to_LOCAL_v6
WAN    eth3         LAN         LAN_to_WAN
      eth0         LOCAL        LOCAL_to_WAN
vyos@vyos:~$
```

### show firewall zone-policy zone <zone>

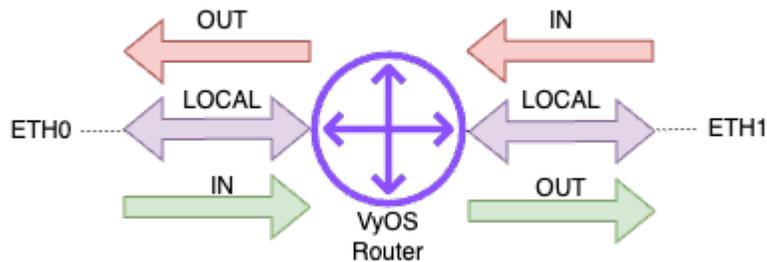
This will show you a basic summary of a particular zone.

```
vyos@vyos:~$ show firewall zone-policy zone WAN
Zone   Interfaces   From Zone   Firewall IPv4   Firewall IPv6
-----
WAN    eth3         LAN         LAN_to_WAN
      eth0         LOCAL        LOCAL_to_WAN
vyos@vyos:~$ show firewall zone-policy zone LOCAL
Zone   Interfaces   From Zone   Firewall IPv4   Firewall IPv6
-----
LOCAL  LOCAL        LAN         LAN_to_LOCAL
      LOCAL        WAN         WAN_to_LOCAL    WAN_to_LOCAL_v6
vyos@vyos:~$
```

With zone-based firewalls a new concept was implemented, in addition to the standard in and out traffic flows, a local flow was added. This local was for traffic originating and destined to the router itself. Which means additional rules were required to secure the firewall itself from the network, in addition to the existing inbound and outbound rules from the traditional concept above.

To configure VyOS with the *zone-based firewall configuration*

As the example image below shows, the device now needs rules to allow/block traffic to or from the services running on the device that have open connections on that interface.



## 8.3 High availability

VRRP (Virtual Router Redundancy Protocol) provides active/backup redundancy for routers. Every VRRP router has a physical IP/IPv6 address, and a virtual address. On startup, routers elect the master, and the router with the highest priority becomes the master and assigns the virtual address to its interface. All routers with lower priorities become backup routers. The master then starts sending keepalive packets to notify other routers that it's available. If the master fails and stops sending keepalive packets, the router with the next highest priority becomes the new master and takes over the virtual address.

VRRP keepalive packets use multicast, and VRRP setups are limited to a single datalink layer segment. You can setup multiple VRRP groups (also called virtual routers). Virtual routers are identified by a VRID (Virtual Router IDentifier). If you setup multiple groups on the same interface, their VRIDs must be unique if they use the same address family, but it's possible (even if not recommended for readability reasons) to use duplicate VRIDs on different interfaces.

### 8.3.1 Basic setup

VRRP groups are created with the `set high-availability vrrp group $GROUP_NAME` commands. The required parameters are interface, vrid, and address.

minimal config

```
set high-availability vrrp group Foo vrid 10
set high-availability vrrp group Foo interface eth0
set high-availability vrrp group Foo address 192.0.2.1/24
```

You can verify your VRRP group status with the operational mode `run show vrrp` command:

```
vyos@vyos# run show vrrp
Name      Interface  VRID  State  Last Transition
-----
Foo       eth1      10   MASTER  2s
```

### 8.3.2 IPv6 support

The address parameter can be either an IPv4 or IPv6 address, but you can not mix IPv4 and IPv6 in the same group, and will need to create groups with different VRIDs specially for IPv4 and IPv6. If you want to use IPv4 + IPv6 address you can use option `excluded-address`

### 8.3.3 Address

The address can be configured either on the VRRP interface or on not VRRP interface.

```
set high-availability vrrp group Foo address 192.0.2.1/24
set high-availability vrrp group Foo address 203.0.113.22/24 interface eth2
set high-availability vrrp group Foo address 198.51.100.33/24 interface eth3
```

### 8.3.4 Disabling a VRRP group

You can disable a VRRP group with `disable` option:

```
set high-availability vrrp group Foo disable
```

A disabled group will be removed from the VRRP process and your router will not participate in VRRP for that VRID. It will disappear from operational mode commands output, rather than enter the backup state.

### 8.3.5 Exclude address

Exclude IP addresses from VRRP packets. This option `excluded-address` is used when you want to set IPv4 + IPv6 addresses on the same virtual interface or when used more than 20 IP addresses.

```
set high-availability vrrp group Foo excluded-address '203.0.113.254/24'
set high-availability vrrp group Foo excluded-address '2001:db8:aa::1/64'
set high-availability vrrp group Foo excluded-address '2001:db8:22::1/64'
```

### 8.3.6 Setting VRRP group priority

VRRP priority can be set with `priority` option:

```
set high-availability vrrp group Foo priority 200
```

The priority must be an integer number from 1 to 255. Higher priority value increases router's precedence in the master elections.

### 8.3.7 Sync groups

A sync group allows VRRP groups to transition together.

```
edit high-availability vrrp
set sync-group MAIN member VLAN9
set sync-group MAIN member VLAN20
```

In the following example, when VLAN9 transitions, VLAN20 will also transition:

```
vrrp {
  group VLAN9 {
    interface eth0.9
    address 10.9.1.1/24
    priority 200
    vrid 9
  }
  group VLAN20 {
    interface eth0.20
    priority 200
    address 10.20.20.1/24
    vrid 20
  }
  sync-group MAIN {
```

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```
    member VLAN20
    member VLAN9
}
}
```

**Warning:** All items in a sync group should be similarly configured. If one VRRP group is set to a different preemption delay or priority, it would result in an endless transition loop.

### 8.3.8 Preemption

VRRP can use two modes: preemptive and non-preemptive. In the preemptive mode, if a router with a higher priority fails and then comes back, routers with lower priority will give up their master status. In non-preemptive mode, the newly elected master will keep the master status and the virtual address indefinitely.

By default VRRP uses preemption. You can disable it with the “no-preempt” option:

```
set high-availability vrrp group Foo no-preempt
```

You can also configure the time interval for preemption with the “preempt-delay” option. For example, to set the higher priority router to take over in 180 seconds, use:

```
set high-availability vrrp group Foo preempt-delay 180
```

### 8.3.9 Track

Track option to track non VRRP interface states. VRRP changes status to FAULT if one of the track interfaces in state down.

```
set high-availability vrrp group Foo track interface eth0
set high-availability vrrp group Foo track interface eth1
```

Ignore VRRP main interface faults

```
set high-availability vrrp group Foo track exclude-vrrp-interface
```

### 8.3.10 Unicast VRRP

By default VRRP uses multicast packets. If your network does not support multicast for whatever reason, you can make VRRP use unicast communication instead.

```
set high-availability vrrp group Foo peer-address 192.0.2.10
set high-availability vrrp group Foo hello-source-address 192.0.2.15
```

### 8.3.11 rfc3768-compatibility

RFC 3768 defines a virtual MAC address to each VRRP virtual router. This virtual router MAC address will be used as the source in all periodic VRRP messages sent by the active node. When the rfc3768-compatibility option is set, a new VRRP interface is created, to which the MAC address and the virtual IP address is automatically assigned.

```
set high-availability vrrp group Foo rfc3768-compatibility
```

Verification

```
$show interfaces ethernet eth0v10
eth0v10@eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue
state UP group default qlen 1000
link/ether 00:00:5e:00:01:0a brd ff:ff:ff:ff:ff:ff
inet 172.25.0.247/16 scope global eth0v10
valid_lft forever preferred_lft forever
```

### 8.3.12 Global options

On most scenarios, there's no need to change specific parameters, and using default configuration is enough. But there are cases where extra configuration is needed.

```
set high-availability vrrp global-parameters startup_delay <1-600>
```

This option specifies a delay in seconds before vrrp instances start up after keepalived starts.

### 8.3.13 Gratuitous ARP

This configuration is not mandatory and in most cases there's no need to configure it. But if necessary, Gratuitous ARP can be configured in global-parameters and/or in group section.

```
set high-availability vrrp global-parameters garp interval <0.000-1000>
```

```
set high-availability vrrp group <name> garp interval <0.000-1000>
```

Set delay between gratuitous ARP messages sent on an interface.

0 if not defined.

```
set high-availability vrrp global-parameters garp master-delay <1-255>
```

```
set high-availability vrrp group <name> garp master-delay <1-255>
```

Set delay for second set of gratuitous ARPs after transition to MASTER.

5 if not defined.

```
set high-availability vrrp global-parameters garp master-refresh <1-600>
```

```
set high-availability vrrp group <name> garp master-refresh <1-600>
```

Set minimum time interval for refreshing gratuitous ARPs while MASTER.

0 if not defined, which means no refreshing.

```
set high-availability vrrp global-parameters garp master-refresh-repeat <1-600>
```

```
set high-availability vrrp group <name> garp master-refresh-repeat <1-600>
```

Set number of gratuitous ARP messages to send at a time while MASTER.

1 if not defined.

```
set high-availability vrrp global-parameters garp master-repeat <1-600>
```

```
set high-availability vrrp group <name> garp master-repeat <1-600>
```

Set number of gratuitous ARP messages to send at a time after transition to MASTER.

5 if not defined.

### 8.3.14 Version

```
set high-availability vrrp global-parameters version 2|3
```

Set the default VRRP version to use. This defaults to 2, but IPv6 instances will always use version 3.

### 8.3.15 Scripting

VRRP functionality can be extended with scripts. VyOS supports two kinds of scripts: health check scripts and transition scripts. Health check scripts execute custom checks in addition to the master router reachability. Transition scripts are executed when VRRP state changes from master to backup or fault and vice versa and can be used to enable or disable certain services, for example.

#### Health check scripts

This setup will make the VRRP process execute the `/config/scripts/vrrp-check.sh` script every 60 seconds, and transition the group to the fault state if it fails (i.e. exits with non-zero status) three times:

```
set high-availability vrrp group Foo health-check script /config/scripts/vrrp-check.sh
set high-availability vrrp group Foo health-check interval 60
set high-availability vrrp group Foo health-check failure-count 3
```

When the vrrp group is a member of the sync group will use only the sync group health check script. This example shows how to configure it for the sync group:

```
set high-availability vrrp sync-group Bar health-check script /config/scripts/vrrp-check.
↪sh
set high-availability vrrp sync-group Bar health-check interval 60
set high-availability vrrp sync-group Bar health-check failure-count 3
```

#### Transition scripts

Transition scripts can help you implement various fixups, such as starting and stopping services, or even modifying the VyOS config on VRRP transition. This setup will make the VRRP process execute the `/config/scripts/vrrp-fail.sh` with argument `Foo` when VRRP fails, and the `/config/scripts/vrrp-master.sh` when the router becomes the master:

```
set high-availability vrrp group Foo transition-script backup "/config/scripts/vrrp-fail.
↪sh Foo"
set high-availability vrrp group Foo transition-script fault "/config/scripts/vrrp-fail.
↪sh Foo"
```

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```
set high-availability vrrp group Foo transition-script master "/config/scripts/vrrp-  
↪master.sh Foo"
```

To know more about scripting, check the *Command Scripting* section.

### 8.3.16 Virtual-server

Virtual Server allows to Load-balance traffic destination virtual-address:port between several real servers.

#### Algorithm

Load-balancing schedule algorithm:

- round-robin
- weighted-round-robin
- least-connection
- weighted-least-connection
- source-hashing
- destination-hashing
- locality-based-least-connection

```
set high-availability virtual-server 203.0.113.1 algorithm 'least-connection'
```

#### Forward method

- NAT
- direct
- tunnel

```
set high-availability virtual-server 203.0.113.1 forward-method 'nat'
```

#### Health-check

Custom health-check script allows checking real-server availability

```
set high-availability virtual-server 203.0.113.1 real-server 192.0.2.11 health-check_  
↪script <path-to-script>
```

## Fwmark

Firewall mark. It possible to loadbalancing traffic based on fwmark value

```
set high-availability virtual-server 203.0.113.1 fwmark '111'
```

## Real server

Real server IP address and port

```
set high-availability virtual-server 203.0.113.1 real-server 192.0.2.11 port '80'
```

## Example

Virtual-server can be configured with VRRP virtual address or without VRRP.

In the next example all traffic destined to 203.0.113.1 and port 8280 protocol TCP is balanced between 2 real servers 192.0.2.11 and 192.0.2.12 to port 80

Real server is auto-excluded if port check with this server fail.

```
set interfaces ethernet eth0 address '203.0.113.1/24'
set interfaces ethernet eth1 address '192.0.2.1/24'
set high-availability vrrp group FOO interface 'eth0'
set high-availability vrrp group FOO no-preempt
set high-availability vrrp group FOO priority '150'
set high-availability vrrp group FOO address '203.0.113.1/24'
set high-availability vrrp group FOO vrid '10'

set high-availability virtual-server 203.0.113.1 algorithm 'source-hashing'
set high-availability virtual-server 203.0.113.1 delay-loop '10'
set high-availability virtual-server 203.0.113.1 forward-method 'nat'
set high-availability virtual-server 203.0.113.1 persistence-timeout '180'
set high-availability virtual-server 203.0.113.1 port '8280'
set high-availability virtual-server 203.0.113.1 protocol 'tcp'
set high-availability virtual-server 203.0.113.1 real-server 192.0.2.11 port '80'
set high-availability virtual-server 203.0.113.1 real-server 192.0.2.12 port '80'
```

A firewall mark fwmark allows using multiple ports for high-availability virtual-server. It uses fwmark value.

In this example all traffic destined to ports “80, 2222, 8888” protocol TCP marks to fwmark “111” and balanced between 2 real servers. Port “0” is required if multiple ports are used.

```
set interfaces ethernet eth0 address 'dhcp'
set interfaces ethernet eth0 description 'WAN'
set interfaces ethernet eth1 address '192.0.2.1/24'
set interfaces ethernet eth1 description 'LAN'

set policy route PR interface 'eth0'
set policy route PR rule 10 destination port '80,2222,8888'
set policy route PR rule 10 protocol 'tcp'
set policy route PR rule 10 set mark '111'
```

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```

set high-availability virtual-server vyos fwmark '111'
set high-availability virtual-server vyos protocol 'tcp'
set high-availability virtual-server vyos real-server 192.0.2.11 health-check script '/
↳config/scripts/check-real-server-first.sh'
set high-availability virtual-server vyos real-server 192.0.2.11 port '0'
set high-availability virtual-server vyos real-server 192.0.2.12 health-check script '/
↳config/scripts/check-real-server-second.sh'
set high-availability virtual-server vyos real-server 192.0.2.12 port '0'

set nat source rule 100 outbound-interface name 'eth0'
set nat source rule 100 source address '192.0.2.0/24'
set nat source rule 100 translation address 'masquerade'

```

Op-mode check virtual-server status

```

vyos@r14:~$ run show virtual-server
IP Virtual Server version 1.2.1 (size=4096)
Prot LocalAddress:Port Scheduler Flags
  -> RemoteAddress:Port      Forward Weight ActiveConn InActConn
FWM  111 lc persistent 300
  -> 192.0.2.11:0            Masq    1      0      0
  -> 192.0.2.12:0            Masq    1      1      0

```

## 8.4 Interfaces

### 8.4.1 Bond / Link Aggregation

The bonding interface provides a method for aggregating multiple network interfaces into a single logical “bonded” interface, or LAG, or ether-channel, or port-channel. The behavior of the bonded interfaces depends upon the mode; generally speaking, modes provide either hot standby or load balancing services. Additionally, link integrity monitoring may be performed.

#### Configuration

##### Common interface configuration

**set interfaces bonding <interface> address <address | dhcp | dhcpv6>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/

- /config/scripts/dhcp-client/post-hooks.d/

Example:

```
set interfaces bonding bond0 address 192.0.2.1/24
set interfaces bonding bond0 address 2001:db8::1/64
set interfaces bonding bond0 address dhcp
set interfaces bonding bond0 address dhcpv6
```

#### **set interfaces bonding <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces bonding bond0 description 'This is an awesome interface running on
↳VyOS'
```

#### **set interfaces bonding <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces bonding bond0 disable
```

#### **set interfaces bonding <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces bonding bond0 disable-flow-control
```

#### **set interfaces bonding <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces bonding bond0 disable-link-detect
```

#### **set interfaces bonding <interface> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC (Media Access Control) address on given <interface>.

Example:

```
set interfaces bonding bond0 mac '00:01:02:03:04:05'
```

### **set interfaces bonding <interface> mtu <mtu>**

Configure MTU (Maximum Transmission Unit) on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces bonding bond0 mtu 1600
```

### **set interfaces bonding <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### **set interfaces bonding <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces bonding bond0 ip arp-cache-timeout 180
```

### **set interfaces bonding <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces bonding bond0 ip disable-arp-filter
```

### **set interfaces bonding <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces bonding bond0 ip disable-forwarding
```

**set interfaces bonding <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces bonding bond0 ip enable-directed-broadcast
```

**set interfaces bonding <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces bonding bond0 ip enable-arp-accept
```

**set interfaces bonding <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces bonding bond0 ip enable-arp-announce
```

**set interfaces bonding <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces bonding bond0 ip enable-arp-ignore
```

**set interfaces bonding <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces bonding bond0 ip enable-proxy-arp
```

**set interfaces bonding <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

**set interfaces bonding <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

**set interfaces bonding <interface> ipv6 address autoconf**

SLAAC (Stateless Address Autoconfiguration) [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 (Internet Control Message Protocol version 6) router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces bonding bond0 ipv6 address autoconf
```

**set interfaces bonding <interface> ipv6 address eui64 <prefix>**

EUI-64 (64-Bit Extended Unique Identifier) as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces bonding bond0 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces bonding <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces bonding bond0 ipv6 address no-default-link-local
```

#### **set interfaces bonding <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces bonding bond0 ipv6 disable-forwarding
```

#### **set interfaces bonding <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

#### **set interfaces bonding <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces bonding bond0 ipv6 accept-dad 2
```

#### **set interfaces bonding <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces bonding bond0 ipv6 dup-addr-detect-transmits 5
```

#### **set interfaces bonding <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces bonding bond0 vrf red
```

## DHCP(v6)

**set interfaces bonding <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces bonding bond0 dhcp-options client-id 'foo-bar'
```

**set interfaces bonding <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces bonding bond0 dhcp-options host-name 'VyOS'
```

**set interfaces bonding <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces bonding bond0 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces bonding <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces bonding bond0 dhcp-options no-default-route
```

**set interfaces bonding <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces bonding bond0 dhcp-options default-route-distance 220
```

**set interfaces bonding <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces bonding bond0 dhcp-options reject 192.168.100.0/24
```

**set interfaces bonding <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces bonding bond0 dhcp-options user-class VyOS
```

#### **set interfaces bonding <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces bonding bond0 duid '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces bonding <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces bonding bond0 dhcpv6-options no-release
```

#### **set interfaces bonding <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces bonding bond0 dhcpv6-options parameters-only
```

#### **set interfaces bonding <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces bonding bond0 dhcpv6-options rapid-commit
```

#### **set interfaces bonding <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces bonding bond0 dhcpv6-options temporary
```

### **DHCPv6 Prefix Delegation (PD)**

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

#### **set interfaces bonding <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces bonding bond0 dhcpv6-options pd 0 length 56
```

**set interfaces bonding <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces bonding bond0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces bonding <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces bonding bond0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Member Interfaces

**set interfaces bonding <interface> member interface <member>**

Enslave <member> interface to bond <interface>.

## Bond options

**set interfaces bonding <interface> mode <802.3ad | active-backup | broadcast | round-robin | transmit-load-balance | adaptive-load-balance | xor-hash>**

Specifies one of the bonding policies. The default is 802.3ad. Possible values are:

- **802.3ad** - IEEE 802.3ad Dynamic link aggregation. Creates aggregation groups that share the same speed and duplex settings. Utilizes all slaves in the active aggregator according to the 802.3ad specification.

Slave selection for outgoing traffic is done according to the transmit hash policy, which may be changed from the default simple XOR policy via the hash-policy option, documented below.

---

**Note:** Not all transmit policies may be 802.3ad compliant, particularly in regards to the packet misordering requirements of section 43.2.4 of the 802.3ad standard.

---

- **active-backup** - Active-backup policy: Only one slave in the bond is active. A different slave becomes active if, and only if, the active slave fails. The bond's MAC address is externally visible on only one port (network adapter) to avoid confusing the switch.

When a failover occurs in active-backup mode, bonding will issue one or more gratuitous ARPs on the newly active slave. One gratuitous ARP is issued for the bonding master interface and each VLAN interfaces configured above it, provided that the interface has at least one IP address configured. Gratuitous ARPs issued for VLAN interfaces are tagged with the appropriate VLAN id.

This mode provides fault tolerance. The `primary` option, documented below, affects the behavior of this mode.

- `broadcast` - Broadcast policy: transmits everything on all slave interfaces.

This mode provides fault tolerance.

- `round-robin` - Round-robin policy: Transmit packets in sequential order from the first available slave through the last.

This mode provides load balancing and fault tolerance.

- `transmit-load-balance` - Adaptive transmit load balancing: channel bonding that does not require any special switch support.

Incoming traffic is received by the current slave. If the receiving slave fails, another slave takes over the MAC address of the failed receiving slave.

- `adaptive-load-balance` - Adaptive load balancing: includes `transmit-load-balance` plus receive load balancing for IPV4 traffic, and does not require any special switch support. The receive load balancing is achieved by ARP negotiation. The bonding driver intercepts the ARP Replies sent by the local system on their way out and overwrites the source hardware address with the unique hardware address of one of the slaves in the bond such that different peers use different hardware addresses for the server.

Receive traffic from connections created by the server is also balanced. When the local system sends an ARP Request the bonding driver copies and saves the peer's IP information from the ARP packet. When the ARP Reply arrives from the peer, its hardware address is retrieved and the bonding driver initiates an ARP reply to this peer assigning it to one of the slaves in the bond. A problematic outcome of using ARP negotiation for balancing is that each time that an ARP request is broadcast it uses the hardware address of the bond. Hence, peers learn the hardware address of the bond and the balancing of receive traffic collapses to the current slave. This is handled by sending updates (ARP Replies) to all the peers with their individually assigned hardware address such that the traffic is redistributed. Receive traffic is also redistributed when a new slave is added to the bond and when an inactive slave is re-activated. The receive load is distributed sequentially (round robin) among the group of highest speed slaves in the bond.

When a link is reconnected or a new slave joins the bond the receive traffic is redistributed among all active slaves in the bond by initiating ARP Replies with the selected MAC address to each of the clients. The `updelay` parameter (detailed below) must be set to a value equal or greater than the switch's forwarding delay so that the ARP Replies sent to the peers will not be blocked by the switch.

- `xor-hash` - XOR policy: Transmit based on the selected transmit hash policy. The default policy is a simple [(source MAC address XOR'd with destination MAC address XOR packet type ID) modulo slave count]. Alternate transmit policies may be selected via the `hash-policy` option, described below.

This mode provides load balancing and fault tolerance.

**set interfaces bonding <interface> min-links <0-16>**

Specifies the minimum number of links that must be active before asserting carrier. It is similar to the Cisco EtherChannel `min-links` feature. This allows setting the minimum number of member ports that must be up (link-up state) before marking the bond device as up (carrier on). This is useful for situations where higher

level services such as clustering want to ensure a minimum number of low bandwidth links are active before switchover.

This option only affects 802.3ad mode.

The default value is 0. This will cause the carrier to be asserted (for 802.3ad mode) whenever there is an active aggregator, regardless of the number of available links in that aggregator.

---

**Note:** Because an aggregator cannot be active without at least one available link, setting this option to 0 or to 1 has the exact same effect.

---

#### **set interfaces bonding <interface> lacp-rate <slow|fast>**

Option specifying the rate in which we'll ask our link partner to transmit LACPDU packets in 802.3ad mode.

This option only affects 802.3ad mode.

- **slow:** Request partner to transmit LACPDU every 30 seconds
- **fast:** Request partner to transmit LACPDU every 1 second

The default value is slow.

#### **set interfaces bonding <interface> hash-policy <policy>**

- **layer2** - Uses XOR of hardware MAC addresses and packet type ID field to generate the hash. The formula is

```
hash = source MAC XOR destination MAC XOR packet type ID
slave number = hash modulo slave count
```

This algorithm will place all traffic to a particular network peer on the same slave.

This algorithm is 802.3ad compliant.

- **layer2+3** - This policy uses a combination of layer2 and layer3 protocol information to generate the hash. Uses XOR of hardware MAC addresses and IP addresses to generate the hash. The formula is:

```
hash = source MAC XOR destination MAC XOR packet type ID
hash = hash XOR source IP XOR destination IP
hash = hash XOR (hash RSHIFT 16)
hash = hash XOR (hash RSHIFT 8)
```

And then hash is reduced modulo slave count.

If the protocol is IPv6 then the source and destination addresses are first hashed using `ipv6_addr_hash`.

This algorithm will place all traffic to a particular network peer on the same slave. For non-IP traffic, the formula is the same as for the layer2 transmit hash policy.

This policy is intended to provide a more balanced distribution of traffic than layer2 alone, especially in environments where a layer3 gateway device is required to reach most destinations.

This algorithm is 802.3ad compliant.

- **layer3+4** - This policy uses upper layer protocol information, when available, to generate the hash. This allows for traffic to a particular network peer to span multiple slaves, although a single connection will not span multiple slaves.

The formula for unfragmented TCP and UDP packets is

```

hash = source port, destination port (as in the header)
hash = hash XOR source IP XOR destination IP
hash = hash XOR (hash RSHIFT 16)
hash = hash XOR (hash RSHIFT 8)

```

And then hash is reduced modulo slave count.

If the protocol is IPv6 then the source and destination addresses are first hashed using `ipv6_addr_hash`.

For fragmented TCP or UDP packets and all other IPv4 and IPv6 protocol traffic, the source and destination port information is omitted. For non-IP traffic, the formula is the same as for the layer2 transmit hash policy.

This algorithm is not fully 802.3ad compliant. A single TCP or UDP conversation containing both fragmented and unfragmented packets will see packets striped across two interfaces. This may result in out of order delivery. Most traffic types will not meet these criteria, as TCP rarely fragments traffic, and most UDP traffic is not involved in extended conversations. Other implementations of 802.3ad may or may not tolerate this noncompliance.

#### **set interfaces bonding <interface> primary <interface>**

An *<interface>* specifying which slave is the primary device. The specified device will always be the active slave while it is available. Only when the primary is off-line will alternate devices be used. This is useful when one slave is preferred over another, e.g., when one slave has higher throughput than another.

The primary option is only valid for active-backup, transmit-load-balance, and adaptive-load-balance mode.

#### **set interfaces bonding <interface> arp-monitor interval <time>**

Specifies the ARP link monitoring *<time>* in seconds.

The ARP monitor works by periodically checking the slave devices to determine whether they have sent or received traffic recently (the precise criteria depends upon the bonding mode, and the state of the slave). Regular traffic is generated via ARP probes issued for the addresses specified by the `arp-monitor target` option.

If ARP monitoring is used in an etherchannel compatible mode (modes round-robin and xor-hash), the switch should be configured in a mode that evenly distributes packets across all links. If the switch is configured to distribute the packets in an XOR fashion, all replies from the ARP targets will be received on the same link which could cause the other team members to fail.

A value of 0 disables ARP monitoring. The default value is 0.

#### **set interfaces bonding <interface> arp-monitor target <address>**

Specifies the IP addresses to use as ARP monitoring peers when `arp-monitor interval` option is  $> 0$ . These are the targets of the ARP request sent to determine the health of the link to the targets.

Multiple target IP addresses can be specified. At least one IP address must be given for ARP monitoring to function.

The maximum number of targets that can be specified is 16. The default value is no IP address.

## VLAN

IEEE 802.1q, often referred to as Dot1q, is the networking standard that supports virtual LANs (VLANs) on an IEEE 802.3 Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. The standard also contains provisions for a quality-of-service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.

Portions of the network which are VLAN-aware (i.e., IEEE 802.1q conformant) can include VLAN tags. When a frame enters the VLAN-aware portion of the network, a tag is added to represent the VLAN membership. Each frame must be distinguishable as being within exactly one VLAN. A frame in the VLAN-aware portion of the network that does not contain a VLAN tag is assumed to be flowing on the native VLAN.

The standard was developed by IEEE 802.1, a working group of the IEEE 802 standards committee, and continues to be actively revised. One of the notable revisions is 802.1Q-2014 which incorporated IEEE 802.1aq (Shortest Path Bridging) and much of the IEEE 802.1d standard.

802.1q VLAN interfaces are represented as virtual sub-interfaces in VyOS. The term used for this is `vif`.

### **set interfaces bonding <interface> vif <vlan-id>**

Create a new VLAN interface on interface `<interface>` using the VLAN number provided via `<vlan-id>`.

You can create multiple VLAN interfaces on a physical interface. The VLAN ID range is from 0 to 4094.

---

**Note:** Only 802.1Q-tagged packets are accepted on Ethernet vifs.

---

### **set interfaces bonding <interface> vif <vlan-id> address <address | dhcp | dhcpv6>**

Configure interface `<interface>` with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces bonding bond0 vif 10 address 192.0.2.1/24
set interfaces bonding bond0 vif 10 address 2001:db8::1/64
set interfaces bonding bond0 vif 10 address dhcp
set interfaces bonding bond0 vif 10 address dhcpv6
```

### **set interfaces bonding <interface> vif <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces bonding bond0 vif 10 description 'This is an awesome interface_
↳running on VyOS'
```

### **set interfaces bonding <interface> vif <vlan-id> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces bonding bond0 vif 10 disable
```

### **set interfaces bonding <interface> vif <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces bonding bond0 vif 10 disable-link-detect
```

### **set interfaces bonding <interface> vif <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces bonding bond0 vif 10 mac '00:01:02:03:04:05'
```

### **set interfaces bonding <interface> vif <vlan-id> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces bonding bond0 vif 10 mtu 1600
```

### **set interfaces bonding <interface> vif <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### **set interfaces bonding <interface> vif <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces bonding bond0 vif 10 ip arp-cache-timeout 180
```

#### **set interfaces bonding <interface> vif <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces bonding bond0 vif 10 ip disable-arp-filter
```

#### **set interfaces bonding <interface> vif <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces bonding bond0 vif 10 ip disable-forwarding
```

#### **set interfaces bonding <interface> vif <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces bonding bond0 vif 10 ip enable-directed-broadcast
```

#### **set interfaces bonding <interface> vif <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces bonding bond0 vif 10 ip enable-arp-accept
```

#### **set interfaces bonding <interface> vif <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces bonding bond0 vif 10 ip enable-arp-announce
```

### set interfaces bonding <interface> vif <vlan-id> ip enable-arp-ignore

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces bonding bond0 vif 10 ip enable-arp-ignore
```

### set interfaces bonding <interface> vif <vlan-id> ip enable-proxy-arp

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces bonding bond0 vif 10 ip enable-proxy-arp
```

### set interfaces bonding <interface> vif <vlan-id> ip proxy-arp-pvlan

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### set interfaces bonding <interface> vif <vlan-id> ip source-validation <strict | loose | disable>

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### set interfaces bonding <interface> vif <vlan-id> ipv6 address autoconf

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces bonding bond0 vif 10 ipv6 address autoconf
```

**set interfaces bonding <interface> vif <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces bonding bond0 vif 10 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces bonding <interface> vif <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces bonding bond0 vif 10 ipv6 address no-default-link-local
```

**set interfaces bonding <interface> vif <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces bonding bond0 vif 10 ipv6 disable-forwarding
```

**set interfaces bonding <interface> vif <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces bonding <interface> vif <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)

- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces bonding bond0 vif 10 ipv6 accept-dad 2
```

**set interfaces bonding <interface> vif <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces bonding bond0 vif 10 ipv6 dup-addr-detect-transmits 5
```

**set interfaces bonding <interface> vif <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces bonding bond0 vif 10 vrf red
```

## DHCP(v6)

**set interfaces bonding <interface> vif <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options client-id 'foo-bar'
```

**set interfaces bonding <interface> vif <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options host-name 'VyOS'
```

**set interfaces bonding <interface> vif <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces bonding <interface> vif <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options no-default-route
```

**set interfaces bonding <interface> vif <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options default-route-distance 220
```

**set interfaces bonding <interface> vif <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options reject 192.168.100.0/24
```

**set interfaces bonding <interface> vif <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces bonding bond0 vif 10 dhcp-options user-class VyOS
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces bonding bond0 vif 10 duid
→ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces bonding bond0 vif 10 dhcpv6-options no-release
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces bonding bond0 vif 10 dhcpv6-options parameters-only
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces bonding bond0 vif 10 dhcpv6-options rapid-commit
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces bonding bond0 vif 10 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces bonding bond0 vif 10 dhcpv6-options pd 0 length 56
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces bonding bond0 vif 10 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces bonding <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces bonding bond0 vif 10 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Port Mirror (SPAN)

SPAN port mirroring can copy the inbound/outbound traffic of the interface to the specified interface, usually the interface can be connected to some special equipment, such as behavior control system, intrusion detection system and traffic collector, and can copy all related traffic from this port. The benefit of mirroring the traffic is that the application is isolated from the source traffic and so application processing does not affect the traffic or the system performance.

VyOS uses the *mirror* option to configure port mirroring. The configuration is divided into 2 different directions. Destination ports should be configured for different traffic directions.

**set interfaces bondinging <interface> mirror ingress <monitor-interface>**

Configure port mirroring for *interface* inbound traffic and copy the traffic to *monitor-interface*

Example: Mirror the inbound traffic of *bond1* port to *eth3*

```
set interfaces bondinging bond1 mirror ingress eth3
```

**set interfaces bondinging <interface> mirror egress <monitor-interface>**

Configure port mirroring for *interface* outbound traffic and copy the traffic to *monitor-interface*

Example: Mirror the outbound traffic of *bond1* port to *eth3*

```
set interfaces bondinging bond1 mirror egress eth3
```

## Example

The following configuration on VyOS applies to all following 3rd party vendors. It creates a bond with two links and VLAN 10, 100 on the bonded interfaces with a per VIF IPv4 address.

```
# Create bonding interface bond0 with 802.3ad LACP
set interfaces bonding bond0 hash-policy 'layer2'
set interfaces bonding bond0 mode '802.3ad'

# Add the required vlans and IPv4 addresses on them
set interfaces bonding bond0 vif 10 address 192.168.0.1/24
set interfaces bonding bond0 vif 100 address 10.10.10.1/24

# Add the member interfaces to the bonding interface
set interfaces bonding bond0 member interface eth1
set interfaces bonding bond0 member interface eth2
```

**Note:** If you happen to run this in a virtual environment like by EVE-NG you need to ensure your VyOS NIC is set to use the *e1000* driver. Using the default *virtio-net-pci* or the *vmxnet3* driver will not work. ICMP messages will not be properly processed. They are visible on the virtual wire but will not make it fully up the networking stack.

You can check your NIC driver by issuing `show interfaces ethernet eth0 physical | grep -i driver`

## Cisco Catalyst

Assign member interfaces to PortChannel

```
interface GigabitEthernet1/0/23
description VyOS eth1
channel-group 1 mode active
!
interface GigabitEthernet1/0/24
description VyOS eth2
channel-group 1 mode active
!
```

A new interface becomes present Port-channel1, all configuration like allowed VLAN interfaces, STP will happen here.

```
interface Port-channel1
description LACP Channel for VyOS
switchport trunk encapsulation dot1q
switchport trunk allowed vlan 10,100
switchport mode trunk
spanning-tree portfast trunk
!
```

## Juniper EX Switch

For a headstart you can use the below example on how to build a bond with two interfaces from VyOS to a Juniper EX Switch system.

```
# Create aggregated ethernet device with 802.3ad LACP and port speeds of 10gbit/s
set interfaces ae0 aggregated-ether-options link-speed 10g
set interfaces ae0 aggregated-ether-options lacp active

# Create layer 2 on the aggregated ethernet device with trunking for our vlans
set interfaces ae0 unit 0 family ethernet-switching port-mode trunk

# Add the required vlans to the device
set interfaces ae0 unit 0 family ethernet-switching vlan members 10
set interfaces ae0 unit 0 family ethernet-switching vlan members 100

# Add the two interfaces to the aggregated ethernet device, in this setup both
# ports are on the same switch (switch 0, module 1, port 0 and 1)
set interfaces xe-0/1/0 ether-options 802.3ad ae0
set interfaces xe-0/1/1 ether-options 802.3ad ae0

# But this can also be done with multiple switches in a stack, a virtual
# chassis on Juniper (switch 0 and switch 1, module 1, port 0 on both switches)
set interfaces xe-0/1/0 ether-options 802.3ad ae0
set interfaces xe-1/1/0 ether-options 802.3ad ae0
```

## Aruba/HP

For a headstart you can use the below example on how to build a bond, port-channel with two interfaces from WyOS to a Aruba/HP 2510G switch.

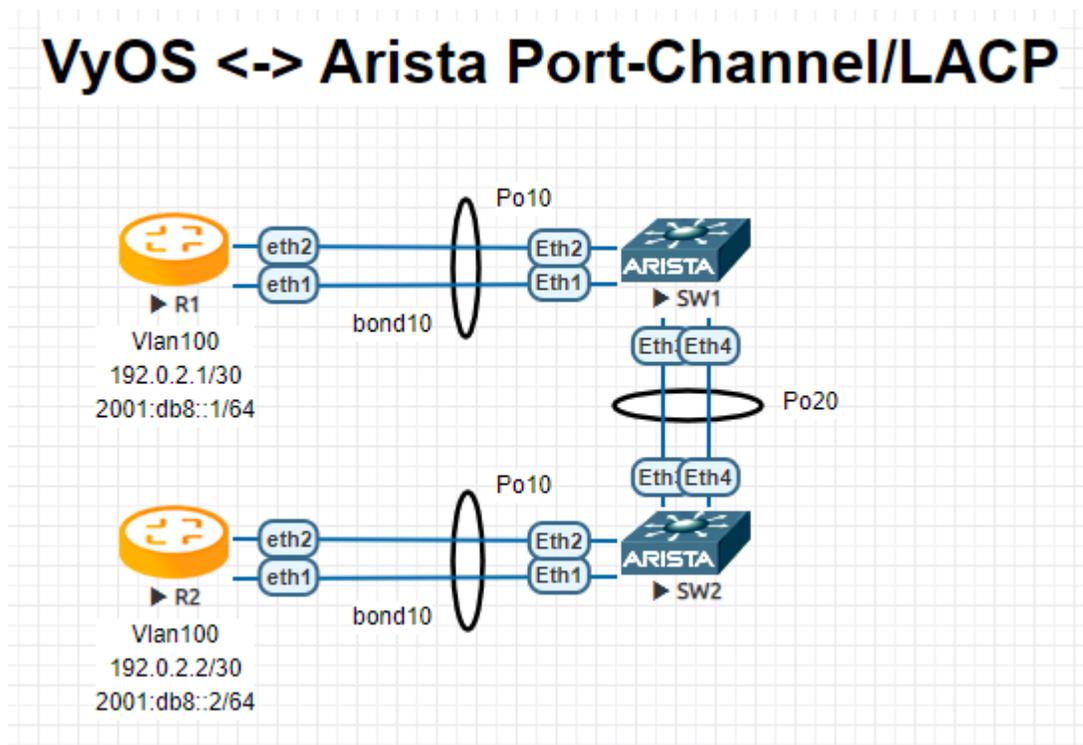
```
# Create trunk with 2 member interfaces (interface 1 and 2) and LACP
trunk 1-2 Trk1 LACP

# Add the required vlans to the trunk
vlan 10 tagged Trk1
vlan 100 tagged Trk1
```

## Arista EOS

When utilizing WyOS in an environment with Arista gear you can use this blue print as an initial setup to get an LACP bond / port-channel operational between those two devices.

Lets assume the following topology:



### R1

```
interfaces {
  bonding bond10 {
    hash-policy layer3+4
    member {
      interface eth1
      interface eth2
    }
  }
}
```

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```
mode 802.3ad
vif 100 {
    address 192.0.2.1/30
    address 2001:db8::1/64
}
}
```

**R2**

```
interfaces {
    bonding bond10 {
        hash-policy layer3+4
        member {
            interface eth1
            interface eth2
        }
        mode 802.3ad
        vif 100 {
            address 192.0.2.2/30
            address 2001:db8::2/64
        }
    }
}
```

**SW1**

```
!
vlan 100
    name F00
!
interface Port-Channel10
    switchport trunk allowed vlan 100
    switchport mode trunk
    spanning-tree portfast
!
interface Port-Channel20
    switchport mode trunk
    no spanning-tree portfast auto
    spanning-tree portfast network
!
interface Ethernet1
    channel-group 10 mode active
!
interface Ethernet2
    channel-group 10 mode active
!
interface Ethernet3
    channel-group 20 mode active
!
interface Ethernet4
    channel-group 20 mode active
!
```

**SW2**

```

!
vlan 100
  name F00
!
interface Port-Channel10
  switchport trunk allowed vlan 100
  switchport mode trunk
  spanning-tree portfast
!
interface Port-Channel20
  switchport mode trunk
  no spanning-tree portfast auto
  spanning-tree portfast network
!
interface Ethernet1
  channel-group 10 mode active
!
interface Ethernet2
  channel-group 10 mode active
!
interface Ethernet3
  channel-group 20 mode active
!
interface Ethernet4
  channel-group 20 mode active
!

```

**Note:** When using EVE-NG to lab this environment ensure you are using e1000 as the desired driver for your VyOS network interfaces. When using the regular virtio network driver no LACP PDUs will be sent by VyOS thus the port-channel will never become active!

## Operation

### show interfaces bonding

Show brief interface information.

```

vyos@vyos:~$ show interfaces bonding
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
bond0          -               u/u  my-sw1 int 23 and 24
bond0.10       192.168.0.1/24 u/u  office-net
bond0.100      10.10.10.1/24  u/u  management-net

```

### show interfaces bonding <interface>

Show detailed information on given <interface>

```

vyos@vyos:~$ show interfaces bonding bond5
bond5: <NO-CARRIER,BROADCAST,MULTICAST,MASTER,UP> mtu 1500 qdisc noqueue state DOWN_

```

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```

→group default qlen 1000
  link/ether 00:50:56:bf:ef:aa brd ff:ff:ff:ff:ff:ff
  inet6 fe80::e862:26ff:fe72:2dac/64 scope link tentative
    valid_lft forever preferred_lft forever

RX: bytes  packets  errors  dropped  overrun    mcast
     0         0        0        0        0          0
TX: bytes  packets  errors  dropped  carrier  collisions
     0         0        0        0        0          0

```

**show interfaces bonding <interface> detail**

Show detailed information about the underlying physical links on given bond <interface>.

```

vyos@vyos:~$ show interfaces bonding bond5 detail
Ethernet Channel Bonding Driver: v3.7.1 (April 27, 2011)

Bonding Mode: IEEE 802.3ad Dynamic link aggregation
Transmit Hash Policy: layer2 (0)
MII Status: down
MII Polling Interval (ms): 100
Up Delay (ms): 0
Down Delay (ms): 0

802.3ad info
LACP rate: slow
Min links: 0
Aggregator selection policy (ad_select): stable

Slave Interface: eth1
MII Status: down
Speed: Unknown
Duplex: Unknown
Link Failure Count: 0
Permanent HW addr: 00:50:56:bf:ef:aa
Slave queue ID: 0
Aggregator ID: 1
Actor Churn State: churned
Partner Churn State: churned
Actor Churned Count: 1
Partner Churned Count: 1

Slave Interface: eth2
MII Status: down
Speed: Unknown
Duplex: Unknown
Link Failure Count: 0
Permanent HW addr: 00:50:56:bf:19:26
Slave queue ID: 0
Aggregator ID: 2
Actor Churn State: churned
Partner Churn State: churned
Actor Churned Count: 1

```

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Partner Churned Count: 1

## 8.4.2 Bridge

A Bridge is a way to connect two Ethernet segments together in a protocol independent way. Packets are forwarded based on Ethernet address, rather than IP address (like a router). Since forwarding is done at Layer 2, all protocols can go transparently through a bridge. The Linux bridge code implements a subset of the ANSI/IEEE 802.1d standard.

**Note:** Spanning Tree Protocol is not enabled by default in VyOS. *STP Parameter* can be easily enabled if needed.

### Configuration

#### Common interface configuration

**set interfaces bridge <interface> address <address | dhcp | dhcpv6>**

Configure interface <interface> with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
- /config/scripts/dhcp-client/post-hooks.d/

Example:

```
set interfaces bridge br0 address 192.0.2.1/24
set interfaces bridge br0 address 2001:db8::1/64
set interfaces bridge br0 address dhcp
set interfaces bridge br0 address dhcpv6
```

**set interfaces bridge <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the show interfaces command or SNMP based monitoring tools.

Example:

```
set interfaces bridge br0 description 'This is an awesome interface running on VyOS'
```

**set interfaces bridge <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces bridge br0 disable
```

### set interfaces bridge <interface> disable-flow-control

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces bridge br0 disable-flow-control
```

### set interfaces bridge <interface> disable-link-detect

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces bridge br0 disable-link-detect
```

### set interfaces bridge <interface> mac <xx:xx:xx:xx:xx:xx>

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces bridge br0 mac '00:01:02:03:04:05'
```

### set interfaces bridge <interface> mtu <mtu>

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces bridge br0 mtu 1600
```

### set interfaces bridge <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces bridge <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces bridge br0 ip arp-cache-timeout 180
```

**set interfaces bridge <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces bridge br0 ip disable-arp-filter
```

**set interfaces bridge <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces bridge br0 ip disable-forwarding
```

**set interfaces bridge <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces bridge br0 ip enable-directed-broadcast
```

**set interfaces bridge <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces bridge br0 ip enable-arp-accept
```

**set interfaces bridge <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces bridge br0 ip enable-arp-announce
```

#### **set interfaces bridge <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces bridge br0 ip enable-arp-ignore
```

#### **set interfaces bridge <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces bridge br0 ip enable-proxy-arp
```

#### **set interfaces bridge <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

#### **set interfaces bridge <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.

- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### **set interfaces bridge <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces bridge br0 ipv6 address autoconf
```

### **set interfaces bridge <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces bridge br0 ipv6 address eui64 2001:db8:beef::/64
```

### **set interfaces bridge <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces bridge br0 ipv6 address no-default-link-local
```

### **set interfaces bridge <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces bridge br0 ipv6 disable-forwarding
```

### **set interfaces bridge <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

### **set interfaces bridge <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces bridge br0 ipv6 accept-dad 2
```

**set interfaces bridge <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces bridge br0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces bridge <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces bridge br0 vrf red
```

### DHCP(v6)

**set interfaces bridge <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces bridge br0 dhcp-options client-id 'foo-bar'
```

**set interfaces bridge <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces bridge br0 dhcp-options host-name 'VyOS'
```

**set interfaces bridge <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces bridge br0 dhcp-options vendor-class-id 'VyOS'
```

#### **set interfaces bridge <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces bridge br0 dhcp-options no-default-route
```

#### **set interfaces bridge <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces bridge br0 dhcp-options default-route-distance 220
```

#### **set interfaces bridge <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces bridge br0 dhcp-options reject 192.168.100.0/24
```

#### **set interfaces bridge <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces bridge br0 dhcp-options user-class VyOS
```

#### **set interfaces bridge <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces bridge br0 duid '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces bridge <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces bridge br0 dhcpv6-options no-release
```

#### **set interfaces bridge <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces bridge br0 dhcpv6-options parameters-only
```

**set interfaces bridge <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces bridge br0 dhcpv6-options rapid-commit
```

**set interfaces bridge <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces bridge br0 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces bridge <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces bridge br0 dhcpv6-options pd 0 length 56
```

**set interfaces bridge <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces bridge br0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces bridge <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces bridge br0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Member Interfaces

**set interfaces bridge <interface> member interface <member>**

Assign <member> interface to bridge <interface>. A completion helper will help you with all allowed interfaces which can be bridged. This includes *Ethernet*, *Bond / Link Aggregation*, *L2TPv3*, *OpenVPN*, *VXLAN*, *WLAN/WIFI - Wireless LAN*, *Tunnel* and *GENEVE*.

**set interfaces bridge <interface> member interface <member> priority <priority>**

Configure individual bridge port <priority>.

Each bridge has a relative priority and cost. Each interface is associated with a port (number) in the STP code. Each has a priority and a cost, that is used to decide which is the shortest path to forward a packet. The lowest cost path is always used unless the other path is down. If you have multiple bridges and interfaces then you may need to adjust the priorities to achieve optimum performance.

**set interfaces bridge <interface> member interface <member> cost <cost>**

Path <cost> value for Spanning Tree Protocol. Each interface in a bridge could have a different speed and this value is used when deciding which link to use. Faster interfaces should have lower costs.

## Bridge Options

**set interfaces bridge <interface> aging <time>**

MAC address aging <time> in seconds (default: 300).

**set interfaces bridge <interface> max-age <time>**

Bridge maximum aging <time> in seconds (default: 20).

If an another bridge in the spanning tree does not send out a hello packet for a long period of time, it is assumed to be dead.

**set interfaces bridge <interface> igmp querier**

Enable IGMP and MLD querier.

**set interfaces bridge <interface> igmp snooping**

Enable IGMP and MLD snooping.

## STP Parameter

STP (Spanning Tree Protocol) is a network protocol that builds a loop-free logical topology for Ethernet networks. The basic function of STP is to prevent bridge loops and the broadcast radiation that results from them. Spanning tree also allows a network design to include backup links providing fault tolerance if an active link fails.

**set interfaces bridge <interface> stp**

Enable spanning tree protocol. STP is disabled by default.

**set interfaces bridge <interface> forwarding-delay <delay>**

Spanning Tree Protocol forwarding <delay> in seconds (default: 15).

The forwarding delay time is the time spent in each of the listening and learning states before the Forwarding state is entered. This delay is so that when a new bridge comes onto a busy network it looks at some traffic before participating.

**set interfaces bridge <interface> hello-time <interval>**

Spanning Tree Protocol hello advertisement *<interval>* in seconds (default: 2).

Periodically, a hello packet is sent out by the Root Bridge and the Designated Bridges. Hello packets are used to communicate information about the topology throughout the entire Bridged Local Area Network.

## VLAN

### Enable VLAN-Aware Bridge

```
set interfaces bridge <interface> enable-vlan
```

To activate the VLAN aware bridge, you must activate this setting to use VLAN settings for the bridge

```
set interfaces bridge <interface> protocol <802.1ad|802.1q>
```

Define used ethertype of bridge interface.

Ethertype `0x8100` is used for `802.1q` and ethertype `0x88a8` is used for `802.1ad`.

The default is `802.1q`.

### VLAN Options

---

**Note:** It is not valid to use the *vif 1* option for VLAN aware bridges because VLAN aware bridges assume that all unlabeled packets belong to the default VLAN 1 member and that the VLAN ID of the bridge's parent interface is always 1

---

IEEE 802.1q, often referred to as Dot1q, is the networking standard that supports virtual LANs (VLANs) on an IEEE 802.3 Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. The standard also contains provisions for a quality-of-service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.

Portions of the network which are VLAN-aware (i.e., IEEE 802.1q conformant) can include VLAN tags. When a frame enters the VLAN-aware portion of the network, a tag is added to represent the VLAN membership. Each frame must be distinguishable as being within exactly one VLAN. A frame in the VLAN-aware portion of the network that does not contain a VLAN tag is assumed to be flowing on the native VLAN.

The standard was developed by IEEE 802.1, a working group of the IEEE 802 standards committee, and continues to be actively revised. One of the notable revisions is 802.1Q-2014 which incorporated IEEE 802.1aq (Shortest Path Bridging) and much of the IEEE 802.1d standard.

802.1q VLAN interfaces are represented as virtual sub-interfaces in VyOS. The term used for this is *vif*.

```
set interfaces bridge <interface> vif <vlan-id>
```

Create a new VLAN interface on interface *<interface>* using the VLAN number provided via *<vlan-id>*.

You can create multiple VLAN interfaces on a physical interface. The VLAN ID range is from 0 to 4094.

---

**Note:** Only 802.1Q-tagged packets are accepted on Ethernet vifs.

---

```
set interfaces bridge <interface> vif <vlan-id> address <address | dhcp | dhcpv6>
```

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
- /config/scripts/dhcp-client/post-hooks.d/

Example:

```
set interfaces bridge br0 vif 10 address 192.0.2.1/24
set interfaces bridge br0 vif 10 address 2001:db8::1/64
set interfaces bridge br0 vif 10 address dhcp
set interfaces bridge br0 vif 10 address dhcpv6
```

#### **set interfaces bridge <interface> vif <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces bridge br0 vif 10 description 'This is an awesome interface running
↳ on VyOS'
```

#### **set interfaces bridge <interface> vif <vlan-id> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces bridge br0 vif 10 disable
```

#### **set interfaces bridge <interface> vif <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces bridge br0 vif 10 disable-link-detect
```

#### **set interfaces bridge <interface> vif <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces bridge br0 vif 10 mac '00:01:02:03:04:05'
```

#### **set interfaces bridge <interface> vif <vlan-id> mtu <mtu>**

Configure MTU on given *<interface>*. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces bridge br0 vif 10 mtu 1600
```

**set interfaces bridge <interface> vif <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally ‘do not try to send me packets bigger than this value’.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces bridge <interface> vif <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry’s validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces bridge br0 vif 10 ip arp-cache-timeout 180
```

**set interfaces bridge <interface> vif <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP’d IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces bridge br0 vif 10 ip disable-arp-filter
```

**set interfaces bridge <interface> vif <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces bridge br0 vif 10 ip disable-forwarding
```

**set interfaces bridge <interface> vif <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces bridge br0 vif 10 ip enable-directed-broadcast
```

#### **set interfaces bridge <interface> vif <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces bridge br0 vif 10 ip enable-arp-accept
```

#### **set interfaces bridge <interface> vif <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces bridge br0 vif 10 ip enable-arp-announce
```

#### **set interfaces bridge <interface> vif <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces bridge br0 vif 10 ip enable-arp-ignore
```

#### **set interfaces bridge <interface> vif <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces bridge br0 vif 10 ip enable-proxy-arp
```

#### **set interfaces bridge <interface> vif <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with `proxy_arp`.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

**set interfaces bridge <interface> vif <vlan-id> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

**set interfaces bridge <interface> vif <vlan-id> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces bridge br0 vif 10 ipv6 address autoconf
```

**set interfaces bridge <interface> vif <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces bridge br0 vif 10 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces bridge <interface> vif <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces bridge br0 vif 10 ipv6 address no-default-link-local
```

**set interfaces bridge <interface> vif <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces bridge br0 vif 10 ipv6 disable-forwarding
```

**set interfaces bridge <interface> vif <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally ‘do not try to send me packets bigger than this value’.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces bridge <interface> vif <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces bridge br0 vif 10 ipv6 accept-dad 2
```

**set interfaces bridge <interface> vif <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces bridge br0 vif 10 ipv6 dup-addr-detect-transmits 5
```

**set interfaces bridge <interface> vif <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a *VRF*, please check this for additional information.

Example:

```
set interfaces bridge br0 vif 10 vrf red
```

**DHCP(v6)**

**set interfaces bridge <interface> vif <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces bridge br0 vif 10 dhcp-options client-id 'foo-bar'
```

**set interfaces bridge <interface> vif <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces bridge br0 vif 10 dhcp-options host-name 'VyOS'
```

**set interfaces bridge <interface> vif <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces bridge br0 vif 10 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces bridge <interface> vif <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces bridge br0 vif 10 dhcp-options no-default-route
```

**set interfaces bridge <interface> vif <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces bridge br0 vif 10 dhcp-options default-route-distance 220
```

**set interfaces bridge <interface> vif <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces bridge br0 vif 10 dhcp-options reject 192.168.100.0/24
```

**set interfaces bridge <interface> vif <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces bridge br0 vif 10 dhcp-options user-class VyOS
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces bridge br0 vif 10 duid
↪ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces bridge br0 vif 10 dhcpv6-options no-release
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces bridge br0 vif 10 dhcpv6-options parameters-only
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces bridge br0 vif 10 dhcpv6-options rapid-commit
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces bridge br0 vif 10 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces bridge br0 vif 10 dhcpv6-options pd 0 length 56
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces bridge br0 vif 10 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces bridge <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces bridge br0 vif 10 dhcpv6-options pd 0 interface eth8 sla-id 1
```

**set interfaces bridge <interface> member interface <member> native-vlan <vlan-id>**

Set the native VLAN ID flag of the interface. When a data packet without a VLAN tag enters the port, the data packet will be forced to add a tag of a specific vlan id. When the vlan id flag flows out, the tag of the vlan id will be stripped

Example: Set *eth0* member port to be native VLAN 2

```
set interfaces bridge br1 member interface eth0 native-vlan 2
```

**set interfaces bridge <interface> member interface <member> allowed-vlan <vlan-id>**

Allows specific VLAN IDs to pass through the bridge member interface. This can either be an individual VLAN id or a range of VLAN ids delimited by a hyphen.

Example: Set *eth0* member port to be allowed VLAN 4

```
set interfaces bridge br1 member interface eth0 allowed-vlan 4
```

Example: Set *eth0* member port to be allowed VLAN 6-8

```
set interfaces bridge br1 member interface eth0 allowed-vlan 6-8
```

## Port Mirror (SPAN)

SPAN port mirroring can copy the inbound/outbound traffic of the interface to the specified interface, usually the interface can be connected to some special equipment, such as behavior control system, intrusion detection system and traffic collector, and can copy all related traffic from this port. The benefit of mirroring the traffic is that the application is isolated from the source traffic and so application processing does not affect the traffic or the system performance.

VyOS uses the *mirror* option to configure port mirroring. The configuration is divided into 2 different directions. Destination ports should be configured for different traffic directions.

**set interfaces bridge <interface> mirror ingress <monitor-interface>**

Configure port mirroring for *interface* inbound traffic and copy the traffic to *monitor-interface*

Example: Mirror the inbound traffic of *br1* port to *eth3*

```
set interfaces bridge br1 mirror ingress eth3
```

**set interfaces bridge <interface> mirror egress <monitor-interface>**

Configure port mirroring for *interface* outbound traffic and copy the traffic to *monitor-interface*

Example: Mirror the outbound traffic of *br1* port to *eth3*

```
set interfaces bridge br1 mirror egress eth3
```

## Examples

### Create a basic bridge

Creating a bridge interface is very simple. In this example, we will have:

- A bridge named *br100*
- Member interfaces *eth1* and VLAN 10 on interface *eth2*
- Enable STP
- Bridge answers on IP address 192.0.2.1/24 and 2001:db8::ffff/64

```
set interfaces bridge br100 address 192.0.2.1/24
set interfaces bridge br100 address 2001:db8::ffff/64
set interfaces bridge br100 member interface eth1
set interfaces bridge br100 member interface eth2.10
set interfaces bridge br100 stp
```

This results in the active configuration:

```
vyos@vyos# show interfaces bridge br100
address 192.0.2.1/24
address 2001:db8::ffff/64
member {
  interface eth1 {
  }
  interface eth2.10 {
  }
}
stp
```

### Using VLAN aware Bridge

An example of creating a VLAN-aware bridge is as follows:

- A bridge named *br100*
- The member interface *eth1* is a trunk that allows VLAN 10 to pass
- VLAN 10 on member interface *eth2* (ACCESS mode)
- Enable STP
- Bridge answers on IP address 192.0.2.1/24 and 2001:db8::ffff/64

```

set interfaces bridge br100 enable-vlan
set interfaces bridge br100 member interface eth1 allowed-vlan 10
set interfaces bridge br100 member interface eth2 native-vlan 10
set interfaces bridge br100 vif 10 address 192.0.2.1/24
set interfaces bridge br100 vif 10 address 2001:db8::ffff/64
set interfaces bridge br100 stp

```

This results in the active configuration:

```

vyos@vyos# show interfaces bridge br100
enable-vlan
member {
  interface eth1 {
    allowed-vlan 10
  }
  interface eth2 {
    native-vlan 10
  }
}
stp
vif 10 {
  address 192.0.2.1/24
  address 2001:db8::ffff/64
}

```

## Using the operation mode command to view Bridge Information

### show bridge

The *show bridge* operational command can be used to display configured bridges:

```

vyos@vyos:~$ show bridge
3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 master br0 state forwarding
priority 32 cost 100
4: eth2: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 master br0 state forwarding
priority 32 cost 100

```

### show bridge <name> fdb

Show bridge <name> fdb displays the current forwarding table:

```

vyos@vyos:~$ show bridge br0 fdb
50:00:00:08:00:01 dev eth1 vlan 20 master br0 permanent
50:00:00:08:00:01 dev eth1 vlan 10 master br0 permanent
50:00:00:08:00:01 dev eth1 master br0 permanent
33:33:00:00:00:01 dev eth1 self permanent
33:33:00:00:00:02 dev eth1 self permanent
01:00:5e:00:00:01 dev eth1 self permanent
50:00:00:08:00:02 dev eth2 vlan 20 master br0 permanent
50:00:00:08:00:02 dev eth2 vlan 10 master br0 permanent
50:00:00:08:00:02 dev eth2 master br0 permanent
33:33:00:00:00:01 dev eth2 self permanent
33:33:00:00:00:02 dev eth2 self permanent

```

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```
01:00:5e:00:00:01 dev eth2 self permanent
33:33:00:00:00:01 dev br0 self permanent
33:33:00:00:00:02 dev br0 self permanent
33:33:ff:08:00:01 dev br0 self permanent
01:00:5e:00:00:6a dev br0 self permanent
33:33:00:00:00:6a dev br0 self permanent
01:00:5e:00:00:01 dev br0 self permanent
33:33:ff:00:00:00 dev br0 self permanent
```

**show bridge <name> mdb**

Show bridge <name> mdb displays the current multicast group membership table. The table is populated by IGMP and MLD snooping in the bridge driver automatically.

```
vyos@vyos:~$ show bridge br0 mdb
dev br0 port br0 grp ff02::1:ff00:0 temp vid 1
dev br0 port br0 grp ff02::2 temp vid 1
dev br0 port br0 grp ff02::1:ff08:1 temp vid 1
dev br0 port br0 grp ff02::6a temp vid 1
```

### 8.4.3 Dummy

The dummy interface is really a little exotic, but rather useful nevertheless. Dummy interfaces are much like the *Loopback* interface, except you can have as many as you want.

---

**Note:** Dummy interfaces can be used as interfaces that always stay up (in the same fashion to loopbacks in Cisco IOS), or for testing purposes.

---



---

**Hint:** On systems with multiple redundant uplinks and routes, it's a good idea to use a dedicated address for management and dynamic routing protocols. However, assigning that address to a physical link is risky: if that link goes down, that address will become inaccessible. A common solution is to assign the management address to a loopback or a dummy interface and advertise that address via all physical links, so that it's reachable through any of them. Since in Linux-based systems, there can be only one loopback interface, it's better to use a dummy interface for that purpose, since they can be added, removed, and taken up and down independently.

---

## Configuration

### Common interface configuration

**set interfaces dummy <interface> address <address>**

Configure interface <interface> with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64

Example:

```
set interfaces dummy dum0 address 192.0.2.1/24
set interfaces dummy dum0 address 2001:db8::1/64
```

### set interfaces dummy <interface> description <description>

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces dummy dum0 description 'This is an awesome interface running on VyOS'
```

### set interfaces dummy <interface> disable

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces dummy dum0 disable
```

### set interfaces dummy <interface> vrf <vrf>

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces dummy dum0 vrf red
```

## Operation

### show interfaces dummy

Show brief interface information.

```
vyos@vyos:~$ show interfaces dummy
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
dum0           172.18.254.201/32  u/u
```

### show interfaces dummy <interface>

Show detailed information on given <interface>

```
vyos@vyos:~$ show interfaces dummy dum0
dum0: <BROADCAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc noqueue state UNKNOWN group_
↳default qlen 1000
   link/ether 26:7c:8e:bc:fc:f5 brd ff:ff:ff:ff:ff:ff
   inet 172.18.254.201/32 scope global dum0
       valid_lft forever preferred_lft forever
   inet6 fe80::247c:8eff:febc:fcf5/64 scope link
       valid_lft forever preferred_lft forever
```

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RX:	bytes	packets	errors	dropped	overrun	mcast
	0	0	0	0	0	0
TX:	bytes	packets	errors	dropped	carrier	collisions
	1369707	4267	0	0	0	0

## 8.4.4 Ethernet

This will be the most widely used interface on a router carrying traffic to the real world.

### Configuration

#### Common interface configuration

**set interfaces ethernet <interface> address <address | dhcp | dhcpv6>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
- /config/scripts/dhcp-client/post-hooks.d/

Example:

```
set interfaces ethernet eth0 address 192.0.2.1/24
set interfaces ethernet eth0 address 2001:db8::1/64
set interfaces ethernet eth0 address dhcp
set interfaces ethernet eth0 address dhcpv6
```

**set interfaces ethernet <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces ethernet eth0 description 'This is an awesome interface running on
↳VyOS'
```

**set interfaces ethernet <interface> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces ethernet eth0 disable
```

### **set interfaces ethernet <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces ethernet eth0 disable-flow-control
```

### **set interfaces ethernet <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces ethernet eth0 disable-link-detect
```

### **set interfaces ethernet <interface> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces ethernet eth0 mac '00:01:02:03:04:05'
```

### **set interfaces ethernet <interface> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces ethernet eth0 mtu 1600
```

### **set interfaces ethernet <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces ethernet <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces ethernet eth0 ip arp-cache-timeout 180
```

**set interfaces ethernet <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces ethernet eth0 ip disable-arp-filter
```

**set interfaces ethernet <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces ethernet eth0 ip disable-forwarding
```

**set interfaces ethernet <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces ethernet eth0 ip enable-directed-broadcast
```

**set interfaces ethernet <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces ethernet eth0 ip enable-arp-accept
```

**set interfaces ethernet <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces ethernet eth0 ip enable-arp-announce
```

#### **set interfaces ethernet <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces ethernet eth0 ip enable-arp-ignore
```

#### **set interfaces ethernet <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces ethernet eth0 ip enable-proxy-arp
```

#### **set interfaces ethernet <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

#### **set interfaces ethernet <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.

- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

**set interfaces ethernet <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces ethernet eth0 ipv6 address autoconf
```

**set interfaces ethernet <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces ethernet eth0 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces ethernet <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces ethernet eth0 ipv6 address no-default-link-local
```

**set interfaces ethernet <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces ethernet eth0 ipv6 disable-forwarding
```

**set interfaces ethernet <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces ethernet <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces ethernet eth0 ipv6 accept-dad 2
```

**set interfaces ethernet <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces ethernet eth0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces ethernet <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces ethernet eth0 vrf red
```

### DHCP(v6)

**set interfaces ethernet <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces ethernet eth0 dhcp-options client-id 'foo-bar'
```

**set interfaces ethernet <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces ethernet eth0 dhcp-options host-name 'VyOS'
```

**set interfaces ethernet <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces ethernet eth0 dhcp-options vendor-class-id 'VyOS'
```

#### **set interfaces ethernet <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces ethernet eth0 dhcp-options no-default-route
```

#### **set interfaces ethernet <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces ethernet eth0 dhcp-options default-route-distance 220
```

#### **set interfaces ethernet <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces ethernet eth0 dhcp-options reject 192.168.100.0/24
```

#### **set interfaces ethernet <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces ethernet eth0 dhcp-options user-class VyOS
```

#### **set interfaces ethernet <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces ethernet eth0 duid '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces ethernet <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces ethernet eth0 dhcpv6-options no-release
```

#### **set interfaces ethernet <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces ethernet eth0 dhcpv6-options parameters-only
```

**set interfaces ethernet <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces ethernet eth0 dhcpv6-options rapid-commit
```

**set interfaces ethernet <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces ethernet eth0 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces ethernet <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces ethernet eth0 dhcpv6-options pd 0 length 56
```

**set interfaces ethernet <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces ethernet eth0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces ethernet <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces ethernet eth0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Ethernet options

```
set interfaces ethernet <interface> duplex <auto | full | half>
```

Configure physical interface duplex setting.

- auto - interface duplex setting is auto-negotiated
- full - always use full-duplex
- half - always use half-duplex

VyOS default will be *auto*.

```
set interfaces ethernet <interface> speed <auto | 10 | 100 | 1000 | 2500 | 5000 | 10000 | 25000 | 40000 | 50000 | 100000>
```

Configure physical interface speed setting.

- auto - interface speed is auto-negotiated
- 10 - 10 MBit/s
- 100 - 100 MBit/s
- 1000 - 1 GBit/s
- 2500 - 2.5 GBit/s
- 5000 - 5 GBit/s
- 10000 - 10 GBit/s
- 25000 - 25 GBit/s
- 40000 - 40 GBit/s
- 50000 - 50 GBit/s
- 100000 - 100 GBit/s

VyOS default will be *auto*.

## Offloading

```
set interfaces ethernet <interface> offload <gro | gso | lro | rps | sg | tso>
```

Enable different types of hardware offloading on the given NIC.

LRO (Large Receive Offload) is a technique designed to boost the efficiency of how your computer's network interface card (NIC) processes incoming network traffic. Typically, network data arrives in smaller chunks called packets. Processing each packet individually consumes CPU (central processing unit) resources. Lots of small packets can lead to a performance bottleneck. Instead of handing the CPU each packet as it comes in, LRO instructs the NIC to combine multiple incoming packets into a single, larger packet. This larger packet is then passed to the CPU for processing.

---

**Note:** Under some circumstances, LRO is known to modify the packet headers of forwarded traffic, which breaks the end-to-end principle of computer networking. LRO is also only able to offload TCP segments encapsulated in IPv4 packets. Due to these limitations, it is recommended to use GRO (Generic Receive Offload) where possible. More information on the limitations of LRO can be found here: <https://lwn.net/Articles/358910/>

---

GSO (Generic Segmentation Offload) is a pure software offload that is meant to deal with cases where device drivers cannot perform the offloads described above. What occurs in GSO is that a given skbuff will have its data broken out over multiple skbuffs that have been resized to match the MSS provided via `skb_shinfo()->gso_size`.

Before enabling any hardware segmentation offload a corresponding software offload is required in GSO. Otherwise it becomes possible for a frame to be re-routed between devices and end up being unable to be transmitted.

GRO (Generic receive offload) is the complement to GSO. Ideally any frame assembled by GRO should be segmented to create an identical sequence of frames using GSO, and any sequence of frames segmented by GSO should be able to be reassembled back to the original by GRO. The only exception to this is IPv4 ID in the case that the DF bit is set for a given IP header. If the value of the IPv4 ID is not sequentially incrementing it will be altered so that it is when a frame assembled via GRO is segmented via GSO.

RPS (Receive Packet Steering) is logically a software implementation of RSS (Receive Side Scaling). Being in software, it is necessarily called later in the datapath. Whereas RSS selects the queue and hence CPU that will run the hardware interrupt handler, RPS selects the CPU to perform protocol processing above the interrupt handler. This is accomplished by placing the packet on the desired CPU's backlog queue and waking up the CPU for processing. RPS has some advantages over RSS:

- it can be used with any NIC
- software filters can easily be added to hash over new protocols
- it does not increase hardware device interrupt rate, although it does introduce inter-processor interrupts (IPIs)

---

**Note:** In order to use TSO/LRO with VMXNET3 adapters, the SG offloading option must also be enabled.

---

## Authentication (EAPoL)

EAP (Extensible Authentication Protocol) over LAN (EAPoL) is a network port authentication protocol used in IEEE 802.1X (Port Based Network Access Control) developed to give a generic network sign-on to access network resources.

EAPoL comes with an identify option. We automatically use the interface MAC address as identity parameter.

**set interfaces ethernet <interface> eapol ca-certificate <name>**

Set the name of the SSL CA (Certificate Authority) PKI entry used for authentication of the remote side. If an intermediate CA certificate is specified, then all parent CA certificates that exist in the PKI, such as the root CA or additional intermediate CAs, will automatically be used during certificate validation to ensure that the full chain of trust is available.

Example:

```
set pki ca eapol-server-intermediate-ca <Server intermediate CA contents>
set pki ca eapol-server-root-ca <Server root CA contents>
set interfaces ethernet eth0 eapol ca-certificate eapol-server-intermediate-ca
```

**set interfaces ethernet <interface> eapol certificate <name>**

Set the name of the x509 client keypair used to authenticate against the 802.1x system. All parent CA certificates of the client certificate, such as intermediate and root CAs, will be sent as part of the EAP-TLS handshake.

Example:

```
set pki ca eapol-client-intermediate-ca <Client intermediate CA contents>
set pki ca eapol-client-root-ca <Client root CA contents>
```

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```
set pki certificate eapol-client certificate <Client certificate contents>
set pki certificate eapol-client private key <Client private key contents>
set interfaces ethernet eth0 eapol certificate eapol-client
```

## VLAN

### Regular VLANs (802.1q)

IEEE 802.1q, often referred to as Dot1q, is the networking standard that supports virtual LANs (VLANs) on an IEEE 802.3 Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. The standard also contains provisions for a quality-of-service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.

Portions of the network which are VLAN-aware (i.e., IEEE 802.1q conformant) can include VLAN tags. When a frame enters the VLAN-aware portion of the network, a tag is added to represent the VLAN membership. Each frame must be distinguishable as being within exactly one VLAN. A frame in the VLAN-aware portion of the network that does not contain a VLAN tag is assumed to be flowing on the native VLAN.

The standard was developed by IEEE 802.1, a working group of the IEEE 802 standards committee, and continues to be actively revised. One of the notable revisions is 802.1Q-2014 which incorporated IEEE 802.1aq (Shortest Path Bridging) and much of the IEEE 802.1d standard.

802.1q VLAN interfaces are represented as virtual sub-interfaces in VyOS. The term used for this is `vif`.

**set interfaces ethernet <interface> vif <vlan-id>**

Create a new VLAN interface on interface `<interface>` using the VLAN number provided via `<vlan-id>`.

You can create multiple VLAN interfaces on a physical interface. The VLAN ID range is from 0 to 4094.

---

**Note:** Only 802.1Q-tagged packets are accepted on Ethernet vifs.

---

**set interfaces ethernet <interface> vif <vlan-id> address <address | dhcp | dhcpv6>**

Configure interface `<interface>` with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- `/config/scripts/dhcp-client/pre-hooks.d/`
  - `/config/scripts/dhcp-client/post-hooks.d/`
- 

Example:

```
set interfaces ethernet eth0 vif 10 address 192.0.2.1/24
set interfaces ethernet eth0 vif 10 address 2001:db8::1/64
set interfaces ethernet eth0 vif 10 address dhcp
set interfaces ethernet eth0 vif 10 address dhcpv6
```

### **set interfaces ethernet <interface> vif <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces ethernet eth0 vif 10 description 'This is an awesome interface,
↳running on VyOS'
```

### **set interfaces ethernet <interface> vif <vlan-id> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces ethernet eth0 vif 10 disable
```

### **set interfaces ethernet <interface> vif <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces ethernet eth0 vif 10 disable-link-detect
```

### **set interfaces ethernet <interface> vif <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces ethernet eth0 vif 10 mac '00:01:02:03:04:05'
```

### **set interfaces ethernet <interface> vif <vlan-id> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces ethernet eth0 vif 10 mtu 1600
```

### **set interfaces ethernet <interface> vif <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces ethernet <interface> vif <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces ethernet eth0 vif 10 ip arp-cache-timeout 180
```

**set interfaces ethernet <interface> vif <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces ethernet eth0 vif 10 ip disable-arp-filter
```

**set interfaces ethernet <interface> vif <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces ethernet eth0 vif 10 ip disable-forwarding
```

**set interfaces ethernet <interface> vif <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces ethernet eth0 vif 10 ip enable-directed-broadcast
```

**set interfaces ethernet <interface> vif <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces ethernet eth0 vif 10 ip enable-arp-accept
```

**set interfaces ethernet <interface> vif <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces ethernet eth0 vif 10 ip enable-arp-announce
```

**set interfaces ethernet <interface> vif <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces ethernet eth0 vif 10 ip enable-arp-ignore
```

**set interfaces ethernet <interface> vif <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces ethernet eth0 vif 10 ip enable-proxy-arp
```

**set interfaces ethernet <interface> vif <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

**set interfaces ethernet <interface> vif <vlan-id> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

#### **set interfaces ethernet <interface> vif <vlan-id> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces ethernet eth0 vif 10 ipv6 address autoconf
```

#### **set interfaces ethernet <interface> vif <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces ethernet eth0 vif 10 ipv6 address eui64 2001:db8:beef::/64
```

#### **set interfaces ethernet <interface> vif <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces ethernet eth0 vif 10 ipv6 address no-default-link-local
```

#### **set interfaces ethernet <interface> vif <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces ethernet eth0 vif 10 ipv6 disable-forwarding
```

#### **set interfaces ethernet <interface> vif <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces ethernet <interface> vif <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces ethernet eth0 vif 10 ipv6 accept-dad 2
```

**set interfaces ethernet <interface> vif <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces ethernet eth0 vif 10 ipv6 dup-addr-detect-transmits 5
```

**set interfaces ethernet <interface> vif <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces ethernet eth0 vif 10 vrf red
```

### DHCP(v6)

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the 'client identifier' option. If the client supplies a 'client identifier', the client MUST use the same 'client identifier' in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options client-id 'foo-bar'
```

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options host-name 'VyOS'
```

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options no-default-route
```

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options default-route-distance 220
```

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options reject 192.168.100.0/24
```

**set interfaces ethernet <interface> vif <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces ethernet eth0 vif 10 dhcp-options user-class VyOS
```

**set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces ethernet eth0 vif 10 duid
→ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces ethernet eth0 vif 10 dhcpv6-options no-release
```

#### **set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces ethernet eth0 vif 10 dhcpv6-options parameters-only
```

#### **set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces ethernet eth0 vif 10 dhcpv6-options rapid-commit
```

#### **set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces ethernet eth0 vif 10 dhcpv6-options temporary
```

### **DHCPv6 Prefix Delegation (PD)**

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

#### **set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces ethernet eth0 vif 10 dhcpv6-options pd 0 length 56
```

#### **set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces ethernet eth0 vif 10 dhcpv6-options pd 0 interface eth8 address 65534
```

```
set interfaces ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> interface
<delegatee> sla-id <id>
```

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces ethernet eth0 vif 10 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## QinQ (802.1ad)

IEEE 802.1ad was an Ethernet networking standard informally known as QinQ as an amendment to IEEE standard 802.1q VLAN interfaces as described above. 802.1ad was incorporated into the base 802.1q standard in 2011. The technique is also known as provider bridging, Stacked VLANs, or simply QinQ or Q-in-Q. “Q-in-Q” can for supported devices apply to C-tag stacking on C-tag (Ethernet Type = 0x8100).

The original 802.1q specification allows a single Virtual Local Area Network (VLAN) header to be inserted into an Ethernet frame. QinQ allows multiple VLAN tags to be inserted into a single frame, an essential capability for implementing Metro Ethernet network topologies. Just as QinQ extends 802.1Q, QinQ itself is extended by other Metro Ethernet protocols.

In a multiple VLAN header context, out of convenience the term “VLAN tag” or just “tag” for short is often used in place of “802.1q VLAN header”. QinQ allows multiple VLAN tags in an Ethernet frame; together these tags constitute a tag stack. When used in the context of an Ethernet frame, a QinQ frame is a frame that has 2 VLAN 802.1q headers (double-tagged).

In VyOS the terms `vif-s` and `vif-c` stand for the ethertype tags that are used.

The inner tag is the tag which is closest to the payload portion of the frame. It is officially called C-TAG (customer tag, with ethertype 0x8100). The outer tag is the one closer/closest to the Ethernet header, its name is S-TAG (service tag with Ethernet Type = 0x88a8).

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> address <address |
dhcp | dhcpv6>
```

Configure interface `<interface>` with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 address 192.0.2.1/24
set interfaces ethernet eth0 vif-s 1000 vif-c 20 address 2001:db8::1/64
set interfaces ethernet eth0 vif-s 1000 vif-c 20 address dhcp
set interfaces ethernet eth0 vif-s 1000 vif-c 20 address dhcpv6
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 description 'This is an awesome
↳interface running on VyOS'
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 disable
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 disable-link-detect
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 mac '00:01:02:03:04:05'
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 mtu 1600
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip arp-cache-timeout 180
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip disable-arp-filter
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip disable-forwarding
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip enable-directed-broadcast
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip enable-arp-accept
```

### **set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip enable-arp-announce
```

### **set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip enable-arp-ignore
```

### **set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ip enable-proxy-arp
```

### **set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN

- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip source-validation
<strict | loose | disable>
```

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address autoconf
```

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ipv6 address autoconf
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address eui64
<prefix>
```

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ipv6 address eui64 2001:db8:beef::/
↪ 64
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address
no-default-link-local
```

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ipv6 address no-default-link-local
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6
disable-forwarding
```

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ipv6 disable-forwarding
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 adjust-mss <mss>
| clamp-mss-to-pmtu>
```

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally ‘do not try to send me packets bigger than this value’.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 accept-dad <1-3>
```

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ipv6 accept-dad 2
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6
dup-addr-detect-transmits <n>
```

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 ipv6 dup-addr-detect-transmits 5
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> vrf <vrf>
```

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 vrf red
```

## DHCP(v6)

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options
client-id <description>
```

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options client-id 'foo-bar'
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options host-name 'VyOS'
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options no-default-route
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options default-route-
→distance 220
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options reject 192.168.100.0/
→24
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcp-options user-class VyOS
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 duid
→ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options no-release
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options parameters-only
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options rapid-commit
```

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options pd 0 length 56
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>
```

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options pd 0 interface eth8.
→address 65534
```

```
set interfaces ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options pd <id> interface <delegatee> sla-id <id>
```

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces ethernet eth0 vif-s 1000 vif-c 20 dhcpv6-options pd 0 interface eth8.
→sla-id 1
```

## Port Mirror (SPAN)

SPAN port mirroring can copy the inbound/outbound traffic of the interface to the specified interface, usually the interface can be connected to some special equipment, such as behavior control system, intrusion detection system and traffic collector, and can copy all related traffic from this port. The benefit of mirroring the traffic is that the application is isolated from the source traffic and so application processing does not affect the traffic or the system performance.

VyOS uses the *mirror* option to configure port mirroring. The configuration is divided into 2 different directions. Destination ports should be configured for different traffic directions.

```
set interfaces ethernet <interface> mirror ingress <monitor-interface>
```

Configure port mirroring for *interface* inbound traffic and copy the traffic to *monitor-interface*

Example: Mirror the inbound traffic of *eth1* port to *eth3*

```
set interfaces ethernet eth1 mirror ingress eth3
```

```
set interfaces ethernet <interface> mirror egress <monitor-interface>
```

Configure port mirroring for *interface* outbound traffic and copy the traffic to *monitor-interface*

Example: Mirror the outbound traffic of *eth1* port to *eth3*

```
set interfaces ethernet eth1 mirror egress eth3
```

## Operation

### show interfaces ethernet

Show brief interface information.

```
vyos@vyos:~$ show interfaces ethernet
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           172.18.201.10/24  u/u  LAN
eth1           172.18.202.11/24  u/u  WAN
eth2           -                u/D
```

### show interfaces ethernet <interface>

Show detailed information on given <interface>

```
vyos@vyos:~$ show interfaces ethernet eth0
eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group_
↳default qlen 1000
  link/ether 00:50:44:00:f5:c9 brd ff:ff:ff:ff:ff:ff
  inet6 fe80::250:44ff:fe00:f5c9/64 scope link
    valid_lft forever preferred_lft forever

RX: bytes  packets  errors  dropped  overrun  mcast
    56735451 179841    0       0        0       142380
TX: bytes  packets  errors  dropped  carrier  collisions
    5601460  62595    0       0        0        0
```

### show interfaces ethernet <interface> physical

Show information about physical <interface>

```
vyos@vyos:~$ show interfaces ethernet eth0 physical
Settings for eth0:
  Supported ports: [ TP ]
  Supported link modes:  1000baseT/Full
                        10000baseT/Full
  Supported pause frame use: No
  Supports auto-negotiation: No
  Supported FEC modes: Not reported
  Advertised link modes:  Not reported
  Advertised pause frame use: No
  Advertised auto-negotiation: No
  Advertised FEC modes: Not reported
  Speed: 10000Mb/s
  Duplex: Full
  Port: Twisted Pair
  PHYAD: 0
  Transceiver: internal
  Auto-negotiation: off
```

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```

MDI-X: Unknown
Supports Wake-on: uag
Wake-on: d
Link detected: yes
driver: vmxnet3
version: 1.4.16.0-k-NAPI
firmware-version:
expansion-rom-version:
bus-info: 0000:0b:00.0
supports-statistics: yes
supports-test: no
supports-eeprom-access: no
supports-register-dump: yes
supports-priv-flags: no

```

**show interfaces ethernet <interface> physical offload**

Show available offloading functions on given &lt;interface&gt;

```

vyos@vyos:~$ show interfaces ethernet eth0 physical offload
rx-checksumming                on
tx-checksumming                on
tx-checksum-ip-generic         on
scatter-gather                 off
tx-scatter-gather              off
tcp-segmentation-offload      off
tx-tcp-segmentation            off
tx-tcp-mangleid-segmentation  off
tx-tcp6-segmentation           off
udp-fragmentation-offload     off
generic-segmentation-offload  off
generic-receive-offload       off
large-receive-offload         off
rx-vlan-offload                on
tx-vlan-offload                on
ntuple-filters                 off
receive-hashing                on
tx-gre-segmentation            on
tx-gre-csum-segmentation       on
tx-udp_tnl-segmentation        on
tx-udp_tnl-csum-segmentation  on
tx-gso-partial                 on
tx-nocache-copy                off
rx-all                          off

```

**show interfaces ethernet <interface> transceiver**

Show transceiver information from plugin modules, e.g SFP+, QSFP

```

vyos@vyos:~$ show interfaces ethernet eth5 transceiver
Identifier      : 0x03 (SFP)
Extended identifier : 0x04 (GBIC/SFP defined by 2-wire interface ID)
Connector       : 0x07 (LC)

```

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```

Transceiver codes      : 0x00 0x00 0x00 0x01 0x00 0x00 0x00 0x00 0x00
Transceiver type      : Ethernet: 1000BASE-SX
Encoding              : 0x01 (8B/10B)
BR, Nominal           : 1300MBd
Rate identifier       : 0x00 (unspecified)
Length (SMF,km)      : 0km
Length (SMF)         : 0m
Length (50um)        : 550m
Length (62.5um)     : 270m
Length (Copper)      : 0m
Length (OM3)         : 0m
Laser wavelength     : 850nm
Vendor name          : CISCO-FINISAR
Vendor OUI           : 00:90:65
Vendor PN            : FTRJ-8519-7D-CS4
Vendor rev           : A
Option values        : 0x00 0x1a
Option               : RX_LOS implemented
Option               : TX_FAULT implemented
Option               : TX_DISABLE implemented
BR margin, max       : 0%
BR margin, min       : 0%
Vendor SN            : FNS092xxxxx
Date code            : 0506xx
    
```

### 8.4.5 GENEVE

GENEVE (Generic Network Virtualization Encapsulation) supports all of the capabilities of VXLAN (Virtual Extensible LAN), NVGRE (Network Virtualization using Generic Routing Encapsulation), and STT (Stateless Transport Tunneling) and was designed to overcome their perceived limitations. Many believe GENEVE could eventually replace these earlier formats entirely.

GENEVE is designed to support network virtualization use cases, where tunnels are typically established to act as a backplane between the virtual switches residing in hypervisors, physical switches, or middleboxes or other appliances. An arbitrary IP network can be used as an underlay although Clos networks - A technique for composing network fabrics larger than a single switch while maintaining non-blocking bandwidth across connection points. ECMP is used to divide traffic across the multiple links and switches that constitute the fabric. Sometimes termed “leaf and spine” or “fat tree” topologies.

Geneve Header:

```

+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|Ver| Opt Len |O|C|   Rsvd. |           Protocol Type           |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           Virtual Network Identifier (VNI)           |   Reserved   |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           Variable Length Options           |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
    
```

## Configuration

### Common interface configuration

#### **set interfaces geneve <interface> address <address>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64

Example:

```
set interfaces geneve gnv0 address 192.0.2.1/24
set interfaces geneve gnv0 address 2001:db8::1/64
```

#### **set interfaces geneve <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces geneve gnv0 description 'This is an awesome interface running on VyOS
↪ '
```

#### **set interfaces geneve <interface> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces geneve gnv0 disable
```

#### **set interfaces geneve <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces geneve gnv0 disable-flow-control
```

#### **set interfaces geneve <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces geneve gnv0 disable-link-detect
```

```
set interfaces geneve <interface> mac <xx:xx:xx:xx:xx:xx>
```

Configure user defined MAC address on given *<interface>*.

Example:

```
set interfaces geneve gnv0 mac '00:01:02:03:04:05'
```

```
set interfaces geneve <interface> mtu <mtu>
```

Configure MTU on given *<interface>*. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces geneve gnv0 mtu 1600
```

```
set interfaces geneve <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>
```

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

```
set interfaces geneve <interface> ip arp-cache-timeout
```

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces geneve gnv0 ip arp-cache-timeout 180
```

```
set interfaces geneve <interface> ip disable-arp-filter
```

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces geneve gnv0 ip disable-arp-filter
```

```
set interfaces geneve <interface> ip disable-forwarding
```

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces geneve gnv0 ip disable-forwarding
```

#### **set interfaces geneve <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces geneve gnv0 ip enable-directed-broadcast
```

#### **set interfaces geneve <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces geneve gnv0 ip enable-arp-accept
```

#### **set interfaces geneve <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces geneve gnv0 ip enable-arp-announce
```

#### **set interfaces geneve <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces geneve gnv0 ip enable-arp-ignore
```

#### **set interfaces geneve <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces geneve gnv0 ip enable-proxy-arp
```

### set interfaces geneve <interface> ip proxy-arp-pvlan

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### set interfaces geneve <interface> ip source-validation <strict | loose | disable>

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### set interfaces geneve <interface> ipv6 address autoconf

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces geneve gnv0 ipv6 address autoconf
```

### set interfaces geneve <interface> ipv6 address eui64 <prefix>

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces geneve gnv0 ipv6 address eui64 2001:db8:beef::/64
```

### set interfaces geneve <interface> ipv6 address no-default-link-local

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces geneve gnv0 ipv6 address no-default-link-local
```

### **set interfaces geneve <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces geneve gnv0 ipv6 disable-forwarding
```

### **set interfaces geneve <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### **set interfaces geneve <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces geneve gnv0 ipv6 accept-dad 2
```

### **set interfaces geneve <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces geneve gnv0 ipv6 dup-addr-detect-transmits 5
```

### **set interfaces geneve <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces geneve gnv0 vrf red
```

## GENEVE options

**set interfaces geneve gnv0 remote <address>**

Configure GENEVE tunnel far end/remote tunnel endpoint.

**set interfaces geneve gnv0 vni <vni>**

VNI (Virtual Network Identifier) is an identifier for a unique element of a virtual network. In many situations this may represent an L2 segment, however, the control plane defines the forwarding semantics of decapsulated packets. The VNI MAY be used as part of ECMP forwarding decisions or MAY be used as a mechanism to distinguish between overlapping address spaces contained in the encapsulated packet when load balancing across CPUs.

### 8.4.6 L2TPv3

Layer 2 Tunnelling Protocol Version 3 is an IETF standard related to L2TP that can be used as an alternative protocol to *MPLS* for encapsulation of multiprotocol Layer 2 communications traffic over IP networks. Like L2TP, L2TPv3 provides a pseudo-wire service but is scaled to fit carrier requirements.

L2TPv3 can be regarded as being to MPLS what IP is to ATM: a simplified version of the same concept, with much of the same benefit achieved at a fraction of the effort, at the cost of losing some technical features considered less important in the market.

In the case of L2TPv3, the features lost are teletraffic engineering features considered important in MPLS. However, there is no reason these features could not be re-engineered in or on top of L2TPv3 in later products.

The protocol overhead of L2TPv3 is also significantly bigger than MPLS.

L2TPv3 is described in [RFC 3931](#).

## Configuration

### Common interface configuration

**set interfaces l2tpv3 <interface> address <address>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64

Example:

```
set interfaces l2tpv3 l2tpeth0 address 192.0.2.1/24
set interfaces l2tpv3 l2tpeth0 address 2001:db8::1/64
```

**set interfaces l2tpv3 <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces l2tpv3 l2tpeth0 description 'This is an awesome interface running on  
↳VyOS'
```

#### **set interfaces l2tpv3 <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces l2tpv3 l2tpeth0 disable
```

#### **set interfaces l2tpv3 <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces l2tpv3 l2tpeth0 disable-flow-control
```

#### **set interfaces l2tpv3 <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detect physical link state changes.

Example:

```
set interfaces l2tpv3 l2tpeth0 disable-link-detect
```

#### **set interfaces l2tpv3 <interface> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces l2tpv3 l2tpeth0 mac '00:01:02:03:04:05'
```

#### **set interfaces l2tpv3 <interface> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces l2tpv3 l2tpeth0 mtu 1600
```

#### **set interfaces l2tpv3 <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

#### **set interfaces l2tpv3 <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces l2tpv3 l2tpeth0 ip arp-cache-timeout 180
```

#### **set interfaces l2tpv3 <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces l2tpv3 l2tpeth0 ip disable-arp-filter
```

#### **set interfaces l2tpv3 <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces l2tpv3 l2tpeth0 ip disable-forwarding
```

#### **set interfaces l2tpv3 <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces l2tpv3 l2tpeth0 ip enable-directed-broadcast
```

#### **set interfaces l2tpv3 <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces l2tpv3 l2tpeth0 ip enable-arp-accept
```

### **set interfaces l2tpv3 <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces l2tpv3 l2tpeth0 ip enable-arp-announce
```

### **set interfaces l2tpv3 <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces l2tpv3 l2tpeth0 ip enable-arp-ignore
```

### **set interfaces l2tpv3 <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces l2tpv3 l2tpeth0 ip enable-proxy-arp
```

### **set interfaces l2tpv3 <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation

- Ericsson call it MAC-Forced Forwarding (RFC Draft)

**set interfaces l2tpv3 <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

**set interfaces l2tpv3 <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces l2tpv3 l2tpeth0 ipv6 address autoconf
```

**set interfaces l2tpv3 <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces l2tpv3 l2tpeth0 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces l2tpv3 <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces l2tpv3 l2tpeth0 ipv6 address no-default-link-local
```

**set interfaces l2tpv3 <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces l2tpv3 l2tpeth0 ipv6 disable-forwarding
```

**set interfaces l2tpv3 <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces l2tpv3 <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces l2tpv3 l2tpeth0 ipv6 accept-dad 2
```

**set interfaces l2tpv3 <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces l2tpv3 l2tpeth0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces l2tpv3 <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces l2tpv3 l2tpeth0 vrf red
```

## L2TPv3 options

**set interfaces l2tpv3 <interface> encapsulation <udp | ip>**

Set the encapsulation type of the tunnel. Valid values for encapsulation are: udp, ip.

This defaults to UDP

**set interfaces l2tpv3 <interface> source-address <address>**

Set the IP address of the local interface to be used for the tunnel.

This address must be the address of a local interface. It may be specified as an IPv4 address or an IPv6 address.

**set interfaces l2tpv3 <interface> remote <address>**

Set the IP address of the remote peer. It may be specified as an IPv4 address or an IPv6 address.

**set interfaces l2tpv3 <interface> session-id <id>**

Set the session id, which is a 32-bit integer value. Uniquely identifies the session being created. The value used must match the peer\_session\_id value being used at the peer.

**set interfaces l2tpv3 <interface> peer-session-id <id>**

Set the peer-session-id, which is a 32-bit integer value assigned to the session by the peer. The value used must match the session\_id value being used at the peer.

**set interfaces l2tpv3 <interface> tunnel-id <id>**

Set the tunnel id, which is a 32-bit integer value. Uniquely identifies the tunnel into which the session will be created.

**set interfaces l2tpv3 <interface> peer-tunnel-id <id>**

Set the tunnel id, which is a 32-bit integer value. Uniquely identifies the tunnel into which the session will be created.

**Example****Over IP**

```
# show interfaces l2tpv3
l2tpv3 l2tpeth10 {
  address 192.168.37.1/27
  encapsulation ip
  source-address 192.0.2.1
  peer-session-id 100
  peer-tunnel-id 200
  remote 203.0.113.24
  session-id 100
  tunnel-id 200
}
```

The inverse configuration has to be applied to the remote side.

**Over UDP**

UDP mode works better with NAT:

- Set source-address to your local IP (LAN).
- Add a forwarding rule matching UDP port on your internet router.

```
# show interfaces l2tpv3
l2tpv3 l2tpeth10 {
  address 192.168.37.1/27
  destination-port 9001
  encapsulation udp
  source-address 192.0.2.1
  peer-session-id 100
  peer-tunnel-id 200
  remote 203.0.113.24
  session-id 100
```

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```

source-port 9000
tunnel-id 200
}

```

To create more than one tunnel, use distinct UDP ports.

### Over IPsec, L2 VPN (bridge)

This is the LAN extension use case. The eth0 port of the distant VPN peers will be directly connected like if there was a switch between them.

IPsec:

```

set vpn ipsec authentication psk <pre-shared-name> id '%any'
set vpn ipsec authentication psk <pre-shared-name> secret <pre-shared-key>
set vpn ipsec interface <VPN-interface>
set vpn ipsec esp-group test-ESP-1 lifetime '3600'
set vpn ipsec esp-group test-ESP-1 mode 'transport'
set vpn ipsec esp-group test-ESP-1 pfs 'enable'
set vpn ipsec esp-group test-ESP-1 proposal 1 encryption 'aes128'
set vpn ipsec esp-group test-ESP-1 proposal 1 hash 'sha1'
set vpn ipsec ike-group test-IKE-1 key-exchange 'ikev1'
set vpn ipsec ike-group test-IKE-1 lifetime '3600'
set vpn ipsec ike-group test-IKE-1 proposal 1 dh-group '5'
set vpn ipsec ike-group test-IKE-1 proposal 1 encryption 'aes128'
set vpn ipsec ike-group test-IKE-1 proposal 1 hash 'sha1'
set vpn ipsec site-to-site peer <connection-name> authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer <connection-name> connection-type 'initiate'
set vpn ipsec site-to-site peer <connection-name> ike-group 'test-IKE-1'
set vpn ipsec site-to-site peer <connection-name> ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer <connection-name> local-address <local-ip>
set vpn ipsec site-to-site peer <connection-name> tunnel 1 esp-group 'test-ESP-1'
set vpn ipsec site-to-site peer <connection-name> tunnel 1 protocol 'l2tp'

```

Bridge:

```

set interfaces bridge br0 description 'L2 VPN Bridge'
# remote side in this example:
# set interfaces bridge br0 address '172.16.30.18/30'
set interfaces bridge br0 address '172.16.30.17/30'
set interfaces bridge br0 member interface eth0
set interfaces ethernet eth0 description 'L2 VPN Physical port'

```

L2TPv3:

```

set interfaces bridge br0 member interface 'l2tpeth0'
set interfaces l2tpv3 l2tpeth0 description 'L2 VPN Tunnel'
set interfaces l2tpv3 l2tpeth0 destination-port '5000'
set interfaces l2tpv3 l2tpeth0 encapsulation 'ip'
set interfaces l2tpv3 l2tpeth0 source-address <local-ip>
set interfaces l2tpv3 l2tpeth0 mtu '1500'
set interfaces l2tpv3 l2tpeth0 peer-session-id '110'

```

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```

set interfaces l2tpv3 l2tpeth0 peer-tunnel-id '10'
set interfaces l2tpv3 l2tpeth0 remote <peer-ip>
set interfaces l2tpv3 l2tpeth0 session-id '110'
set interfaces l2tpv3 l2tpeth0 source-port '5000'
set interfaces l2tpv3 l2tpeth0 tunnel-id '10'

```

## 8.4.7 Loopback

The loopback networking interface is a virtual network device implemented entirely in software. All traffic sent to it “loops back” and just targets services on your local machine.

---

**Note:** There can only be one loopback lo interface on the system. If you need multiple interfaces, please use the *Dummy* interface type.

---



---

**Hint:** A loopback interface is always up, thus it could be used for management traffic or as source/destination for and IGP (Interior Gateway Protocol) like *BGP* so your internal BGP link is not dependent on physical link states and multiple routes can be chosen to the destination. A *Dummy* Interface should always be preferred over a *Loopback* interface.

---

## Configuration

### Common interface configuration

**set interfaces loopback <interface> address <address>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64

Example:

```

set interfaces loopback lo address 192.0.2.1/24
set interfaces loopback lo address 2001:db8::1/64

```

**set interfaces loopback <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```

set interfaces loopback lo description 'This is an awesome interface running on VyOS
→ '

```

## Operation

### show interfaces loopback

Show brief interface information.

```
vyos@vyos:~$ show interfaces loopback
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
lo             127.0.0.1/8    u/u
              ::1/128
```

### show interfaces loopback lo

Show detailed information on the given loopback interface *lo*.

```
vyos@vyos:~$ show interfaces loopback lo
lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen_
→1000
  link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
  inet 127.0.0.1/8 scope host lo
    valid_lft forever preferred_lft forever
  inet6 ::1/128 scope host
    valid_lft forever preferred_lft forever

RX:  bytes    packets    errors    dropped    overrun    mcast
    300         6          0         0         0         0
TX:  bytes    packets    errors    dropped    carrier    collisions
    300         6          0         0         0         0
```

## 8.4.8 MACsec

MACsec is an IEEE standard (IEEE 802.1AE) for MAC security, introduced in 2006. It defines a way to establish a protocol independent connection between two hosts with data confidentiality, authenticity and/or integrity, using GCM-AES-128. MACsec operates on the Ethernet layer and as such is a layer 2 protocol, which means it's designed to secure traffic within a layer 2 network, including DHCP or ARP requests. It does not compete with other security solutions such as IPsec (layer 3) or TLS (layer 4), as all those solutions are used for their own specific use cases.

## Configuration

### Common interface configuration

**set interfaces macsec <interface> address <address | dhcp | dhcpv6>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
- /config/scripts/dhcp-client/post-hooks.d/

Example:

```
set interfaces macsec macsec0 address 192.0.2.1/24
set interfaces macsec macsec0 address 2001:db8::1/64
set interfaces macsec macsec0 address dhcp
set interfaces macsec macsec0 address dhcpv6
```

### **set interfaces macsec <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces macsec macsec0 description 'This is an awesome interface running on
↳VyOS'
```

### **set interfaces macsec <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces macsec macsec0 disable
```

### **set interfaces macsec <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces macsec macsec0 disable-flow-control
```

### **set interfaces macsec <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces macsec macsec0 disable-link-detect
```

```
set interfaces macsec <interface> mac <xx:xx:xx:xx:xx:xx>
```

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces macsec macsec0 mac '00:01:02:03:04:05'
```

```
set interfaces macsec <interface> mtu <mtu>
```

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces macsec macsec0 mtu 1600
```

```
set interfaces macsec <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>
```

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

```
set interfaces macsec <interface> ip arp-cache-timeout
```

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces macsec macsec0 ip arp-cache-timeout 180
```

```
set interfaces macsec <interface> ip disable-arp-filter
```

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces macsec macsec0 ip disable-arp-filter
```

```
set interfaces macsec <interface> ip disable-forwarding
```

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces macsec macsec0 ip disable-forwarding
```

#### **set interfaces macsec <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces macsec macsec0 ip enable-directed-broadcast
```

#### **set interfaces macsec <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces macsec macsec0 ip enable-arp-accept
```

#### **set interfaces macsec <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces macsec macsec0 ip enable-arp-announce
```

#### **set interfaces macsec <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces macsec macsec0 ip enable-arp-ignore
```

#### **set interfaces macsec <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces macsec macsec0 ip enable-proxy-arp
```

### set interfaces macsec <interface> ip proxy-arp-pvlan

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### set interfaces macsec <interface> ip source-validation <strict | loose | disable>

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### set interfaces macsec <interface> ipv6 address autoconf

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces macsec macsec0 ipv6 address autoconf
```

### set interfaces macsec <interface> ipv6 address eui64 <prefix>

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces macsec macsec0 ipv6 address eui64 2001:db8:beef::/64
```

### set interfaces macsec <interface> ipv6 address no-default-link-local

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces macsec macsec0 ipv6 address no-default-link-local
```

### **set interfaces macsec <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces macsec macsec0 ipv6 disable-forwarding
```

### **set interfaces macsec <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### **set interfaces macsec <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces macsec macsec0 ipv6 accept-dad 2
```

### **set interfaces macsec <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces macsec macsec0 ipv6 dup-addr-detect-transmits 5
```

### **set interfaces macsec <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces macsec macsec0 vrf red
```

## DHCP(v6)

**set interfaces macsec <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces macsec macsec0 dhcp-options client-id 'foo-bar'
```

**set interfaces macsec <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces macsec macsec0 dhcp-options host-name 'VyOS'
```

**set interfaces macsec <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces macsec macsec0 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces macsec <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces macsec macsec0 dhcp-options no-default-route
```

**set interfaces macsec <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces macsec macsec0 dhcp-options default-route-distance 220
```

**set interfaces macsec <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces macsec macsec0 dhcp-options reject 192.168.100.0/24
```

**set interfaces macsec <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces macsec macsec0 dhcp-options user-class VyOS
```

#### **set interfaces macsec <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces macsec macsec0 duid '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces macsec <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces macsec macsec0 dhcpv6-options no-release
```

#### **set interfaces macsec <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces macsec macsec0 dhcpv6-options parameters-only
```

#### **set interfaces macsec <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces macsec macsec0 dhcpv6-options rapid-commit
```

#### **set interfaces macsec <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces macsec macsec0 dhcpv6-options temporary
```

### **DHCPv6 Prefix Delegation (PD)**

VyOS 1.3 (equuleus) supports DHCPv6-PD (**RFC 3633**). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

#### **set interfaces macsec <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces macsec macsec0 dhcpv6-options pd 0 length 56
```

**set interfaces macsec <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces macsec macsec0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces macsec <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces macsec macsec0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## MACsec options

**set interfaces macsec <interface> security cipher <gcm-aes-128|gcm-aes-256>**

Select cipher suite used for cryptographic operations. This setting is mandatory.

**set interfaces macsec <interface> security encrypt**

MACsec only provides authentication by default, encryption is optional. This command will enable encryption for all outgoing packets.

**set interfaces macsec <interface> source-interface <physical-source>**

A physical interface is required to connect this MACsec instance to. Traffic leaving this interface will now be authenticated/encrypted.

## Static Keys

Static SAK (Secure Authentication Key) mode can be configured manually on each device wishing to use MACsec. Keys must be set statically on all devices for traffic to flow properly. Key rotation is dependent on the administrator updating all keys manually across connected devices. Static SAK mode can not be used with MKA.

**set interfaces macsec <interface> security static key <key>**

Set the device's transmit (TX) key. This key must be a hex string that is 16-bytes (GCM-AES-128) or 32-bytes (GCM-AES-256).

**set interfaces macsec <interface> security static peer <peer> mac <mac address>**

Set the peer's MAC address

**set interfaces macsec <interface> security static peer <peer> key <key>**

Set the peer's key used to receive (RX) traffic

```
set interfaces macsec <interface> security static peer <peer> disable
```

Disable the peer configuration

## Key Management

MKA (MACsec Key Agreement protocol) is used to synchronize keys between individual peers.

```
set interfaces macsec <interface> security mka cak <key>
```

IEEE 802.1X/MACsec pre-shared key mode. This allows configuring MACsec with a pre-shared key using a CAK (MACsec connectivity association key) and CKN (MACsec connectivity association name) pair.

```
set interfaces macsec <interface> security mka ckn <key>
```

CKN key

```
set interfaces macsec <interface> security mka priority <priority>
```

The peer with lower priority will become the key server and start distributing SAKs.

## Replay protection

```
set interfaces macsec <interface> security replay-window <window>
```

IEEE 802.1X/MACsec replay protection window. This determines a window in which replay is tolerated, to allow receipt of frames that have been misordered by the network.

- 0: No replay window, strict check
- 1-4294967295: Number of packets that could be misordered

## Operation

```
run generate macsec mka cak <gcm-aes-128|gcm-aes-256>
```

Generate MKA CAK key 128 or 256 bits.

```
vyos@vyos:~$ generate macsec mka cak gcm-aes-128
20693b6e08bfa482703a563898c9e3ad
```

```
run generate macsec mka ckn
```

Generate MKA CAK key.

```
vyos@vyos:~$ generate macsec mka ckn
88737efef314ee319b2cbf30210a5f164957d884672c143aefdc0f5f6bc49eb2
```

```
show interfaces macsec
```

List all MACsec interfaces.

```
vyos@vyos:~$ show interfaces macsec
17: macsec1: protect on validate strict sc off sa off encrypt on send_sci on end_
↪station off scb off replay off
   cipher suite: GCM-AES-128, using ICV length 16
```

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```

TXSC: 005056bfe0001 on SA 0
20: macsec0: protect on validate strict sc off sa off encrypt off send_sci on end_
↪station off scb off replay off
   cipher suite: GCM-AES-128, using ICV length 16
TXSC: 005056bfe0001 on SA 0

```

**show interfaces macsec <interface>**

Show specific MACsec interface information

```

vyos@vyos:~$ show interfaces macsec macsec1
17: macsec1: protect on validate strict sc off sa off encrypt on send_sci on end_
↪station off scb off replay off
   cipher suite: GCM-AES-128, using ICV length 16
TXSC: 005056bfe0001 on SA 0

```

**Examples**

- Two routers connected both via eth1 through an untrusted switch
- R1 has 192.0.2.1/24 & 2001:db8::1/64
- R2 has 192.0.2.2/24 & 2001:db8::2/64

**R1**

```

set interfaces macsec macsec1 address '192.0.2.1/24'
set interfaces macsec macsec1 address '2001:db8::1/64'
set interfaces macsec macsec1 security cipher 'gcm-aes-128'
set interfaces macsec macsec1 security encrypt
set interfaces macsec macsec1 security mka cak '232e44b7fda6f8e2d88a07bf78a7aff4'
set interfaces macsec macsec1 security mka ckn
↪'40916f4b23e3d548ad27eadd2d10c6f98c2d21684699647d63d41b500dfe8836'
set interfaces macsec macsec1 source-interface 'eth1'

```

**R2**

```

set interfaces macsec macsec1 address '192.0.2.2/24'
set interfaces macsec macsec1 address '2001:db8::2/64'
set interfaces macsec macsec1 security cipher 'gcm-aes-128'
set interfaces macsec macsec1 security encrypt
set interfaces macsec macsec1 security mka cak '232e44b7fda6f8e2d88a07bf78a7aff4'
set interfaces macsec macsec1 security mka ckn
↪'40916f4b23e3d548ad27eadd2d10c6f98c2d21684699647d63d41b500dfe8836'
set interfaces macsec macsec1 source-interface 'eth1'

```

Pinging (IPv6) the other host and intercepting the traffic in eth1 will show you the content is encrypted.

```

17:35:44.586668 00:50:56:bf:ef:aa > 00:50:56:b3:ad:d6, ethertype Unknown (0x88e5), ↪
↪length 150:
   0x0000: 2c00 0000 000a 0050 56bf efaa 0001 d9fb  ,.....PV.....
   0x0010: 920a 8b8d 68ed 9609 29dd e767 25a4 4466  ....h...)..g%.Df
   0x0020: 5293 487b 9990 8517 3b15 22c7 ea5c ac83  R.H{....;"...\..
   0x0030: 4c6e 13cf 0743 f917 2c4e 694e 87d1 0f09  Ln...C.,NiN....

```

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```

0x0040: 0f77 5d53 ed75 cfe1 54df 0e5a c766 93cb .w]S.u..T..Z.f..
0x0050: c4f2 6e23 f200 6dfe 3216 c858 dcaa a73b ..n#..m.2..X...;
0x0060: 4dd1 9358 d9e4 ed0e 072f 1acc 31c4 f669 M..X...../..1..i
0x0070: e93a 9f38 8a62 17c6 2857 6ac5 ec11 8b0e ..:8.b..(Wj.....
0x0080: 6b30 92a5 7ccc 720b k0..|.r.

```

Disabling the encryption on the link by removing security encrypt will show the unencrypted but authenticated content.

```

17:37:00.746155 00:50:56:bf:ef:aa > 00:50:56:b3:ad:d6, ethertype Unknown (0x88e5),
↳ length 150:
 0x0000: 2000 0000 0009 0050 56bf efaa 0001 86dd .....PV.....
 0x0010: 6009 86f3 0040 3a40 2001 0db8 0000 0000 `....@:@.....
 0x0020: 0000 0000 0000 0001 2001 0db8 0000 0000 .....
 0x0030: 0000 0000 0000 0002 8100 d977 0f30 0003 .....w.0..
 0x0040: 1ca0 c65e 0000 0000 8d93 0b00 0000 0000 ...^.....
 0x0050: 1011 1213 1415 1617 1819 1a1b 1c1d 1e1f .....
 0x0060: 2021 2223 2425 2627 2829 2a2b 2c2d 2e2f .!"#$%&'()*+,-./
 0x0070: 3031 3233 3435 3637 87d5 eed3 3a39 d52b 01234567....:9.+
 0x0080: a282 c842 5254 ef28 ...BRT.(

```

### R1 Static Key

```

set interfaces macsec macsec1 address '192.0.2.1/24'
set interfaces macsec macsec1 address '2001:db8::1/64'
set interfaces macsec macsec1 security cipher 'gcm-aes-128'
set interfaces macsec macsec1 security encrypt
set interfaces macsec macsec1 security static key 'ddd6f4a7be4d8bbaf88b26f10e1c05f7'
set interfaces macsec macsec1 security static peer R2 mac 00:11:22:33:44:02
set interfaces macsec macsec1 security static peer R2 key
↳ 'eadcc0aa9cf203f3ce651b332bd6e6c7'
set interfaces macsec macsec1 source-interface 'eth1'

```

### R2 Static Key

```

set interfaces macsec macsec1 address '192.0.2.2/24'
set interfaces macsec macsec1 address '2001:db8::2/64'
set interfaces macsec macsec1 security cipher 'gcm-aes-128'
set interfaces macsec macsec1 security encrypt
set interfaces macsec macsec1 security static key 'eadcc0aa9cf203f3ce651b332bd6e6c7'
set interfaces macsec macsec1 security static peer R2 mac 00:11:22:33:44:01
set interfaces macsec macsec1 security static peer R2 key
↳ 'ddd6f4a7be4d8bbaf88b26f10e1c05f7'
set interfaces macsec macsec1 source-interface 'eth1'

```

## 8.4.9 OpenVPN

Traditionally hardware routers implement IPsec exclusively due to relative ease of implementing it in hardware and insufficient CPU power for doing encryption in software. Since VyOS is a software router, this is less of a concern. OpenVPN has been widely used on UNIX platform for a long time and is a popular option for remote access VPN, though it's also capable of site-to-site connections.

Advantages of OpenVPN are:

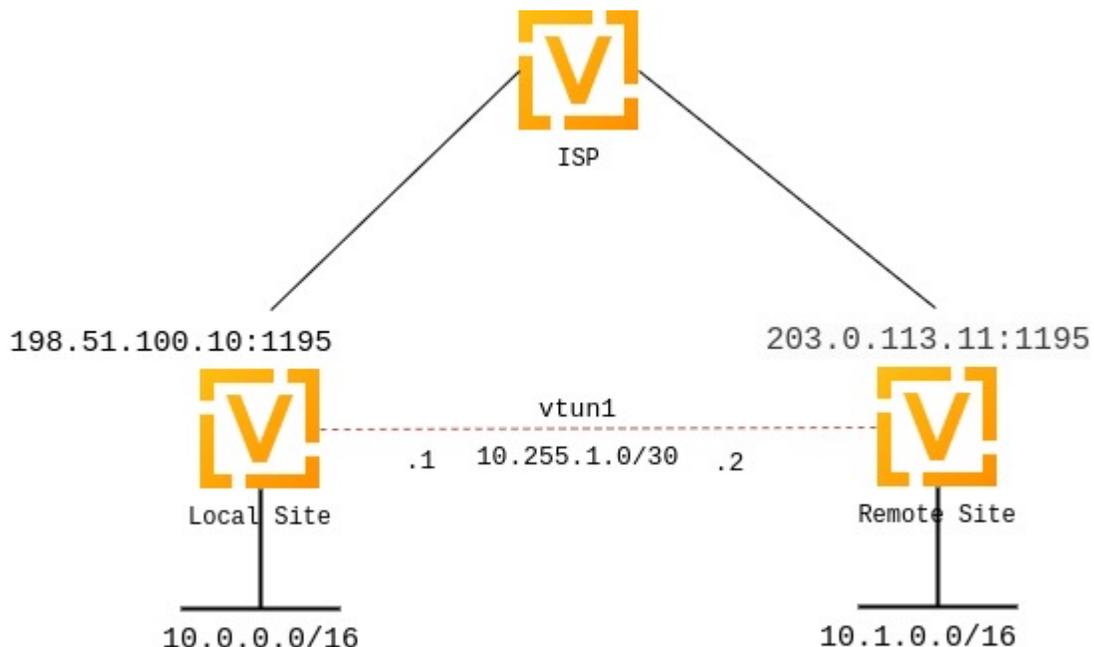
- It uses a single TCP or UDP connection and does not rely on packet source addresses, so it will work even through a double NAT: perfect for public hotspots and such
- It's easy to setup and offers very flexible split tunneling
- There's a variety of client GUI frontends for any platform

Disadvantages are:

- It's slower than IPsec due to higher protocol overhead and the fact it runs in user mode while IPsec, on Linux, is in kernel mode
- None of the operating systems have client software installed by default

In the VyOS CLI, a key point often overlooked is that rather than being configured using the `set vpn` stanza, OpenVPN is configured as a network interface using `set interfaces openvpn`.

### Site-to-Site



OpenVPN is popular for client-server setups, but its site-to-site mode remains a relatively obscure feature, and many router appliances still don't support it. However, it's very useful for quickly setting up tunnels between routers.

As of VyOS 1.4, OpenVPN site-to-site mode can use either pre-shared keys or x.509 certificates.

The pre-shared key mode is deprecated and will be removed from future OpenVPN versions, so VyOS will have to remove support for that option as well. The reason is that using pre-shared keys is significantly less secure than using TLS.

We'll configure OpenVPN using self-signed certificates, and then discuss the legacy pre-shared key mode.

In both cases, we will use the following settings:

- The public IP address of the local side of the VPN will be 198.51.100.10.
- The public IP address of the remote side of the VPN will be 203.0.113.11.
- The tunnel will use 10.255.1.1 for the local IP and 10.255.1.2 for the remote.
- The local site will have a subnet of 10.0.0.0/16.
- The remote site will have a subnet of 10.1.0.0/16.
- The official port for OpenVPN is 1194, which we reserve for client VPN; we will use 1195 for site-to-site VPN.
- The `persist-tunnel` directive will allow us to configure tunnel-related attributes, such as firewall policy as we would on any normal network interface.
- If known, the IP of the remote router can be configured using the `remote-host` directive; if unknown, it can be omitted. We will assume a dynamic IP for our remote router.

## Setting up certificates

Setting up a full-blown PKI with a CA certificate would arguably defeat the purpose of site-to-site OpenVPN, since its main goal is supposed to be configuration simplicity, compared to server setups that need to support multiple clients.

However, since VyOS 1.4, it is possible to verify self-signed certificates using certificate fingerprints.

On both sides, you need to generate a self-signed certificate, preferably using the “ec” (elliptic curve) type. You can generate them by executing `run generate pki certificate self-signed install <name>` in the configuration mode. Once the command is complete, it will add the certificate to the configuration session, to the `pki` subtree. You can then review the proposed changes and commit them.

```
vyos@vyos# run generate pki certificate self-signed install openvpn-local
Enter private key type: [rsa, dsa, ec] (Default: rsa) ec
Enter private key bits: (Default: 256)
Enter country code: (Default: GB)
Enter state: (Default: Some-State)
Enter locality: (Default: Some-City)
Enter organization name: (Default: VyOS)
Enter common name: (Default: vyos.io)
Do you want to configure Subject Alternative Names? [y/N]
Enter how many days certificate will be valid: (Default: 365)
Enter certificate type: (client, server) (Default: server)
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N]
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.
[edit]

vyos@vyos# compare
[pki]
+ certificate openvpn-local {
+   certificate "MIICJTCCAcugAwIBAgIUMXLfRNJ5i0jk/
↵uAZqUe4phW8MdgwCgYIKoZIZj0EAwIwVzELMAkGA1UEBhMCR0IxExARBgNVBAGMC1NvbWUtU3RhdGUxEjAQBgNVBAcMVCNvbWUtQ2
↵lw9Eg9Q89r247AJR6ec/GT26A1cVA1bsongV1YaWvRwzTPC/yi5pkzV/PcT/
↵WU7JQIyMwo3UwczAMBgNVHRMBAf8EAjAAMA4GA1UdDwEB/
```

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```

↪wQEAWIHgDATBgNVHSUEDDAKBggrBgEFBQcDATAdbGNVHQ4EFgQUBrAxRdFppdG/
↪UBRdo7qNyHutaTQwHwYDVR0jBBgwFoAUBrAxRdFppdG/
↪UBRdo7qNyHutaTQwCgYIKoZIzj0EAwIDSAAwRQIhAI2+8C92z9wTcTWkQ/
↪goRxs10EBC+h780+vgo9k97z5iAiBSeqfaVr5taQTS31+McGTAK3cYWNTg0Dl0BI8aK02oRg=="
+   private {
+     key "MIGHAgEAMBMGBByqGSM49AgEGCCqGSM49AwEHBG0wawIBAQQgtOeEb0dMb5P/
↪2Exi09WWvk6Cvz0o0BoDuP68ZimS2LShRANCAASp7D0vE3SKSAWAzr/lw9Eq9Q89r247AJR6ec/
↪GT26AICVA1bsongV1YaWvRwzTPC/yi5pkzV/PcT/WU7JQIyMW"
+   }
+ }

[edit]

vyos@vyos# commit

```

You do **not** need to copy the certificate to the other router. Instead, you need to retrieve its SHA-256 fingerprint. OpenVPN only supports SHA-256 fingerprints at the moment, so you need to use the following command:

```

vyos@vyos# run show pki certificate openvpn-local fingerprint sha256
5C:B8:09:64:8B:59:51:DC:F4:DF:2C:12:5C:B7:03:D1:68:94:D7:5B:62:C2:E1:83:79:F1:F0:68:B2:81:26:79

```

Note: certificate names don't matter, we use 'openvpn-local' and 'openvpn-remote' but they can be arbitrary.

Repeat the procedure on the other router.

## Setting up OpenVPN

Local Configuration:

```

Configure the tunnel:

set interfaces openvpn vtun1 mode site-to-site
set interfaces openvpn vtun1 protocol udp
set interfaces openvpn vtun1 persistent-tunnel
set interfaces openvpn vtun1 remote-host '203.0.113.11' # Public
↪IP of the other side
set interfaces openvpn vtun1 local-port '1195'
set interfaces openvpn vtun1 remote-port '1195'
set interfaces openvpn vtun1 local-address '10.255.1.1' # Local
↪IP of vtun interface
set interfaces openvpn vtun1 remote-address '10.255.1.2' # Remote
↪IP of vtun interface
set interfaces openvpn vtun1 tls certificate 'openvpn-local' # The
↪self-signed certificate
set interfaces openvpn vtun1 tls peer-fingerprint <remote cert fingerprint> # The
↪output of 'run show pki certificate <name> fingerprint sha256
on the
↪remote rout

```

Remote Configuration:

```

set interfaces openvpn vtun1 mode site-to-site
set interfaces openvpn vtun1 protocol udp
set interfaces openvpn vtun1 persistent-tunnel
set interfaces openvpn vtun1 remote-host '198.51.100.10'           # Pub
↳ IP of other site
set interfaces openvpn vtun1 local-port '1195'
set interfaces openvpn vtun1 remote-port '1195'
set interfaces openvpn vtun1 local-address '10.255.1.2'          # Local
↳ IP of vtun interface
set interfaces openvpn vtun1 remote-address '10.255.1.1'         #
↳ Remote IP of vtun interface
set interfaces openvpn vtun1 tls certificate 'openvpn-remote'    # The
↳ self-signed certificate
set interfaces openvpn vtun1 tls peer-fingerprint <local cert fingerprint> # The
↳ output of 'run show pki certificate <name> fingerprint sha256
on the
↳ local router

```

## Pre-shared keys

Until VyOS 1.4, the only option for site-to-site OpenVPN without PKI was to use pre-shared keys. That option is still available but it is deprecated and will be removed in the future. However, if you need to set up a tunnel to an older VyOS version or a system with older OpenVPN, you need to still need to know how to use it.

First, you need to generate a key by running `run generate pki openvpn shared-secret install <name>` from configuration mode. You can use any name, we will use `s2s`.

```

vyos@local# run generate pki openvpn shared-secret install s2s
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.
[edit]
vyos@local# compare
[pki openvpn shared-secret]
+ s2s {
+   key
↳ "7c73046a9da91e874d31c7ad894a32688cda054bde157c64270f28ecee0bb2f44dbb70335fad45148b0456aaa78cb34a34"
↳ ""
+   version "1"
+ }

[edit]
vyos@local# commit
[edit]

```

Then you need to install the key on the remote router:

```
vyos@remote# set pki openvpn shared-secret s2s key <generated key string>
```

Then you need to set the key in your OpenVPN interface settings:

```
set interfaces openvpn vtun1 shared-secret-key s2s
```

## Firewall Exceptions

For the OpenVPN traffic to pass through the WAN interface, you must create a firewall exception.

```
set firewall name OUTSIDE_LOCAL rule 10 action accept
set firewall name OUTSIDE_LOCAL rule 10 description 'Allow established/related'
set firewall name OUTSIDE_LOCAL rule 10 state established enable
set firewall name OUTSIDE_LOCAL rule 10 state related enable
set firewall name OUTSIDE_LOCAL rule 20 action accept
set firewall name OUTSIDE_LOCAL rule 20 description OpenVPN_IN
set firewall name OUTSIDE_LOCAL rule 20 destination port 1195
set firewall name OUTSIDE_LOCAL rule 20 log enable
set firewall name OUTSIDE_LOCAL rule 20 protocol udp
set firewall name OUTSIDE_LOCAL rule 20 source
```

You should also ensure that the OUTSIDE\_LOCAL firewall group is applied to the WAN interface and a direction (local).

```
set firewall interface eth0 local name 'OUTSIDE-LOCAL'
```

### Static Routing:

Static routes can be configured referencing the tunnel interface; for example, the local router will use a network of 10.0.0.0/16, while the remote has a network of 10.1.0.0/16:

#### Local Configuration:

```
set protocols static route 10.1.0.0/16 interface vtun1
```

#### Remote Configuration:

```
set protocols static route 10.0.0.0/16 interface vtun1
```

The configurations above will default to using 256-bit AES in GCM mode for encryption (if both sides support NCP) and SHA-1 for HMAC authentication. SHA-1 is considered weak, but other hashing algorithms are available, as are encryption algorithms:

#### For Encryption:

This sets the cipher when NCP (Negotiable Crypto Parameters) is disabled or OpenVPN version < 2.4.0.

```
vyos@vyos# set interfaces openvpn vtun1 encryption cipher
Possible completions:
  des          DES algorithm
  3des         DES algorithm with triple encryption
  bf128        Blowfish algorithm with 128-bit key
  bf256        Blowfish algorithm with 256-bit key
  aes128       AES algorithm with 128-bit key CBC
  aes128gcm    AES algorithm with 128-bit key GCM
  aes192       AES algorithm with 192-bit key CBC
  aes192gcm    AES algorithm with 192-bit key GCM
  aes256       AES algorithm with 256-bit key CBC
  aes256gcm    AES algorithm with 256-bit key GCM
```

This sets the accepted ciphers to use when version => 2.4.0 and NCP is enabled (which is the default). Default NCP cipher for versions >= 2.4.0 is aes256gcm. The first cipher in this list is what server pushes to clients.

```
vyos@vyos# set int open vtun0 encryption ncp-ciphers
Possible completions:
  des          DES algorithm
  3des         DES algorithm with triple encryption
  aes128       AES algorithm with 128-bit key CBC
  aes128gcm    AES algorithm with 128-bit key GCM
  aes192       AES algorithm with 192-bit key CBC
  aes192gcm    AES algorithm with 192-bit key GCM
  aes256       AES algorithm with 256-bit key CBC
  aes256gcm    AES algorithm with 256-bit key GCM
```

For Hashing:

```
vyos@vyos# set interfaces openvpn vtun1 hash
Possible completions:
  md5          MD5 algorithm
  sha1         SHA-1 algorithm
  sha256       SHA-256 algorithm
  sha512       SHA-512 algorithm
```

If you change the default encryption and hashing algorithms, be sure that the local and remote ends have matching configurations, otherwise the tunnel will not come up.

Firewall policy can also be applied to the tunnel interface for *local*, *in*, and *out* directions and functions identically to ethernet interfaces.

If making use of multiple tunnels, OpenVPN must have a way to distinguish between different tunnels aside from the pre-shared-key. This is either by referencing IP address or port number. One option is to dedicate a public IP to each tunnel. Another option is to dedicate a port number to each tunnel (e.g. 1195,1196,1197...).

OpenVPN status can be verified using the *show openvpn* operational commands. See the built-in help for a complete list of options.

## Server

Multi-client server is the most popular OpenVPN mode on routers. It always uses x.509 authentication and therefore requires a PKI setup. Refer this topic *PKI* to generate a CA certificate, a server certificate and key, a certificate revocation list, a Diffie-Hellman key exchange parameters file. You do not need client certificates and keys for the server setup.

In this example we will use the most complicated case: a setup where each client is a router that has its own subnet (think HQ and branch offices), since simpler setups are subsets of it.

Suppose you want to use 10.23.1.0/24 network for client tunnel endpoints and all client subnets belong to 10.23.0.0/20. All clients need access to the 192.168.0.0/16 network.

First we need to specify the basic settings. 1194/UDP is the default. The `persistent-tunnel` option is recommended, it prevents the TUN/TAP device from closing on connection resets or daemon reloads.

---

**Note:** Using `openvpn-option-reneg-sec` can be tricky. This option is used to renegotiate data channel after n seconds. When used at both server and client, the lower value will trigger the renegotiation. If you set it to 0 on one side of the connection (to disable it), the chosen value on the other side will determine when the renegotiation will occur.

---

```
set interfaces openvpn vtun10 mode server
set interfaces openvpn vtun10 local-port 1194
set interfaces openvpn vtun10 persistent-tunnel
set interfaces openvpn vtun10 protocol udp
```

Then we need to generate, add and specify the names of the cryptographic materials. Each of the install command should be applied to the configuration and committed before using under the openvpn interface configuration.

```
run generate pki ca install ca-1 # Follow the
↳instructions to generate CA cert.
Configure mode commands to install:
set pki ca ca-1 certificate 'generated_cert_string'
set pki ca ca-1 private key 'generated_private_key'

run generate pki certificate sign ca-1 install srv-1 # Follow the
↳instructions to generate server cert.
Configure mode commands to install:
set pki certificate srv-1 certificate 'generated_server_cert'
set pki certificate srv-1 private key 'generated_private_key'

run generate pki dh install dh-1 # Follow the
↳instructions to generate set of
Diffie-Hellman
↳parameters.
Generating parameters...
Configure mode commands to install DH parameters:
set pki dh dh-1 parameters 'generated_dh_params_set'

set interfaces openvpn vtun10 tls ca-certificate ca-1
set interfaces openvpn vtun10 tls certificate srv-1
set interfaces openvpn vtun10 tls dh-params dh-1
```

Now we need to specify the server network settings. In all cases we need to specify the subnet for client tunnel endpoints. Since we want clients to access a specific network behind our router, we will use a push-route option for installing that route on clients.

```
set interfaces openvpn vtun10 server push-route 192.168.0.0/16
set interfaces openvpn vtun10 server subnet 10.23.1.0/24
```

Since it's a HQ and branch offices setup, we will want all clients to have fixed addresses and we will route traffic to specific subnets through them. We need configuration for each client to achieve this.

---

**Note:** Clients are identified by the CN field of their x.509 certificates, in this example the CN is `client0`:

---

```
set interfaces openvpn vtun10 server client client0 ip 10.23.1.10
set interfaces openvpn vtun10 server client client0 subnet 10.23.2.0/25
```

OpenVPN **will not** automatically create routes in the kernel for client subnets when they connect and will only use client-subnet association internally, so we need to create a route to the 10.23.0.0/20 network ourselves:

```
set protocols static route 10.23.0.0/20 interface vtun10
```

Additionally, each client needs a copy of ca cert and its own client key and cert files. The files are plaintext so they

may be copied either manually from the CLI. Client key and cert files should be signed with the proper ca cert and generated on the server side.

HQ's router requires the following steps to generate crypto materials for the Branch 1:

```
run generate pki certificate sign ca-1 install branch-1      # Follow the
↳instructions to generate client                            cert for Branch 1

Configure mode commands to install:
```

Branch 1's router might have the following lines:

```
set pki ca ca-1 certificate 'generated_cert_string'        # CA cert generated
↳on HQ router
set pki certificate branch-1 certificate 'generated_branch_cert' # Client cert
↳generated and signed on HQ router
set pki certificate branch-1 private key 'generated_private_key' # Client cert key
↳generated on HQ router

set interfaces openvpn vtun10 tls ca-cert ca-1
set interfaces openvpn vtun10 tls certificate branch-1
```

## Client Authentication

### LDAP

Enterprise installations usually ship a kind of directory service which is used to have a single password store for all employees. VyOS and OpenVPN support using LDAP/AD as single user backend.

Authentication is done by using the `openvpn-auth-ldap.so` plugin which is shipped with every VyOS installation. A dedicated configuration file is required. It is best practise to store it in `/config` to survive image updates

```
set interfaces openvpn vtun0 openvpn-option "--plugin /usr/lib/openvpn/openvpn-auth-ldap.
↳so /config/auth/ldap-auth.config"
```

The required config file may look like this:

```
<LDAP>
# LDAP server URL
URL          ldap://ldap.example.com
# Bind DN (If your LDAP server doesn't support anonymous binds)
BindDN       cn=LDAPUser,dc=example,dc=com
# Bind Password password
Password     S3cr3t
# Network timeout (in seconds)
Timeout      15
</LDAP>

<Authorization>
# Base DN
BaseDN       "ou=people,dc=example,dc=com"
# User Search Filter
SearchFilter "(&(uid=%u)(objectClass=shadowAccount))"
```

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```
# Require Group Membership - allow all users
RequireGroup false
</Authorization>
```

## Active Directory

Despite the fact that AD is a superset of LDAP

```
<LDAP>
# LDAP server URL
URL ldap://dc01.example.com
# Bind DN (If your LDAP server doesn't support anonymous binds)
BindDN CN=LDAPUser,DC=example,DC=com
# Bind Password
Password mysecretpassword
# Network timeout (in seconds)
Timeout 15
# Enable Start TLS
TLSEnable no
# Follow LDAP Referrals (anonymously)
FollowReferrals no
</LDAP>

<Authorization>
# Base DN
BaseDN "DC=example,DC=com"
# User Search Filter, user must be a member of the VPN AD group
SearchFilter "(&(sAMAccountName=%u)(memberOf=CN=VPN,OU=Groups,DC=example,DC=com))"
# Require Group Membership
RequireGroup false # already handled by SearchFilter
<Group>
BaseDN "OU=Groups,DC=example,DC=com"
SearchFilter "(|(cn=VPN))"
MemberAttribute memberOf
</Group>
</Authorization>
```

If you only want to check if the user account is enabled and can authenticate (against the primary group) the following snippet is sufficient:

```
<LDAP>
URL ldap://dc01.example.com
BindDN CN=SA_OPENVPN,OU=ServiceAccounts,DC=example,DC=com
Password ThisIsTopSecret
Timeout 15
TLSEnable no
FollowReferrals no
</LDAP>

<Authorization>
BaseDN "DC=example,DC=com"
```

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```

SearchFilter      "sAMAccountName=%u"
RequireGroup      false
</Authorization>

```

A complete LDAP auth OpenVPN configuration could look like the following example:

```

vyos@vyos# show interfaces openvpn
openvpn vtun0 {
  mode server
  openvpn-option "--tun-mtu 1500 --fragment 1300 --mssfix"
  openvpn-option "--plugin /usr/lib/openvpn/openvpn-auth-ldap.so /config/auth/ldap-
↪auth.config"
  openvpn-option "--push redirect-gateway"
  openvpn-option --duplicate-cn
  openvpn-option "--verify-client-cert none"
  openvpn-option --comp-lzo
  openvpn-option --persist-key
  openvpn-option --persist-tun
  server {
    domain-name example.com
    max-connections 5
    name-server 203.0.113.0.10
    name-server 198.51.100.3
    subnet 172.18.100.128/29
  }
  tls {
    ca-certificate ca.crt
    certificate server.crt
    dh-params dh1024.pem
  }
}

```

## Client

VyOS can not only act as an OpenVPN site-to-site or server for multiple clients. You can indeed also configure any VyOS OpenVPN interface as an OpenVPN client connecting to a VyOS OpenVPN server or any other OpenVPN server.

Given the following example we have one VyOS router acting as OpenVPN server and another VyOS router acting as OpenVPN client. The server also pushes a static client IP address to the OpenVPN client. Remember, clients are identified using their CN attribute in the SSL certificate.

## Configuration

### Server Side

```
set interfaces openvpn vtun10 encryption cipher 'aes256'
set interfaces openvpn vtun10 hash 'sha512'
set interfaces openvpn vtun10 local-host '172.18.201.10'
set interfaces openvpn vtun10 local-port '1194'
set interfaces openvpn vtun10 mode 'server'
set interfaces openvpn vtun10 persistent-tunnel
set interfaces openvpn vtun10 protocol 'udp'
set interfaces openvpn vtun10 server client client1 ip '10.10.0.10'
set interfaces openvpn vtun10 server domain-name 'vyos.net'
set interfaces openvpn vtun10 server max-connections '250'
set interfaces openvpn vtun10 server name-server '172.16.254.30'
set interfaces openvpn vtun10 server subnet '10.10.0.0/24'
set interfaces openvpn vtun10 server topology 'subnet'
set interfaces openvpn vtun10 tls ca-cert ca-1
set interfaces openvpn vtun10 tls certificate srv-1
set interfaces openvpn vtun10 tls crypt-key srv-1
set interfaces openvpn vtun10 tls dh-params dh-1
set interfaces openvpn vtun10 use-lzo-compression
```

### Client Side

```
set interfaces openvpn vtun10 encryption cipher 'aes256'
set interfaces openvpn vtun10 hash 'sha512'
set interfaces openvpn vtun10 mode 'client'
set interfaces openvpn vtun10 persistent-tunnel
set interfaces openvpn vtun10 protocol 'udp'
set interfaces openvpn vtun10 remote-host '172.18.201.10'
set interfaces openvpn vtun10 remote-port '1194'
set interfaces openvpn vtun10 tls ca-cert ca-1
set interfaces openvpn vtun10 tls certificate client-1
set interfaces openvpn vtun10 tls crypt-key client-1
set interfaces openvpn vtun10 use-lzo-compression
```

## Options

We do not have CLI nodes for every single OpenVPN option. If an option is missing, a feature request should be opened at [Phabricator](#) so all users can benefit from it (see [Issues/Feature requests](#)).

If you are a hacker or want to try on your own we support passing raw OpenVPN options to OpenVPN.

```
set interfaces openvpn vtun10 openvpn-option 'persistent-key'
```

Will add persistent-key at the end of the generated OpenVPN configuration. Please use this only as last resort - things might break and OpenVPN won't start if you pass invalid options/syntax.

```
set interfaces openvpn vtun10 openvpn-option 'push "keepalive 1 10"'
```

Will add push "keepalive 1 10" to the generated OpenVPN config file.

**Note:** Sometimes option lines in the generated OpenVPN configuration require quotes. This is done through a hack on our config generator. You can pass quotes using the `&quot;`; statement.

---

## OpenVPN Data Channel Offload (DCO)

OpenVPN Data Channel Offload (DCO) enables significant performance enhancement in encrypted OpenVPN data processing. By minimizing context switching for each packet, DCO effectively reduces overhead. This optimization is achieved by keeping most data handling tasks within the kernel, avoiding frequent switches between kernel and user space for encryption and packet handling.

As a result, the processing of each packet becomes more efficient, potentially leveraging hardware encryption offloading support available in the kernel.

**Note:** OpenVPN DCO is not full OpenVPN features supported, is currently considered experimental. Furthermore, there are certain OpenVPN features and use cases that remain incompatible with DCO. To get a comprehensive understanding of the limitations associated with DCO, refer to the list of known limitations in the documentation.

<https://community.openvpn.net/openvpn/wiki/DataChannelOffload/Features>

---

## Enabling OpenVPN DCO

DCO support is a per-tunnel option and it is not automatically enabled by default for new or upgraded tunnels. Existing tunnels will continue to function as they have in the past.

DCO can be enabled for both new and existing tunnels, VyOS adds an option in each tunnel configuration where we can enable this function. The current best practice is to create a new tunnel with DCO to minimize the chance of problems with existing clients.

**set interfaces openvpn <name> offload dco**

Enable OpenVPN Data Channel Offload feature by loading the appropriate kernel module.

Disabled by default - no kernel module loaded.

---

**Note:** Enable this feature causes an interface reset.

---

## Troubleshooting

VyOS provides some operational commands on OpenVPN.

## Check status

The following commands let you check tunnel status.

### **show openvpn client**

Use this command to check the tunnel status for OpenVPN client interfaces.

### **show openvpn server**

Use this command to check the tunnel status for OpenVPN server interfaces.

### **show openvpn site-to-site**

Use this command to check the tunnel status for OpenVPN site-to-site interfaces.

## Reset OpenVPN

The following commands let you reset OpenVPN.

### **reset openvpn client <text>**

Use this command to reset the specified OpenVPN client.

### **reset openvpn interface <interface>**

Use this command to reset the OpenVPN process on a specific interface.

## 8.4.10 WireGuard

WireGuard is an extremely simple yet fast and modern VPN that utilizes state-of-the-art cryptography. See <https://www.wireguard.com> for more information.

### Site to Site VPN

This diagram corresponds with the example site to site configuration below.

### Keypairs

WireGuard requires the generation of a keypair, which includes a private key to decrypt incoming traffic, and a public key for peer(s) to encrypt traffic.

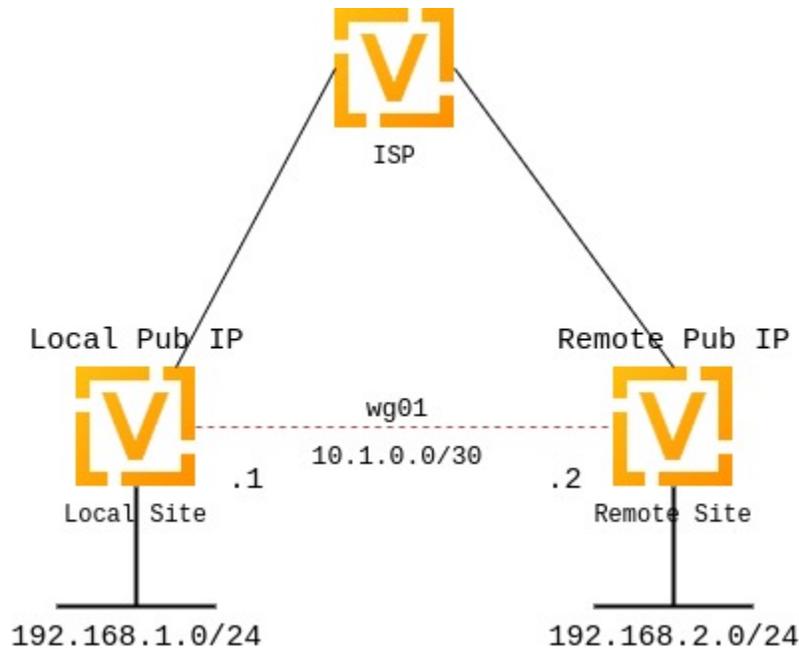
### Generate Keypair

#### **generate pki wireguard key-pair**

It generates the keypair, which includes the public and private parts. The key is not stored on the system - only a keypair is generated.

```
vyos@vyos:~$ generate pki wireguard key-pair
Private key: iJJyEARGK52Ls1GYRCcFvPuTj7WyWYDo//BknoDU0XY=
Public key: EKY0dxRrSD98QHj fHOK13mZ5PJ7hnddRZt5woB3szyw=
```

#### **generate pki wireguard key-pair install interface <interface>**



Generates a keypair, which includes the public and private parts, and build a configuration command to install this key to interface.

```
vyos@vyos:~$ generate pki wireguard key-pair install interface wg10
"generate" CLI command executed from operational level.
Generated private-key is not stored to CLI, use configure mode commands to install.
→key:

set interfaces wireguard wg10 private-key
→ '4Krkv8h6NkAYMMaBWI957yYDJDMvj9URTHstdl0cDU0='

Corresponding public-key to use on peer system is:
→ 'UxDsYT6EnpTIOKUzvMlw2p0sNOKQvFxEdSVrnNrX1Ro='
```

**Note:** If this command is invoked from configure mode with the `run` prefix the key is automatically installed to the appropriate interface:

```
vyos@vyos# run generate pki wireguard key-pair install interface wg10
"generate" CLI command executed from config session.
Generated private-key was imported to CLI!

Use the following command to verify: show interfaces wireguard wg10
Corresponding public-key to use on peer system is: '7d9KwabjLhHpJiEJeIGd0CBla0/
→eTWF0h6xyCovTfG8='

vyos@vyos# compare
[edit interfaces]
+wireguard wg10 {
+  private-key CJweb8FC6BU3Loj4PC2pn5V82cdJIPs7G1saW0ZfLWc=
+}
```

**show interfaces wireguard <interface> public-key**

Retrieve public key portion from configured WIREGuard interface.

```
vyos@vyos:~$ show interfaces wireguard wg01 public-key
EKY0dxRrSD98QHjfhOK13mZ5PJ7hnddRZt5woB3szyw=
```

**Optional****generate pki wireguard preshared-key**

An additional layer of symmetric-key crypto can be used on top of the asymmetric crypto.

This is optional.

```
vyos@vyos:~$ generate pki wireguard preshared-key
Pre-shared key: OHH2EwZfMNK+1L6BXbYw3bKcTMrfjpR4mCAEeBlFnRs=
```

**generate pki wireguard preshared-key install interface <interface> peer <peer>**

An additional layer of symmetric-key crypto can be used on top of the asymmetric crypto. This command automatically creates for you the required CLI command to install this PSK for a given peer.

This is optional.

```
vyos@vyos:~$ generate pki wireguard preshared-key install interface wg10 peer foo
"generate" CLI command executed from operational level.
Generated preshared-key is not stored to CLI, use configure mode commands to
-> install key:

set interfaces wireguard wg10 peer foo preshared-key
-> '32vQ1w1yFKTna8n7Gu7EimubSe2Y63m8bafz55EG3Ro='

Pre-shared key: +LuaZ8W6DjsDFJFX3jJzoNqrsXHhvq08JztM9z8LHCs=
```

---

**Note:** If this command is invoked from configure mode with the run prefix the key is automatically installed to the appropriate interface:

---

**Interface configuration**

The next step is to configure your local side as well as the policy based trusted destination addresses. If you only initiate a connection, the listen port and address/port is optional; however, if you act like a server and endpoints initiate the connections to your system, you need to define a port your clients can connect to, otherwise the port is randomly chosen and may make connection difficult with firewall rules, since the port may be different each time the system is rebooted.

You will also need the public key of your peer as well as the network(s) you want to tunnel (allowed-ips) to configure a WireGuard tunnel. The public key below is always the public key from your peer, not your local one.

**local side - commands**

- WireGuard interface itself uses address 10.1.0.1/30
- We only allow the 192.168.2.0/24 subnet to travel over the tunnel

- Our remote end of the tunnel for peer *to-wg02* is reachable at 192.0.2.1 port 51820
- The remote peer *to-wg02* uses XMrlPykaxhdAAiSjhtPlvi30NVkvLQliQuKP7AI7CyI= as its public key portion
- We listen on port 51820
- We route all traffic for the 192.168.2.0/24 network to interface *wg01*

```
set interfaces wireguard wg01 address '10.1.0.1/30'
set interfaces wireguard wg01 description 'VPN-to-wg02'
set interfaces wireguard wg01 peer to-wg02 allowed-ips '192.168.2.0/24'
set interfaces wireguard wg01 peer to-wg02 address '192.0.2.1'
set interfaces wireguard wg01 peer to-wg02 port '51820'
set interfaces wireguard wg01 peer to-wg02 public-key
↪ 'XMrlPykaxhdAAiSjhtPlvi30NVkvLQliQuKP7AI7CyI='
set interfaces wireguard wg01 port '51820'

set protocols static route 192.168.2.0/24 interface wg01
```

The last step is to define an interface route for 192.168.2.0/24 to get through the WireGuard interface *wg01*. Multiple IPs or networks can be defined and routed. The last check is allowed-ips which either prevents or allows the traffic.

**Warning:** You can not assign the same allowed-ips statement to multiple WireGuard peers. This is a design decision. For more information please check the [WireGuard mailing list](#).

#### **set interfaces wireguard <interface> private-key <private-key>**

Associates the previously generated private key to a specific WireGuard interface. The private key can be generated via the command

```
generate pki wireguard key-pair.
```

```
set interfaces wireguard wg01 private-key 'iJJyEARGK52Ls1GYRccFvPuTj7WyWYDo//
↪ BknoDU0XY='
```

The command `show interfaces wireguard wg01 public-key` will then show the public key, which needs to be shared with the peer.

#### **set interfaces wireguard <interface> per-client-thread**

Provides a per-device control to enable/disable the threaded mode for all the NAPI instances of the given network device, without the need for a device up/down.

If CLI option is not specified, this feature is disabled.

Example:

```
set interfaces wireguard wg01 per-client-thread
```

#### **remote side - commands**

```
set interfaces wireguard wg01 address '10.1.0.2/30'
set interfaces wireguard wg01 description 'VPN-to-wg01'
set interfaces wireguard wg01 peer to-wg01 allowed-ips '192.168.1.0/24'
set interfaces wireguard wg01 peer to-wg01 address '192.0.2.2'
set interfaces wireguard wg01 peer to-wg01 port '51820'
set interfaces wireguard wg01 peer to-wg01 public-key
```

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```

↪ 'EKY0dxRrSD98QHjfhOK13mZ5PJ7hnddRZt5woB3szyw='
set interfaces wireguard wg01 port '51820'
set interfaces wireguard wg01 private-key 'OLTQY3HuK5qWdGVs6fJR093SwPgOmCKkDI1+vJLGoFU='

set protocols static route 192.168.1.0/24 interface wg01

```

## Firewall Exceptions

For the WireGuard traffic to pass through the WAN interface, you must create a firewall exception.

```

set firewall ipv4 name OUTSIDE_LOCAL rule 10 action accept
set firewall ipv4 name OUTSIDE_LOCAL rule 10 description 'Allow established/related'
set firewall ipv4 name OUTSIDE_LOCAL rule 10 state established enable
set firewall ipv4 name OUTSIDE_LOCAL rule 10 state related enable
set firewall ipv4 name OUTSIDE_LOCAL rule 20 action accept
set firewall ipv4 name OUTSIDE_LOCAL rule 20 description WireGuard_IN
set firewall ipv4 name OUTSIDE_LOCAL rule 20 destination port 51820
set firewall ipv4 name OUTSIDE_LOCAL rule 20 log enable
set firewall ipv4 name OUTSIDE_LOCAL rule 20 protocol udp
set firewall ipv4 name OUTSIDE_LOCAL rule 20 source

```

You should also ensure that the OUTSIDE\_LOCAL firewall group is applied to the WAN interface and a direction (local).

```

set interfaces ethernet eth0 firewall local name 'OUTSIDE-LOCAL'

```

Assure that your firewall rules allow the traffic, in which case you have a working VPN using WireGuard.

```

wg01# ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1) 56(84) bytes of data.
64 bytes from 192.168.1.1: icmp_seq=1 ttl=64 time=1.16 ms
64 bytes from 192.168.1.1: icmp_seq=2 ttl=64 time=1.77 ms

wg02# ping 192.168.2.1
PING 192.168.2.1 (192.168.2.1) 56(84) bytes of data.
64 bytes from 192.168.2.1: icmp_seq=1 ttl=64 time=4.40 ms
64 bytes from 192.168.2.1: icmp_seq=2 ttl=64 time=1.02 ms

```

An additional layer of symmetric-key crypto can be used on top of the asymmetric crypto. This is optional.

```

vyos@vyos:~$ generate pki wireguard preshared-key
Pre-shared key: rvVDOoc2IYEnV+k5p7TNAmHBMEGTHbPU8Qqg8c/sUqc=

```

Copy the key, as it is not stored on the local filesystem. Because it is a symmetric key, only you and your peer should have knowledge of its content. Make sure you distribute the key in a safe manner,

```

wg01# set interfaces wireguard wg01 peer to-wg02 preshared-key
↪ 'rvVDOoc2IYEnV+k5p7TNAmHBMEGTHbPU8Qqg8c/sUqc='
wg02# set interfaces wireguard wg01 peer to-wg01 preshared-key
↪ 'rvVDOoc2IYEnV+k5p7TNAmHBMEGTHbPU8Qqg8c/sUqc='

```

## Remote Access “RoadWarrior” Example

With WireGuard, a Road Warrior VPN config is similar to a site-to-site VPN. It just lacks the address and port statements.

In the following example, the IPs for the remote clients are defined in the peers. This allows the peers to interact with one another. In comparison to the site-to-site example the `persistent-keepalive` flag is set to 15 seconds to assure the connection is kept alive. This is mainly relevant if one of the peers is behind NAT and can't be connected to if the connection is lost. To be effective this value needs to be lower than the UDP timeout.

```
wireguard wg01 {
  address 10.172.24.1/24
  address 2001:db8:470:22::1/64
  description RoadWarrior
  peer MacBook {
    allowed-ips 10.172.24.30/32
    allowed-ips 2001:db8:470:22::30/128
    persistent-keepalive 15
    pubkey F5MbW7ye7Dsoxd0aixjdrudshjxxN5UdNV+pGFHqehc=
  }
  peer iPhone {
    allowed-ips 10.172.24.20/32
    allowed-ips 2001:db8:470:22::20/128
    persistent-keepalive 15
    pubkey BknHcLFo8n0o8Dwq2CjaC/TedchKQ0ebxC7GYn7A100=
  }
  port 2224
  private-key OLTQY3HuK5qWDgVs6fJR093SwPgOmCKkDI1+vJLGoFU=
}
```

The following is the config for the iPhone peer above. It's important to note that the `AllowedIPs` wildcard setting directs all IPv4 and IPv6 traffic through the connection.

```
[Interface]
PrivateKey = ARAKLSDJsadlkfjasdfiowqeruriowqueasdf=
Address = 10.172.24.20/24, 2001:db8:470:22::20/64
DNS = 10.0.0.53, 10.0.0.54

[Peer]
PublicKey = RIbtUTCfgzNjnLNPQ/ulkGnnB2vMWHm7l2H/xUfbyjc=
AllowedIPs = 0.0.0.0/0, ::/0
Endpoint = 192.0.2.1:2224
PersistentKeepalive = 25
```

However, split-tunneling can be achieved by specifying the remote subnets. This ensures that only traffic destined for the remote site is sent over the tunnel. All other traffic is unaffected.

```
[Interface]
PrivateKey = 8Iasdfweirousd1EVGUk5XsT+wYFZ9mhPnQhmjzaJE6Go=
Address = 10.172.24.30/24, 2001:db8:470:22::30/64

[Peer]
PublicKey = RIbtUTCfgzNjnLNPQ/ulkGnnB2vMWHm7l2H/xUfbyjc=
AllowedIPs = 10.172.24.30/24, 2001:db8:470:22::/64
```

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```
Endpoint = 192.0.2.1:2224
PersistentKeepalive = 25
```

## Operational Commands

### Status

#### show interfaces wireguard wg01 summary

Show info about the Wireguard service. It also shows the latest handshake.

```
vyos@vyos:~$ show interfaces wireguard wg01 summary
interface: wg01
  public key:
  private key: (hidden)
  listening port: 51820

peer: <peer pubkey>
  endpoint: <peer public IP>
  allowed ips: 10.69.69.2/32
  latest handshake: 23 hours, 45 minutes, 26 seconds ago
  transfer: 1.26 MiB received, 6.47 MiB sent
```

#### show interfaces wireguard

Get a list of all wireguard interfaces

```
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
wg01           10.0.0.1/24    u/u
```

#### show interfaces wireguard <interface>

Show general information about specific WireGuard interface

```
vyos@vyos:~$ show interfaces wireguard wg01
interface: wg01
  address: 10.0.0.1/24
  public key: h1HkYlSuHdJN6Qv4Hz4bBzjGg5WUty+U1L7DJsZy1iE=
  private key: (hidden)
  listening port: 41751

RX:  bytes  packets  errors  dropped  overrun      mcast
    0         0         0         0         0         0
TX:  bytes  packets  errors  dropped  carrier  collisions
    0         0         0         0         0         0
```

## Remote Access “RoadWarrior” clients

Some users tend to connect their mobile devices using WireGuard to their VyOS router. To ease deployment one can generate a “per mobile” configuration from the VyOS CLI.

**Warning:** From a security perspective, it is not recommended to let a third party create and share the private key for a secured connection. You should create the private portion on your own and only hand out the public key. Please keep this in mind when using this convenience feature.

```
generate wireguard client-config <name> interface <interface> server <ip|fqdn> address <client-ip>
```

Using this command, you will create a new client configuration which can connect to `interface` on this router. The public key from the specified interface is automatically extracted and embedded into the configuration.

The command also generates a configuration snippet which can be copy/pasted into the VyOS CLI if needed. The supplied `<name>` on the CLI will become the peer name in the snippet.

In addition you will specify the IP address or FQDN for the client where it will connect to. The address parameter can be used up to two times and is used to assign the clients specific IPv4 (/32) or IPv6 (/128) address.

### 8.4.11 PPPoE

PPPoE (Point-to-Point Protocol over Ethernet) is a network protocol for encapsulating PPP frames inside Ethernet frames. It appeared in 1999, in the context of the boom of DSL as the solution for tunneling packets over the DSL connection to the ISPs (Internet Service Providers) IP network, and from there to the rest of the Internet. A 2005 networking book noted that “Most DSL providers use PPPoE, which provides authentication, encryption, and compression.” Typical use of PPPoE involves leveraging the PPP facilities for authenticating the user with a username and password, predominately via the PAP protocol and less often via CHAP.

#### Operating Modes

VyOS supports setting up PPPoE in two different ways to a PPPoE internet connection. This is because most ISPs provide a modem that is also a wireless router.

#### Home Users

In this method, the DSL Modem/Router connects to the ISP for you with your credentials preprogrammed into the device. This gives you an [RFC 1918](#) address, such as 192.168.1.0/24 by default.

For a simple home network using just the ISP’s equipment, this is usually desirable. But if you want to run VyOS as your firewall and router, this will result in having a double NAT and firewall setup. This results in a few extra layers of complexity, particularly if you use some NAT or tunnel features.

WireGuard client configuration for interface: wg0

To enable this configuration on a VyOS router you can use the following commands:

=== VyOS (server) configuration ===

```
set interfaces wireguard wg0 peer foo allowed-ips '10.0.1.10/32'  
set interfaces wireguard wg0 peer foo allowed-ips '2001:db8::10/128'  
set interfaces wireguard wg0 peer foo pubkey 'Hk62WnBsZawKaBnucwmI8ZHZs6ABnr5M8OAC6vch/F4='
```

=== RoadWarrior (client) configuration ===

[Interface]

```
PrivateKey = kLlYfiTO+VrF8rzoBIsl9DrylDniwJUQie5jwWIXLFs=  
Address = 10.0.1.10/32, 2001:db8::10/128  
DNS = 1.1.1.1
```

[Peer]

```
PublicKey = h1HkYlSuHdJN6Qv4Hz4bBzjGg5WUty+U1L7DJsZyliE=  
Endpoint = wireguard.vyos.net:41751  
AllowedIPs = 0.0.0.0/0, ::/0
```



## Business Users

In order to have full control and make use of multiple static public IP addresses, your VyOS will have to initiate the PPPoE connection and control it. In order for this method to work, you will have to figure out how to make your DSL Modem/Router switch into a Bridged Mode so it only acts as a DSL Transceiver device to connect between the Ethernet link of your VyOS and the phone cable. Once your DSL Transceiver is in Bridge Mode, you should get no IP address from it. Please make sure you connect to the Ethernet Port 1 if your DSL Transceiver has a switch, as some of them only work this way.

Once you have an Ethernet device connected, i.e. *eth0*, then you can configure it to open the PPPoE session for you and your DSL Transceiver (Modem/Router) just acts to translate your messages in a way that vDSL/aDSL understands.

## Configuration

### Common interface configuration

#### **set interfaces pppoe <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces pppoe pppoe0 description 'This is an awesome interface running on  
→VyOS'
```

#### **set interfaces pppoe <interface> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces pppoe pppoe0 disable
```

#### **set interfaces pppoe <interface> mtu <mtu>**

Configure MTU on given *<interface>*. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces pppoe pppoe0 mtu 1600
```

#### **set interfaces pppoe <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a *VRF*, please check this for additional information.

Example:

```
set interfaces pppoe pppoe0 vrf red
```

## PPPoE options

### **set interfaces pppoe <interface> access-concentrator <name>**

Use this command to restrict the PPPoE session on a given access concentrator. Normally, a host sends a PPPoE initiation packet to start the PPPoE discovery process, a number of access concentrators respond with offer packets and the host selects one of the responding access concentrators to serve this session.

This command allows you to select a specific access concentrator when you know the access concentrators <name>.

### **set interfaces pppoe <interface> authentication username <username>**

Use this command to set the username for authenticating with a remote PPPoE endpoint. Authentication is optional from the system's point of view but most service providers require it.

### **set interfaces pppoe <interface> authentication password <password>**

Use this command to set the password for authenticating with a remote PPPoE endpoint. Authentication is optional from the system's point of view but most service providers require it.

### **set interfaces pppoe <interface> connect-on-demand**

When set the interface is enabled for "dial-on-demand".

Use this command to instruct the system to establish a PPPoE connection automatically once traffic passes through the interface. A disabled on-demand connection is established at boot time and remains up. If the link fails for any reason, the link is brought back up immediately.

Enabled on-demand PPPoE connections bring up the link only when traffic needs to pass this link. If the link fails for any reason, the link is brought back up automatically once traffic passes the interface again. If you configure an on-demand PPPoE connection, you must also configure the idle timeout period, after which an idle PPPoE link will be disconnected. A non-zero idle timeout will never disconnect the link after it first came up.

### **set interfaces pppoe <interface> no-default-route**

Only request an address from the PPPoE server but do not install any default route.

Example:

```
set interfaces pppoe pppoe0 no-default-route
```

---

**Note:** This command got added in VyOS 1.4 and inverts the logic from the old `default-route` CLI option.

---

### **set interfaces pppoe <interface> default-route-distance <distance>**

Set the distance for the default gateway sent by the PPPoE server.

Example:

```
set interfaces pppoe pppoe0 default-route-distance 220
```

### **set interfaces pppoe <interface> mru <mru>**

Set the MRU (Maximum Receive Unit) to *mru*. PPPd will ask the peer to send packets of no more than *mru* bytes. The value of *mru* must be between 128 and 16384.

A value of 296 works well on very slow links (40 bytes for TCP/IP header + 256 bytes of data).

The default is 1492.

---

**Note:** When using the IPv6 protocol, MRU must be at least 1280 bytes.

---

**set interfaces pppoe <interface> idle-timeout <time>**

Use this command to set the idle timeout interval to be used with on-demand PPPoE sessions. When an on-demand connection is established, the link is brought up only when traffic is sent and is disabled when the link is idle for the interval specified.

If this parameter is not set or 0, an on-demand link will not be taken down when it is idle and after the initial establishment of the connection. It will stay up forever.

**set interfaces pppoe <interface> holdoff <time>**

Use this command to set re-dial delay time to be used with persist PPPoE sessions. When the PPPoE session is terminated by peer, and on-demand option is not set, the router will attempt to re-establish the PPPoE link.

If this parameter is not set, the default holdoff time is 30 seconds.

**set interfaces pppoe <interface> local-address <address>**

Use this command to set the IP address of the local endpoint of a PPPoE session. If it is not set it will be negotiated.

**set interfaces pppoe <interface> no-peer-dns**

Use this command to not install advertised DNS nameservers into the local system.

**set interfaces pppoe <interface> remote-address <address>**

Use this command to set the IP address of the remote endpoint of a PPPoE session. If it is not set it will be negotiated.

**set interfaces pppoe <interface> service-name <name>**

Use this command to specify a service name by which the local PPPoE interface can select access concentrators to connect with. It will connect to any access concentrator if not set.

**set interfaces pppoe <interface> source-interface <source-interface>**

Use this command to link the PPPoE connection to a physical interface. Each PPPoE connection must be established over a physical interface. Interfaces can be regular Ethernet interfaces, VIFs or bonding interfaces/VIFs.

**set interfaces pppoe <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces pppoe <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

**set interfaces pppoe <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

## IPv6

**set interfaces pppoe <interface> ipv6 address autoconf**

Use this command to enable acquisition of IPv6 address using stateless autoconfig (SLAAC).

**set interfaces pppoe <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces pppoe <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

## DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces pppoe <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces pppoe pppoe0 dhcpv6-options pd 0 length 56
```

**set interfaces pppoe <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces pppoe pppoe0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces pppoe <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces pppoe pppoe0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Operation

**show interfaces pppoe <interface>**

Show detailed information on given <interface>

```
vyos@vyos:~$ show interfaces pppoe pppoe0
pppoe0: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1492 qdisc pfifo_fast state_
->UNKNOWN group default qlen 3
  link/ppp
  inet 192.0.2.1 peer 192.0.2.255/32 scope global pppoe0
    valid_lft forever preferred_lft forever

RX:  bytes    packets    errors    dropped    overrun    mcast
    7002658233  5064967    0         0         0         0
TX:  bytes    packets    errors    dropped    carrier    collisions
    533822843  1620173    0         0         0         0
```

**show interfaces pppoe <interface> queue**

Displays queue information for a PPPoE interface.

```
vyos@vyos:~$ show interfaces pppoe pppoe0 queue
qdisc pfifo_fast 0: root refcnt 2 bands 3 priomap  1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
Sent 534625359 bytes 1626761 pkt (dropped 62, overlimits 0 requeues 0)
backlog 0b 0p requeues 0
```

## Connect/Disconnect

### **disconnect interface** <interface>

Test disconnecting given connection-oriented interface. <interface> can be pppoe0 as the example.

### **connect interface** <interface>

Test connecting given connection-oriented interface. <interface> can be pppoe0 as the example.

## Example

Requirements:

- Your ISP's modem is connected to port eth0 of your VyOS box.
- No VLAN tagging required by your ISP.
- You need your PPPoE credentials from your DSL ISP in order to configure this. The usual username is in the form of name@host.net but may vary depending on ISP.
- The largest MTU size you can use with DSL is 1492 due to PPPoE overhead. If you are switching from a DHCP based ISP like cable then be aware that things like VPN links may need to have their MTU sizes adjusted to work within this limit.
- With the name-server option set to none, VyOS will ignore the nameservers your ISP sends you and thus you can fully rely on the ones you have configured statically.

---

**Note:** Syntax has changed from VyOS 1.2 (crux) and it will be automatically migrated during an upgrade.

---



---

**Note:** A default route is automatically installed once the interface is up. To change this behavior use the no-default-route CLI option.

---

```
set interfaces pppoe pppoe0 authentication username 'userid'
set interfaces pppoe pppoe0 authentication password 'secret'
set interfaces pppoe pppoe0 source-interface 'eth0'
```

You should add a firewall to your configuration above as well by assigning it to the pppoe0 itself as shown here:

```
set firewall interface pppoe0 in name NET-IN
set firewall interface pppoe0 local name NET-LOCAL
set firewall interface pppoe0 out name NET-OUT
```

## VLAN Example

Some recent ISPs require you to build the PPPoE connection through a VLAN interface. One of those ISPs is e.g. Deutsche Telekom in Germany. VyOS can easily create a PPPoE session through an encapsulated VLAN interface. The following configuration will run your PPPoE connection through VLAN7 which is the default VLAN for Deutsche Telekom:

```
set interfaces pppoe pppoe0 authentication username 'userid'
set interfaces pppoe pppoe0 authentication password 'secret'
set interfaces pppoe pppoe0 source-interface 'eth0.7'
```

## IPv6 DHCPv6-PD Example

The following configuration will setup a PPPoE session source from eth1 and assign a /64 prefix out of a /56 delegation (requested from the ISP) to eth0. The IPv6 address assigned to eth0 will be <prefix>::1/64. If you do not know the prefix size delegated to you, start with sla-len 0.

In addition we setup IPv6 RA (Router Advertisements) to make the prefix known on the eth0 link.

```
set interfaces pppoe pppoe0 authentication username vyos
set interfaces pppoe pppoe0 authentication password vyos
set interfaces pppoe pppoe0 dhcpv6-options pd 0 interface eth0 address '1'
set interfaces pppoe pppoe0 dhcpv6-options pd 0 interface eth0 sla-id '0'
set interfaces pppoe pppoe0 dhcpv6-options pd 0 length '56'
set interfaces pppoe pppoe0 ipv6 address autoconf
set interfaces pppoe pppoe0 source-interface eth1

set service router-advert interface eth0 prefix ::/64
```

### 8.4.12 MACVLAN - Pseudo Ethernet

Pseudo-Ethernet or MACVLAN interfaces can be seen as subinterfaces to regular ethernet interfaces. Each and every subinterface is created a different media access control (MAC) address, for a single physical Ethernet port. Pseudo-Ethernet interfaces have most of their application in virtualized environments,

By using Pseudo-Ethernet interfaces there will be less system overhead compared to running a traditional bridging approach. Pseudo-Ethernet interfaces can also be used to workaround the general limit of 4096 virtual LANs (VLANs) per physical Ethernet port, since that limit is with respect to a single MAC address.

Every Virtual Ethernet interfaces behaves like a real Ethernet interface. They can have IPv4/IPv6 addresses configured, or can request addresses by DHCP/ DHCPv6 and are associated/mapped with a real ethernet port. This also makes Pseudo-Ethernet interfaces interesting for testing purposes. A Pseudo-Ethernet device will inherit characteristics (speed, duplex, ...) from its physical parent (the so called link) interface.

Once created in the system, Pseudo-Ethernet interfaces can be referenced in the exact same way as other Ethernet interfaces. Notes about using Pseudo- Ethernet interfaces:

- Pseudo-Ethernet interfaces can not be reached from your internal host. This means that you can not try to ping a Pseudo-Ethernet interface from the host system on which it is defined. The ping will be lost.
- Loopbacks occurs at the IP level the same way as for other interfaces, ethernet frames are not forwarded between Pseudo-Ethernet interfaces.
- Pseudo-Ethernet interfaces may not work in environments which expect a NIC (Network Interface Card) to only have a single address. This applies to: - VMware machines using default settings - Network switches with security settings allowing only a single MAC address - xDSL modems that try to learn the MAC address of the NIC

## Configuration

### Common interface configuration

#### **set interfaces pseudo-ethernet <interface> address <address | dhcp | dhcpv6>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces pseudo-ethernet peth0 address 192.0.2.1/24
set interfaces pseudo-ethernet peth0 address 2001:db8::1/64
set interfaces pseudo-ethernet peth0 address dhcp
set interfaces pseudo-ethernet peth0 address dhcpv6
```

#### **set interfaces pseudo-ethernet <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces pseudo-ethernet peth0 description 'This is an awesome interface_
↳running on VyOS'
```

#### **set interfaces pseudo-ethernet <interface> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces pseudo-ethernet peth0 disable
```

#### **set interfaces pseudo-ethernet <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces pseudo-ethernet peth0 disable-flow-control
```

### set interfaces pseudo-ethernet <interface> disable-link-detect

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces pseudo-ethernet peth0 disable-link-detect
```

### set interfaces pseudo-ethernet <interface> mac <xx:xx:xx:xx:xx:xx>

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces pseudo-ethernet peth0 mac '00:01:02:03:04:05'
```

### set interfaces pseudo-ethernet <interface> mtu <mtu>

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces pseudo-ethernet peth0 mtu 1600
```

### set interfaces pseudo-ethernet <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### set interfaces pseudo-ethernet <interface> ip arp-cache-timeout

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces pseudo-ethernet peth0 ip arp-cache-timeout 180
```

### set interfaces pseudo-ethernet <interface> ip disable-arp-filter

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned

by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces pseudo-ethernet peth0 ip disable-arp-filter
```

#### **set interfaces pseudo-ethernet <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces pseudo-ethernet peth0 ip disable-forwarding
```

#### **set interfaces pseudo-ethernet <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces pseudo-ethernet peth0 ip enable-directed-broadcast
```

#### **set interfaces pseudo-ethernet <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces pseudo-ethernet peth0 ip enable-arp-accept
```

#### **set interfaces pseudo-ethernet <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces pseudo-ethernet peth0 ip enable-arp-announce
```

#### **set interfaces pseudo-ethernet <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces pseudo-ethernet peth0 ip enable-arp-ignore
```

### **set interfaces pseudo-ethernet <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces pseudo-ethernet peth0 ip enable-proxy-arp
```

### **set interfaces pseudo-ethernet <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### **set interfaces pseudo-ethernet <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### **set interfaces pseudo-ethernet <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces pseudo-ethernet peth0 ipv6 address autoconf
```

**set interfaces pseudo-ethernet <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces pseudo-ethernet peth0 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces pseudo-ethernet <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces pseudo-ethernet peth0 ipv6 address no-default-link-local
```

**set interfaces pseudo-ethernet <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces pseudo-ethernet peth0 ipv6 disable-forwarding
```

**set interfaces pseudo-ethernet <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces pseudo-ethernet <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces pseudo-ethernet peth0 ipv6 accept-dad 2
```

**set interfaces pseudo-ethernet <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces pseudo-ethernet peth0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces pseudo-ethernet <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a *VRF*, please check this for additional information.

Example:

```
set interfaces pseudo-ethernet peth0 vrf red
```

## DHCP(v6)

**set interfaces pseudo-ethernet <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options client-id 'foo-bar'
```

**set interfaces pseudo-ethernet <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options host-name 'VyOS'
```

**set interfaces pseudo-ethernet <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces pseudo-ethernet <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options no-default-route
```

**set interfaces pseudo-ethernet <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options default-route-distance 220
```

**set interfaces pseudo-ethernet <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options reject 192.168.100.0/24
```

**set interfaces pseudo-ethernet <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces pseudo-ethernet peth0 dhcp-options user-class VyOS
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces pseudo-ethernet peth0 duid
→ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces pseudo-ethernet peth0 dhcpv6-options no-release
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces pseudo-ethernet peth0 dhcpv6-options parameters-only
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces pseudo-ethernet peth0 dhcpv6-options rapid-commit
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces pseudo-ethernet peth0 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces pseudo-ethernet <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces pseudo-ethernet peth0 dhcpv6-options pd 0 length 56
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces pseudo-ethernet peth0 dhcpv6-options pd 0 interface eth8 address_
↪65534
```

**set interfaces pseudo-ethernet <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces pseudo-ethernet peth0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Pseudo Ethernet/MACVLAN options

```
set interfaces pseudo-ethernet <interface> source-interface <ethX>
```

Specifies the physical *<ethX>* Ethernet interface associated with a Pseudo Ethernet *<interface>*.

## VLAN

IEEE 802.1q, often referred to as Dot1q, is the networking standard that supports virtual LANs (VLANs) on an IEEE 802.3 Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. The standard also contains provisions for a quality-of-service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.

Portions of the network which are VLAN-aware (i.e., IEEE 802.1q conformant) can include VLAN tags. When a frame enters the VLAN-aware portion of the network, a tag is added to represent the VLAN membership. Each frame must be distinguishable as being within exactly one VLAN. A frame in the VLAN-aware portion of the network that does not contain a VLAN tag is assumed to be flowing on the native VLAN.

The standard was developed by IEEE 802.1, a working group of the IEEE 802 standards committee, and continues to be actively revised. One of the notable revisions is 802.1Q-2014 which incorporated IEEE 802.1aq (Shortest Path Bridging) and much of the IEEE 802.1d standard.

802.1q VLAN interfaces are represented as virtual sub-interfaces in VyOS. The term used for this is *vif*.

```
set interfaces pseudo-ethernet <interface> vif <vlan-id>
```

Create a new VLAN interface on interface *<interface>* using the VLAN number provided via *<vlan-id>*.

You can create multiple VLAN interfaces on a physical interface. The VLAN ID range is from 0 to 4094.

---

**Note:** Only 802.1Q-tagged packets are accepted on Ethernet vifs.

---

```
set interfaces pseudo-ethernet <interface> vif <vlan-id> address <address | dhcp | dhcpv6>
```

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 address 192.0.2.1/24
set interfaces pseudo-ethernet peth0 vif 10 address 2001:db8::1/64
```

(continues on next page)

(continued from previous page)

```
set interfaces pseudo-ethernet peth0 vif 10 address dhcp
set interfaces pseudo-ethernet peth0 vif 10 address dhcpv6
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 description 'This is an awesome_
↪interface running on VyOS'
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 disable
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 disable-link-detect
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 mac '00:01:02:03:04:05'
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 mtu 1600
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ip arp-cache-timeout 180
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ip disable-arp-filter
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces pseudo-ethernet peth0 vif 10 ip disable-forwarding
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces pseudo-ethernet peth0 vif 10 ip enable-directed-broadcast
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces pseudo-ethernet peth0 vif 10 ip enable-arp-accept
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces pseudo-ethernet peth0 vif 10 ip enable-arp-announce
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces pseudo-ethernet peth0 vif 10 ip enable-arp-ignore
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ip enable-proxy-arp
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ipv6 address autoconf
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ipv6 address eui64 2001:db8:beef::/64
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ipv6 address no-default-link-local
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ipv6 disable-forwarding
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ipv6 accept-dad 2
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 ipv6 dup-addr-detect-transmits 5
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 vrf red
```

### DHCP(v6)

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options client-id 'foo-bar'
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options host-name 'VyOS'
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options no-default-route
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options default-route-distance 220
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options reject 192.168.100.0/24
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcp-options user-class VyOS
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its

type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces pseudo-ethernet peth0 vif 10 duid
↪ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options no-release
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options parameters-only
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options rapid-commit
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options temporary
```

### **DHCPv6 Prefix Delegation (PD)**

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options pd 0 length 56
```

#### **set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options pd 0 interface eth8
→address 65534
```

**set interfaces pseudo-ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces pseudo-ethernet peth0 vif 10 dhcpv6-options pd 0 interface eth8 sla-
→id 1
```

### 8.4.13 SSTP Client

SSTP (Secure Socket Tunneling Protocol) is a form of VTP (Virtual Private Network) tunnel that provides a mechanism to transport PPP traffic through an SSL/TLS channel. SSL/TLS provides transport-level security with key negotiation, encryption and traffic integrity checking. The use of SSL/TLS over TCP port 443 (by default, port can be changed) allows SSTP to pass through virtually all firewalls and proxy servers except for authenticated web proxies.

---

**Note:** VyOS also comes with a build in SSTP server, see [SSTP Server](#).

---

## Configuration

### Common interface configuration

**set interfaces sstpc <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces sstpc sstpc0 description 'This is an awesome interface running on
→VyOS'
```

**set interfaces sstpc <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces sstpc sstpc0 disable
```

**set interfaces sstpc <interface> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces sstpc sstpc0 mtu 1600
```

**set interfaces sstpc <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces sstpc sstpc0 vrf red
```

## SSTP Client Options

**set interfaces sstpc <interface> no-default-route**

Only request an address from the SSTP server but do not install any default route.

Example:

```
set interfaces sstpc sstpc0 no-default-route
```

---

**Note:** This command got added in VyOS 1.4 and inverts the logic from the old `default-route` CLI option.

---

**set interfaces sstpc <interface> default-route-distance <distance>**

Set the distance for the default gateway sent by the SSTP server.

Example:

```
set interfaces sstpc sstpc0 default-route-distance 220
```

**set interfaces sstpc <interface> no-peer-dns**

Use this command to not install advertised DNS nameservers into the local system.

**set interfaces sstpc <interface> server <address>**

SSTP remote server to connect to. Can be either an IP address or FQDN.

**set interfaces sstpc <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces sstpc <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

**set interfaces sstpc <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

**Operation****show interfaces sstpc <interface>**

Show detailed information on given <interface>

```
vyos@vyos:~$ show interfaces sstpc sstpc10
sstpc10: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state_
->UNKNOWN group default qlen 3
  link/ppp
  inet 192.0.2.5 peer 192.0.2.254/32 scope global sstpc10
    valid_lft forever preferred_lft forever
  inet6 fe80::fd53:c7ff:fe8b:144f/64 scope link
    valid_lft forever preferred_lft forever

RX:  bytes  packets  errors  dropped  overrun      mcast
     215     9        0        0         0           0
TX:  bytes  packets  errors  dropped  carrier  collisions
     539    14        0        0         0           0
```

**Connect/Disconnect****disconnect interface <interface>**

Test disconnecting given connection-oriented interface. <interface> can be sstpc0 as the example.

**connect interface <interface>**

Test connecting given connection-oriented interface. <interface> can be sstpc0 as the example.

## 8.4.14 Tunnel

This article touches on ‘classic’ IP tunneling protocols.

GRE is often seen as a one size fits all solution when it comes to classic IP tunneling protocols, and for a good reason. However, there are more specialized options, and many of them are supported by VyOS. There are also rather obscure GRE options that can be useful.

All those protocols are grouped under `interfaces tunnel` in VyOS. Let’s take a closer look at the protocols and options currently supported by VyOS.

### Common interface configuration

#### `set interfaces tunnel <interface> address <address>`

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. `192.0.2.1/24` and/or `2001:db8::1/64`

Example:

```
set interfaces tunnel tun0 address 192.0.2.1/24
set interfaces tunnel tun0 address 2001:db8::1/64
```

#### `set interfaces tunnel <interface> description <description>`

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces tunnel tun0 description 'This is an awesome interface running on VyOS
↪ '
```

#### `set interfaces tunnel <interface> disable`

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces tunnel tun0 disable
```

#### `set interfaces tunnel <interface> disable-flow-control`

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces tunnel tun0 disable-flow-control
```

#### `set interfaces tunnel <interface> disable-link-detect`

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces tunnel tun0 disable-link-detect
```

#### **set interfaces tunnel <interface> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces tunnel tun0 mtu 1600
```

#### **set interfaces tunnel <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

#### **set interfaces tunnel <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces tunnel tun0 ip arp-cache-timeout 180
```

#### **set interfaces tunnel <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces tunnel tun0 ip disable-arp-filter
```

#### **set interfaces tunnel <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces tunnel tun0 ip disable-forwarding
```

#### **set interfaces tunnel <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces tunnel tun0 ip enable-directed-broadcast
```

#### **set interfaces tunnel <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces tunnel tun0 ip enable-arp-accept
```

#### **set interfaces tunnel <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces tunnel tun0 ip enable-arp-announce
```

#### **set interfaces tunnel <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces tunnel tun0 ip enable-arp-ignore
```

#### **set interfaces tunnel <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces tunnel tun0 ip enable-proxy-arp
```

### set interfaces tunnel <interface> ip proxy-arp-pvlan

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### set interfaces tunnel <interface> ip source-validation <strict | loose | disable>

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### set interfaces tunnel <interface> ipv6 address autoconf

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces tunnel tun0 ipv6 address autoconf
```

### set interfaces tunnel <interface> ipv6 address eui64 <prefix>

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces tunnel tun0 ipv6 address eui64 2001:db8:beef::/64
```

### set interfaces tunnel <interface> ipv6 address no-default-link-local

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces tunnel tun0 ipv6 address no-default-link-local
```

### **set interfaces tunnel <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces tunnel tun0 ipv6 disable-forwarding
```

### **set interfaces tunnel <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### **set interfaces tunnel <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces tunnel tun0 ipv6 accept-dad 2
```

### **set interfaces tunnel <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces tunnel tun0 ipv6 dup-addr-detect-transmits 5
```

### **set interfaces tunnel <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces tunnel tun0 vrf red
```

## IPIP

This is one of the simplest types of tunnels, as defined by [RFC 2003](#). It takes an IPv4 packet and sends it as a payload of another IPv4 packet. For this reason, there are no other configuration options for this kind of tunnel.

An example:

```
set interfaces tunnel tun0 encapsulation ipip
set interfaces tunnel tun0 source-address 192.0.2.10
set interfaces tunnel tun0 remote 203.0.113.20
set interfaces tunnel tun0 address 192.168.100.200/24
```

## IP6IP6

This is the IPv6 counterpart of IPIP. I'm not aware of an RFC that defines this encapsulation specifically, but it's a natural specific case of IPv6 encapsulation mechanisms described in [rfc:2473](#).

It's not likely that anyone will need it any time soon, but it does exist.

An example:

```
set interfaces tunnel tun0 encapsulation ip6ip6
set interfaces tunnel tun0 source-address 2001:db8:aa::1
set interfaces tunnel tun0 remote 2001:db8:aa::2
set interfaces tunnel tun0 address 2001:db8:bb::1/64
```

## IPIP6

In the future this is expected to be a very useful protocol (though there are [other proposals](#)).

As the name implies, it's IPv4 encapsulated in IPv6, as simple as that.

An example:

```
set interfaces tunnel tun0 encapsulation ipip6
set interfaces tunnel tun0 source-address 2001:db8:aa::1
set interfaces tunnel tun0 remote 2001:db8:aa::2
set interfaces tunnel tun0 address 192.168.70.80/24
```

## 6in4 (SIT)

6in4 uses tunneling to encapsulate IPv6 traffic over IPv4 links as defined in [RFC 4213](#). The 6in4 traffic is sent over IPv4 inside IPv4 packets whose IP headers have the IP protocol number set to 41. This protocol number is specifically designated for IPv6 encapsulation, the IPv4 packet header is immediately followed by the IPv6 packet being carried. The encapsulation overhead is the size of the IPv4 header of 20 bytes, therefore with an MTU of 1500 bytes, IPv6 packets of 1480 bytes can be sent without fragmentation. This tunneling technique is frequently used by IPv6 tunnel brokers like [Hurricane Electric](#).

An example:

```
set interfaces tunnel tun0 encapsulation sit
set interfaces tunnel tun0 source-address 192.0.2.10
set interfaces tunnel tun0 remote 192.0.2.20
set interfaces tunnel tun0 address 2001:db8:bb::1/64
```

A full example of a Tunnelbroker.net config can be found at [here](#).

## Generic Routing Encapsulation (GRE)

A GRE tunnel operates at layer 3 of the OSI model and is represented by IP protocol 47. The main benefit of a GRE tunnel is that you are able to carry multiple protocols inside the same tunnel. GRE also supports multicast traffic and supports routing protocols that leverage multicast to form neighbor adjacencies.

A VyOS GRE tunnel can carry both IPv4 and IPv6 traffic and can also be created over either IPv4 (gre) or IPv6 (ip6gre).

## Configuration

A basic configuration requires a tunnel source (source-address), a tunnel destination (remote), an encapsulation type (gre), and an address (ipv4/ipv6). Below is a basic IPv4 only configuration example taken from a VyOS router and a Cisco IOS router. The main difference between these two configurations is that VyOS requires you explicitly configure the encapsulation type. The Cisco router defaults to GRE IP otherwise it would have to be configured as well.

### VyOS Router:

```
set interfaces tunnel tun100 address '10.0.0.1/30'
set interfaces tunnel tun100 encapsulation 'gre'
set interfaces tunnel tun100 source-address '198.51.100.2'
set interfaces tunnel tun100 remote '203.0.113.10'
```

### Cisco IOS Router:

```
interface Tunnel100
ip address 10.0.0.2 255.255.255.252
tunnel source 203.0.113.10
tunnel destination 198.51.100.2
```

Here is a second example of a dual-stack tunnel over IPv6 between a VyOS router and a Linux host using systemd-networkd.

### VyOS Router:

```
set interfaces tunnel tun101 address '2001:db8:feed:beef::1/126'
set interfaces tunnel tun101 address '192.168.5.1/30'
set interfaces tunnel tun101 encapsulation 'ip6gre'
set interfaces tunnel tun101 source-address '2001:db8:babe:face::3afe:3'
set interfaces tunnel tun101 remote '2001:db8:9bb:3ce::5'
```

### Linux systemd-networkd:

This requires two files, one to create the device (XXX.netdev) and one to configure the network on the device (XXX.network)

```
# cat /etc/systemd/network/gre-example.netdev
[NetDev]
Name=gre-example
Kind=ip6gre
MTUBytes=14180

[Tunnel]
Remote=2001:db8:babe:face::3afe:3

# cat /etc/systemd/network/gre-example.network
[Match]
Name=gre-example

[Network]
Address=2001:db8:feed:beef::2/126

[Address]
Address=192.168.5.2/30
```

## Tunnel keys

GRE is also the only classic protocol that allows creating multiple tunnels with the same source and destination due to its support for tunnel keys. Despite its name, this feature has nothing to do with security: it's simply an identifier that allows routers to tell one tunnel from another.

An example:

```
set interfaces tunnel tun0 source-address 192.0.2.10
set interfaces tunnel tun0 remote 192.0.2.20
set interfaces tunnel tun0 address 10.40.50.60/24
set interfaces tunnel tun0 parameters ip key 10
```

```
set interfaces tunnel tun0 source-address 192.0.2.10
set interfaces tunnel tun0 remote 192.0.2.20
set interfaces tunnel tun0 address 172.16.17.18/24
set interfaces tunnel tun0 parameters ip key 20
```

## GRETAP

While normal GRE is for layer 3, GRETAP is for layer 2. GRETAP can encapsulate Ethernet frames, thus it can be bridged with other interfaces to create datalink layer segments that span multiple remote sites.

```
set interfaces bridge br0 member interface eth0
set interfaces bridge br0 member interface tun0
set interfaces tunnel tun0 encapsulation gretap
set interfaces tunnel tun0 source-address 198.51.100.2
set interfaces tunnel tun0 remote 203.0.113.10
```

## Troubleshooting

GRE is a well defined standard that is common in most networks. While not inherently difficult to configure there are a couple of things to keep in mind to make sure the configuration performs as expected. A common cause for GRE tunnels to fail to come up correctly include ACL or Firewall configurations that are discarding IP protocol 47 or blocking your source/destination traffic.

### 1. Confirm IP connectivity between tunnel source-address and remote:

```
vyos@vyos:~$ ping 203.0.113.10 interface 198.51.100.2 count 4
PING 203.0.113.10 (203.0.113.10) from 198.51.100.2 : 56(84) bytes of data.
64 bytes from 203.0.113.10: icmp_seq=1 ttl=254 time=0.807 ms
64 bytes from 203.0.113.10: icmp_seq=2 ttl=254 time=1.50 ms
64 bytes from 203.0.113.10: icmp_seq=3 ttl=254 time=0.624 ms
64 bytes from 203.0.113.10: icmp_seq=4 ttl=254 time=1.41 ms

--- 203.0.113.10 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3007ms
rtt min/avg/max/mdev = 0.624/1.087/1.509/0.381 ms
```

### 2. Confirm the link type has been set to GRE:

```
vyos@vyos:~$ show interfaces tunnel tun100
tun100@NONE: <POINTOPOINT,NOARP,UP,LOWER_UP> mtu 1476 qdisc noqueue state UNKNOWN group_
->default qlen 1000
  link/gre 198.51.100.2 peer 203.0.113.10
  inet 10.0.0.1/30 brd 10.0.0.3 scope global tun100
    valid_lft forever preferred_lft forever
  inet6 fe80::5efe:c612:2/64 scope link
    valid_lft forever preferred_lft forever

RX:  bytes    packets    errors    dropped    overrun    mcast
     2183         27         0         0         0         0
TX:  bytes    packets    errors    dropped    carrier    collisions
     836          9         0         0         0         0
```

### 3. Confirm IP connectivity across the tunnel:

```
vyos@vyos:~$ ping 10.0.0.2 interface 10.0.0.1 count 4
PING 10.0.0.2 (10.0.0.2) from 10.0.0.1 : 56(84) bytes of data.
64 bytes from 10.0.0.2: icmp_seq=1 ttl=255 time=1.05 ms
64 bytes from 10.0.0.2: icmp_seq=2 ttl=255 time=1.88 ms
64 bytes from 10.0.0.2: icmp_seq=3 ttl=255 time=1.98 ms
64 bytes from 10.0.0.2: icmp_seq=4 ttl=255 time=1.98 ms

--- 10.0.0.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3008ms
rtt min/avg/max/mdev = 1.055/1.729/1.989/0.395 ms
```

**Note:** There is also a GRE over IPv6 encapsulation available, it is called: ip6gre.

### 8.4.15 Virtual Ethernet

The veth devices are virtual Ethernet devices. They can act as tunnels between network namespaces to create a bridge to a physical network device in another namespace or VRF, but can also be used as standalone network devices.

---

**Note:** veth interfaces need to be created in pairs - it's called the peer name

---

#### Configuration

##### Common interface configuration

**set interfaces virtual-ethernet <interface> address <address | dhcp | dhcpv6>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces virtual-ethernet veth0 address 192.0.2.1/24
set interfaces virtual-ethernet veth0 address 2001:db8::1/64
set interfaces virtual-ethernet veth0 address dhcp
set interfaces virtual-ethernet veth0 address dhcpv6
```

**set interfaces virtual-ethernet <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces virtual-ethernet veth0 description 'This is an awesome interface_
↳running on VyOS'
```

## VLAN

### Regular VLANs (802.1q)

IEEE 802.1q, often referred to as Dot1q, is the networking standard that supports virtual LANs (VLANs) on an IEEE 802.3 Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. The standard also contains provisions for a quality-of-service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.

Portions of the network which are VLAN-aware (i.e., IEEE 802.1q conformant) can include VLAN tags. When a frame enters the VLAN-aware portion of the network, a tag is added to represent the VLAN membership. Each frame must be distinguishable as being within exactly one VLAN. A frame in the VLAN-aware portion of the network that does not contain a VLAN tag is assumed to be flowing on the native VLAN.

The standard was developed by IEEE 802.1, a working group of the IEEE 802 standards committee, and continues to be actively revised. One of the notable revisions is 802.1Q-2014 which incorporated IEEE 802.1aq (Shortest Path Bridging) and much of the IEEE 802.1d standard.

802.1q VLAN interfaces are represented as virtual sub-interfaces in VyOS. The term used for this is `vif`.

**set interfaces virtual-ethernet <interface> vif <vlan-id>**

Create a new VLAN interface on interface `<interface>` using the VLAN number provided via `<vlan-id>`.

You can create multiple VLAN interfaces on a physical interface. The VLAN ID range is from 0 to 4094.

---

**Note:** Only 802.1Q-tagged packets are accepted on Ethernet vifs.

---

**set interfaces virtual-ethernet <interface> vif <vlan-id> address <address | dhcp | dhcpv6>**

Configure interface `<interface>` with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- `/config/scripts/dhcp-client/pre-hooks.d/`
  - `/config/scripts/dhcp-client/post-hooks.d/`
- 

Example:

```
set interfaces virtual-ethernet veth0 vif 10 address 192.0.2.1/24
set interfaces virtual-ethernet veth0 vif 10 address 2001:db8::1/64
set interfaces virtual-ethernet veth0 vif 10 address dhcp
set interfaces virtual-ethernet veth0 vif 10 address dhcpv6
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 description 'This is an awesome_
↳interface running on VyOS'
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 disable
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 disable-link-detect
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given *<interface>*.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 mac '00:01:02:03:04:05'
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> mtu <mtu>**

Configure MTU on given *<interface>*. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 mtu 1600
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ip arp-cache-timeout 180
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ip disable-arp-filter
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces virtual-ethernet veth0 vif 10 ip disable-forwarding
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces virtual-ethernet veth0 vif 10 ip enable-directed-broadcast
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces virtual-ethernet veth0 vif 10 ip enable-arp-accept
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces virtual-ethernet veth0 vif 10 ip enable-arp-announce
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces virtual-ethernet veth0 vif 10 ip enable-arp-ignore
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ip enable-proxy-arp
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.

- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ipv6 address autoconf
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ipv6 address eui64 2001:db8:beef::/64
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ipv6 address no-default-link-local
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ipv6 disable-forwarding
```

#### **set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

```
set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 accept-dad <1-3>
```

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ipv6 accept-dad 2
```

```
set interfaces virtual-ethernet <interface> vif <vlan-id> ipv6 dup-addr-detect-transmits <n>
```

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces virtual-ethernet veth0 vif 10 ipv6 dup-addr-detect-transmits 5
```

```
set interfaces virtual-ethernet <interface> vif <vlan-id> vrf <vrf>
```

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 vrf red
```

### DHCP(v6)

```
set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options client-id <description>
```

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options client-id 'foo-bar'
```

```
set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options host-name <hostname>
```

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options host-name 'VyOS'
```

```
set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options vendor-class-id <vendor-id>
```

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options no-default-route
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options default-route-distance 220
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options reject 192.168.100.0/24
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces virtual-ethernet veth0 vif 10 dhcp-options user-class VyOS
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces virtual-ethernet veth0 vif 10 duid
→ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options no-release
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options parameters-only
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options rapid-commit
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options temporary
```

**DHCPv6 Prefix Delegation (PD)**

VyOS 1.3 (equuleus) supports DHCPv6-PD (**RFC 3633**). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options pd 0 length 56
```

**set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options pd 0 interface eth8
↪address 65534
```

```
set interfaces virtual-ethernet <interface> vif <vlan-id> dhcpv6-options pd <id>
interface <delegatee> sla-id <id>
```

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces virtual-ethernet veth0 vif 10 dhcpv6-options pd 0 interface eth8 sla-
↳id 1
```

## QinQ (802.1ad)

IEEE 802.1ad was an Ethernet networking standard informally known as QinQ as an amendment to IEEE standard 802.1q VLAN interfaces as described above. 802.1ad was incorporated into the base 802.1q standard in 2011. The technique is also known as provider bridging, Stacked VLANs, or simply QinQ or Q-in-Q. “Q-in-Q” can for supported devices apply to C-tag stacking on C-tag (Ethernet Type = 0x8100).

The original 802.1q specification allows a single Virtual Local Area Network (VLAN) header to be inserted into an Ethernet frame. QinQ allows multiple VLAN tags to be inserted into a single frame, an essential capability for implementing Metro Ethernet network topologies. Just as QinQ extends 802.1Q, QinQ itself is extended by other Metro Ethernet protocols.

In a multiple VLAN header context, out of convenience the term “VLAN tag” or just “tag” for short is often used in place of “802.1q VLAN header”. QinQ allows multiple VLAN tags in an Ethernet frame; together these tags constitute a tag stack. When used in the context of an Ethernet frame, a QinQ frame is a frame that has 2 VLAN 802.1q headers (double-tagged).

In VyOS the terms `vif-s` and `vif-c` stand for the ethertype tags that are used.

The inner tag is the tag which is closest to the payload portion of the frame. It is officially called C-TAG (customer tag, with ethertype 0x8100). The outer tag is the one closer/closest to the Ethernet header, its name is S-TAG (service tag with Ethernet Type = 0x88a8).

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> address
<address | dhcp | dhcpv6>
```

Configure interface `<interface>` with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 address 192.0.2.1/24
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 address 2001:db8::1/64
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 address dhcp
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 address dhcpv6
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 description 'This is an
↳ awesome interface running on VyOS'
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 disable
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 disable-link-detect
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 mac '00:01:02:03:04:05'
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 mtu 1600
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip
arp-cache-timeout
```

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip arp-cache-timeout 180
```

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip
disable-arp-filter
```

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip disable-arp-filter
```

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip
disable-forwarding
```

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip disable-forwarding
```

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip
enable-directed-broadcast
```

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip enable-directed-
→broadcast
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip enable-arp-accept
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip enable-arp-announce
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip enable-arp-ignore
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ip enable-proxy-arp
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ip
source-validation <strict | loose | disable>
```

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address
autoconf
```

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ipv6 address autoconf
```

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address
eui64 <prefix>
```

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ipv6 address eui64
→2001:db8:beef::/64
```

```
set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address
no-default-link-local
```

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ipv6 address no-default-
→link-local
```

### **set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ipv6 disable-forwarding
```

### **set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

### **set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ipv6 accept-dad 2
```

### **set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 ipv6 dup-addr-detect-
→transmits 5
```

### **set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 vrf red
```

### DHCP(v6)

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options client-id
→ 'foo-bar'
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options host-name
→ 'VyOS'
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options vendor-class-
→id 'VyOS'
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options no-default-
→route
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options default-
→route-distance 220
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options reject 192.
→168.100.0/24
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcp-options user-class
→VyOS
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 duid
→'0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options no-release
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options parameters-
↳only
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id>  
dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options rapid-
↳commit
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id>  
dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id>  
dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options pd 0
↳length 56
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id>  
dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options pd 0
↳interface eth8 address 65534
```

**set interfaces virtual-ethernet <interface> vif-s <vlan-id> vif-c <vlan-id>  
dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces virtual-ethernet veth0 vif-s 1000 vif-c 20 dhcpv6-options pd 0
↪interface eth8 sla-id 1
```

### set interfaces virtual-ethernet <interface> disable

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces virtual-ethernet veth0 disable
```

### set interfaces virtual-ethernet <interface> vrf <vrf>

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces virtual-ethernet veth0 vrf red
```

## Operation

### show interfaces virtual-ethernet

Show brief interface information.

```
vyos@vyos:~$ show interfaces virtual-ethernet
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
veth10         100.64.0.0/31   u/u
veth11         100.64.0.1/31   u/u
```

### show interfaces virtual-ethernet <interface>

Show detailed information on given <interface>

```
vyos@vyos:~$ show interfaces virtual-ethernet veth11
10: veth11@veth10: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master
↪red state UP group default qlen 1000
    link/ether b2:7b:df:47:e9:11 brd ff:ff:ff:ff:ff:ff
    inet 100.64.0.1/31 scope global veth11
        valid_lft forever preferred_lft forever
    inet6 fe80::b07b:dfff:fe47:e911/64 scope link
        valid_lft forever preferred_lft forever

RX:  bytes  packets  errors  dropped  overrun  mcast
     0         0         0         0         0         0
TX:  bytes  packets  errors  dropped  carrier  collisions
    1369707  4267         0         0         0         0
```

## Example

Interconnect the global VRF with vrf “red” using the veth10 <-> veth 11 pair

```

set interfaces virtual-ethernet veth10 address '100.64.0.0/31'
set interfaces virtual-ethernet veth10 peer-name 'veth11'
set interfaces virtual-ethernet veth11 address '100.64.0.1/31'
set interfaces virtual-ethernet veth11 peer-name 'veth10'
set interfaces virtual-ethernet veth11 vrf 'red'
set vrf name red table '1000'

```

```

vyos@vyos:~$ ping 100.64.0.1
PING 100.64.0.1 (100.64.0.1) 56(84) bytes of data.
64 bytes from 100.64.0.1: icmp_seq=1 ttl=64 time=0.080 ms
64 bytes from 100.64.0.1: icmp_seq=2 ttl=64 time=0.119 ms

```

## 8.4.16 VTI - Virtual Tunnel Interface

Set Virtual Tunnel Interface

```

set interfaces vti vti0 address 192.168.2.249/30
set interfaces vti vti0 address 2001:db8:2::249/64

```

Results in:

```

vyos@vyos# show interfaces vti
vti vti0 {
    address 192.168.2.249/30
    address 2001:db8:2::249/64
    description "Description"
}

```

**Warning:** When using site-to-site IPsec with VTI interfaces, be sure to disable route autoinstall

```

set vpn ipsec options disable-route-autoinstall

```

More details about the IPsec and VTI issue and option disable-route-autoinstall <https://blog.vyos.io/vyos-1-dot-2-0-development-news-in-july>

The root cause of the problem is that for VTI tunnels to work, their traffic selectors have to be set to 0.0.0.0/0 for traffic to match the tunnel, even though actual routing decision is made according to netfilter marks. Unless route insertion is disabled entirely, StrongSWAN thus mistakenly inserts a default route through the VTI peer address, which makes all traffic routed to nowhere.

## 8.4.17 VXLAN

VXLAN is a network virtualization technology that attempts to address the scalability problems associated with large cloud computing deployments. It uses a VLAN-like encapsulation technique to encapsulate OSI layer 2 Ethernet frames within layer 4 UDP datagrams, using 4789 as the default IANA-assigned destination UDP port number. VXLAN endpoints, which terminate VXLAN tunnels and may be either virtual or physical switch ports, are known as VTEPs (VXLAN tunnel endpoints).

VXLAN is an evolution of efforts to standardize an overlay encapsulation protocol. It increases the scalability up to 16 million logical networks and allows for layer 2 adjacency across IP networks. Multicast or unicast with head-end replication (HER) is used to flood broadcast, unknown unicast, and multicast (BUM) traffic.

The VXLAN specification was originally created by VMware, Arista Networks and Cisco. Other backers of the VXLAN technology include Huawei, Broadcom, Citrix, Pica8, Big Switch Networks, Cumulus Networks, Dell EMC, Ericsson, Mellanox, FreeBSD, OpenBSD, Red Hat, Joyent, and Juniper Networks.

VXLAN was officially documented by the IETF in [RFC 7348](#).

If configuring VXLAN in a VyOS virtual machine, ensure that MAC spoofing (Hyper-V) or Forged Transmits (ESX) are permitted, otherwise forwarded frames may be blocked by the hypervisor.

---

**Note:** As VyOS is based on Linux and there was no official IANA port assigned for VXLAN, VyOS uses a default port of 8472. You can change the port on a per VXLAN interface basis to get it working across multiple vendors.

---

### Configuration

#### Common interface configuration

**set interfaces vxlan <interface> address <address>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64

Example:

```
set interfaces vxlan vxlan0 address 192.0.2.1/24
set interfaces vxlan vxlan0 address 2001:db8::1/64
```

**set interfaces vxlan <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces vxlan vxlan0 description 'This is an awesome interface running on
↳VyOS'
```

**set interfaces vxlan <interface> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces vxlan vxlan0 disable
```

### set interfaces vxlan <interface> disable-flow-control

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces vxlan vxlan0 disable-flow-control
```

### set interfaces vxlan <interface> disable-link-detect

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detect physical link state changes.

Example:

```
set interfaces vxlan vxlan0 disable-link-detect
```

### set interfaces vxlan <interface> mac <xx:xx:xx:xx:xx:xx>

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces vxlan vxlan0 mac '00:01:02:03:04:05'
```

### set interfaces vxlan <interface> mtu <mtu>

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces vxlan vxlan0 mtu 1600
```

### set interfaces vxlan <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces vxlan <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces vxlan vxlan0 ip arp-cache-timeout 180
```

**set interfaces vxlan <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces vxlan vxlan0 ip disable-arp-filter
```

**set interfaces vxlan <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces vxlan vxlan0 ip disable-forwarding
```

**set interfaces vxlan <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces vxlan vxlan0 ip enable-directed-broadcast
```

**set interfaces vxlan <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces vxlan vxlan0 ip enable-arp-accept
```

**set interfaces vxlan <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces vxlan vxlan0 ip enable-arp-announce
```

### **set interfaces vxlan <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces vxlan vxlan0 ip enable-arp-ignore
```

### **set interfaces vxlan <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces vxlan vxlan0 ip enable-proxy-arp
```

### **set interfaces vxlan <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### **set interfaces vxlan <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.

- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

#### **set interfaces vxlan <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces vxlan vxlan0 ipv6 address autoconf
```

#### **set interfaces vxlan <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces vxlan vxlan0 ipv6 address eui64 2001:db8:beef::/64
```

#### **set interfaces vxlan <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces vxlan vxlan0 ipv6 address no-default-link-local
```

#### **set interfaces vxlan <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces vxlan vxlan0 ipv6 disable-forwarding
```

#### **set interfaces vxlan <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

#### **set interfaces vxlan <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces vxlan vxlan0 ipv6 accept-dad 2
```

**set interfaces vxlan <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces vxlan vxlan0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces vxlan <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a *VRF*, please check this for additional information.

Example:

```
set interfaces vxlan vxlan0 vrf red
```

## VXLAN specific options

**set interfaces vxlan <interface> vni <number>**

Each VXLAN segment is identified through a 24-bit segment ID, termed the VNI, This allows up to 16M VXLAN segments to coexist within the same administrative domain.

**set interfaces vxlan <interface> port <port>**

Configure port number of remote VXLAN endpoint.

---

**Note:** As VyOS is Linux based the default port used is not using 4789 as the default IANA-assigned destination UDP port number. Instead VyOS uses the Linux default port of 8472.

---

**set interfaces vxlan <interface> source-address <interface>**

Source IP address used for VXLAN underlay. This is mandatory when using VXLAN via L2VPN/EVPN.

**set interfaces vxlan <interface> gpe**

Enables the Generic Protocol extension (VXLAN-GPE). Currently, this is only supported together with the external keyword.

**set interfaces vxlan <interface> parameters external**

Specifies whether an external control plane (e.g. BGP L2VPN/EVPN) or the internal FDB should be used.

**set interfaces vxlan <interface> parameters neighbor-suppress**

In order to minimize the flooding of ARP and ND messages in the VXLAN network, EVPN includes provisions [RFC 7432#section-10](#) that allow participating VTEPs to suppress such messages in case they know the MAC-IP binding and can reply on behalf of the remote host.

**set interfaces vxlan <interface> parameters nolearning**

Specifies if unknown source link layer addresses and IP addresses are entered into the VXLAN device forwarding database.

**set interfaces vxlan <interface> parameters vni-filter**

Specifies whether the VXLAN device is capable of vni filtering.

Only works with a VXLAN device with external flag set.

---

**Note:** The device can only receive packets with VNIs configured in the VNI filtering table.

---

## Unicast

**set interfaces vxlan <interface> remote <address>**

IPv4/IPv6 remote address of the VXLAN tunnel. Alternative to multicast, the remote IPv4/IPv6 address can set directly.

## Multicast

**set interfaces vxlan <interface> source-interface <interface>**

Interface used for VXLAN underlay. This is mandatory when using VXLAN via a multicast network. VXLAN traffic will always enter and exit this interface.

**set interfaces vxlan <interface> group <address>**

Multicast group address for VXLAN interface. VXLAN tunnels can be built either via Multicast or via Unicast.

Both IPv4 and IPv6 multicast is possible.

## Multicast VXLAN

Topology: PC4 - Leaf2 - Spine1 - Leaf3 - PC5

PC4 has IP 10.0.0.4/24 and PC5 has IP 10.0.0.5/24, so they believe they are in the same broadcast domain.

Let's assume PC4 on Leaf2 wants to ping PC5 on Leaf3. Instead of setting Leaf3 as our remote end manually, Leaf2 encapsulates the packet into a UDP-packet and sends it to its designated multicast-address via Spine1. When Spine1 receives this packet it forwards it to all other leaves who has joined the same multicast-group, in this case Leaf3. When Leaf3 receives the packet it forwards it, while at the same time learning that PC4 is reachable behind Leaf2, because the encapsulated packet had Leaf2's IP address set as source IP.

PC5 receives the ping echo, responds with an echo reply that Leaf3 receives and this time forwards to Leaf2's unicast address directly because it learned the location of PC4 above. When Leaf2 receives the echo reply from PC5 it sees that it came from Leaf3 and so remembers that PC5 is reachable via Leaf3.

Thanks to this discovery, any subsequent traffic between PC4 and PC5 will not be using the multicast-address between the leaves as they both know behind which Leaf the PCs are connected. This saves traffic as less multicast packets sent reduces the load on the network, which improves scalability when more leaves are added.

For optimal scalability, Multicast shouldn't be used at all, but instead use BGP to signal all connected devices between leaves. Unfortunately, VyOS does not yet support this.

### Single VXLAN device (SVD)

FRR supports a new way of configuring VLAN-to-VNI mappings for EVPN-VXLAN, when working with the Linux kernel. In this new way, the mapping of a VLAN to a VNI is configured against a container VXLAN interface which is referred to as a SVD (Single VXLAN device).

Multiple VLAN to VNI mappings can be configured against the same SVD. This allows for a significant scaling of the number of VNIs since a separate VXLAN interface is no longer required for each VNI.

**set interfaces vxlan <interface> vlan-to-vni <vlan> vni <vni>**

Maps the VNI to the specified VLAN id. The VLAN can then be consumed by a bridge.

Sample configuration of SVD with VLAN to VNI mappings is shown below.

```
set interfaces bridge br0 member interface vxlan0
set interfaces vxlan vxlan0 parameters external
set interfaces vxlan vxlan0 source-interface 'dum0'
set interfaces vxlan vxlan0 vlan-to-vni 10 vni '10010'
set interfaces vxlan vxlan0 vlan-to-vni 11 vni '10011'
set interfaces vxlan vxlan0 vlan-to-vni 30 vni '10030'
set interfaces vxlan vxlan0 vlan-to-vni 31 vni '10031'
```

### Example

The setup is this: Leaf2 - Spine1 - Leaf3

Spine1 is a Cisco IOS router running version 15.4, Leaf2 and Leaf3 is each a VyOS router running 1.2.

This topology was built using GNS3.

Topology:

```
Spine1:
fa0/2 towards Leaf2, IP-address: 10.1.2.1/24
fa0/3 towards Leaf3, IP-address: 10.1.3.1/24

Leaf2:
Eth0 towards Spine1, IP-address: 10.1.2.2/24
Eth1 towards a vlan-aware switch

Leaf3:
Eth0 towards Spine1, IP-address 10.1.3.3/24
Eth1 towards a vlan-aware switch
```

### Spine1 Configuration:

```
conf t
ip multicast-routing
!
interface fastethernet0/2
ip address 10.1.2.1 255.255.255.0
```

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```

ip pim sparse-dense-mode
!
interface fastethernet0/3
ip address 10.1.3.1 255.255.255.0
ip pim sparse-dense-mode
!
router ospf 1
network 10.0.0.0 0.255.255.255 area 0

```

Multicast-routing is required for the leaves to forward traffic between each other in a more scalable way. This also requires PIM to be enabled towards the leaves so that the Spine can learn what multicast groups each Leaf expects traffic from.

**Leaf2 configuration:**

```

set interfaces ethernet eth0 address '10.1.2.2/24'
set protocols ospf area 0 network '10.0.0.0/8'

! Our first vxlan interface
set interfaces bridge br241 address '172.16.241.1/24'
set interfaces bridge br241 member interface 'eth1.241'
set interfaces bridge br241 member interface 'vxlan241'

set interfaces vxlan vxlan241 group '239.0.0.241'
set interfaces vxlan vxlan241 source-interface 'eth0'
set interfaces vxlan vxlan241 vni '241'

! Our seconds vxlan interface
set interfaces bridge br242 address '172.16.242.1/24'
set interfaces bridge br242 member interface 'eth1.242'
set interfaces bridge br242 member interface 'vxlan242'

set interfaces vxlan vxlan242 group '239.0.0.242'
set interfaces vxlan vxlan242 source-interface 'eth0'
set interfaces vxlan vxlan242 vni '242'

```

**Leaf3 configuration:**

```

set interfaces ethernet eth0 address '10.1.3.3/24'
set protocols ospf area 0 network '10.0.0.0/8'

! Our first vxlan interface
set interfaces bridge br241 address '172.16.241.1/24'
set interfaces bridge br241 member interface 'eth1.241'
set interfaces bridge br241 member interface 'vxlan241'

set interfaces vxlan vxlan241 group '239.0.0.241'
set interfaces vxlan vxlan241 source-interface 'eth0'
set interfaces vxlan vxlan241 vni '241'

! Our seconds vxlan interface
set interfaces bridge br242 address '172.16.242.1/24'
set interfaces bridge br242 member interface 'eth1.242'

```

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```
set interfaces bridge br242 member interface 'vxlان242'

set interfaces vxlan vxlan242 group '239.0.0.242'
set interfaces vxlan vxlan242 source-interface 'eth0'
set interfaces vxlan vxlan242 vni '242'
```

As you can see, Leaf2 and Leaf3 configuration is almost identical. There are lots of commands above, I'll try to into more detail below, command descriptions are placed under the command boxes:

```
set interfaces bridge br241 address '172.16.241.1/24'
```

This commands creates a bridge that is used to bind traffic on eth1 vlan 241 with the vxlan241-interface. The IP address is not required. It may however be used as a default gateway for each Leaf which allows devices on the vlan to reach other subnets. This requires that the subnets are redistributed by OSPF so that the Spine will learn how to reach it. To do this you need to change the OSPF network from '10.0.0.0/8' to '0.0.0.0/0' to allow 172.16/12-networks to be advertised.

```
set interfaces bridge br241 member interface 'eth1.241'
set interfaces bridge br241 member interface 'vxlan241'
```

Binds eth1.241 and vxlan241 to each other by making them both member interfaces of the same bridge.

```
set interfaces vxlan vxlan241 group '239.0.0.241'
```

The multicast-group used by all leaves for this vlan extension. Has to be the same on all leaves that has this interface.

```
set interfaces vxlan vxlan241 source-interface 'eth0'
```

Sets the interface to listen for multicast packets on. Could be a loopback, not yet tested.

```
set interfaces vxlan vxlan241 vni '241'
```

Sets the unique id for this vxlan-interface. Not sure how it correlates with multicast-address.

```
set interfaces vxlan vxlan241 port 12345
```

The destination port used for creating a VXLAN interface in Linux defaults to its pre-standard value of 8472 to preserve backward compatibility. A configuration directive to support a user-specified destination port to override that behavior is available using the above command.

## Unicast VXLAN

Alternative to multicast, the remote IPv4 address of the VXLAN tunnel can be set directly. Let's change the Multicast example from above:

```
# leaf2 and leaf3
delete interfaces vxlan vxlan241 group '239.0.0.241'
delete interfaces vxlan vxlan241 source-interface 'eth0'

# leaf2
set interface vxlan vxlan241 remote 10.1.3.3
```

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```
# leaf3
set interface vxlan vxlan241 remote 10.1.2.2
```

The default port udp is set to 8472. It can be changed with `set interface vxlan <vxlanN> port <port>`

## 8.4.18 WLAN/WIFI - Wireless LAN

WLAN (Wireless LAN) interface provide 802.11 (a/b/g/n/ac) wireless support (commonly referred to as Wi-Fi) by means of compatible hardware. If your hardware supports it, VyOS supports multiple logical wireless interfaces per physical device.

There are three modes of operation for a wireless interface:

- WAP (Wireless Access-Point) provides network access to connecting stations if the physical hardware supports acting as a WAP
- A station acts as a Wi-Fi client accessing the network through an available WAP
- Monitor, the system passively monitors any kind of wireless traffic

If the system detects an unconfigured wireless device, it will be automatically added the configuration tree, specifying any detected settings (for example, its MAC address) and configured to run in monitor mode.

### Configuration

#### Common interface configuration

```
set interfaces wireless <interface> address <address | dhcp | dhcpv6>
```

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces wireless wlan0 address 192.0.2.1/24
set interfaces wireless wlan0 address 2001:db8::1/64
set interfaces wireless wlan0 address dhcp
set interfaces wireless wlan0 address dhcpv6
```

```
set interfaces wireless <interface> description <description>
```

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces wireless wlan0 description 'This is an awesome interface running on  
↳VyOS'
```

#### **set interfaces wireless <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces wireless wlan0 disable
```

#### **set interfaces wireless <interface> disable-flow-control**

Ethernet flow control is a mechanism for temporarily stopping the transmission of data on Ethernet family computer networks. The goal of this mechanism is to ensure zero packet loss in the presence of network congestion.

The first flow control mechanism, the pause frame, was defined by the IEEE 802.3x standard.

A sending station (computer or network switch) may be transmitting data faster than the other end of the link can accept it. Using flow control, the receiving station can signal the sender requesting suspension of transmissions until the receiver catches up.

Use this command to disable the generation of Ethernet flow control (pause frames).

Example:

```
set interfaces wireless wlan0 disable-flow-control
```

#### **set interfaces wireless <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces wireless wlan0 disable-link-detect
```

#### **set interfaces wireless <interface> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces wireless wlan0 mac '00:01:02:03:04:05'
```

#### **set interfaces wireless <interface> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces wireless wlan0 mtu 1600
```

#### **set interfaces wireless <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

#### **set interfaces wireless <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces wireless wlan0 ip arp-cache-timeout 180
```

#### **set interfaces wireless <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces wireless wlan0 ip disable-arp-filter
```

#### **set interfaces wireless <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces wireless wlan0 ip disable-forwarding
```

#### **set interfaces wireless <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces wireless wlan0 ip enable-directed-broadcast
```

#### **set interfaces wireless <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces wireless wlan0 ip enable-arp-accept
```

#### **set interfaces wireless <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces wireless wlan0 ip enable-arp-announce
```

#### **set interfaces wireless <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces wireless wlan0 ip enable-arp-ignore
```

#### **set interfaces wireless <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces wireless wlan0 ip enable-proxy-arp
```

#### **set interfaces wireless <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

**set interfaces wireless <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

**set interfaces wireless <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces wireless wlan0 ipv6 address autoconf
```

**set interfaces wireless <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces wireless wlan0 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces wireless <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces wireless wlan0 ipv6 address no-default-link-local
```

**set interfaces wireless <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces wireless wlan0 ipv6 disable-forwarding
```

**set interfaces wireless <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally ‘do not try to send me packets bigger than this value’.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

**set interfaces wireless <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces wireless wlan0 ipv6 accept-dad 2
```

**set interfaces wireless <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces wireless wlan0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces wireless <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces wireless wlan0 vrf red
```

## DHCP(v6)

**set interfaces wireless <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces wireless wlan0 dhcp-options client-id 'foo-bar'
```

**set interfaces wireless <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces wireless wlan0 dhcp-options host-name 'VyOS'
```

#### **set interfaces wireless <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces wireless wlan0 dhcp-options vendor-class-id 'VyOS'
```

#### **set interfaces wireless <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces wireless wlan0 dhcp-options no-default-route
```

#### **set interfaces wireless <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces wireless wlan0 dhcp-options default-route-distance 220
```

#### **set interfaces wireless <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces wireless wlan0 dhcp-options reject 192.168.100.0/24
```

#### **set interfaces wireless <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces wireless wlan0 dhcp-options user-class VyOS
```

#### **set interfaces wireless <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces wireless wlan0 duid '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces wireless <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces wireless wlan0 dhcpv6-options no-release
```

#### **set interfaces wireless <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces wireless wlan0 dhcpv6-options parameters-only
```

#### **set interfaces wireless <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces wireless wlan0 dhcpv6-options rapid-commit
```

#### **set interfaces wireless <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces wireless wlan0 dhcpv6-options temporary
```

### **DHCPv6 Prefix Delegation (PD)**

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

#### **set interfaces wireless <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces wireless wlan0 dhcpv6-options pd 0 length 56
```

#### **set interfaces wireless <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces wireless wlan0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces wireless <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces wireless wlan0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## Wireless options

**set interfaces wireless <interface> channel <number>**

Channel number (IEEE 802.11), for 2.4Ghz (802.11 b/g/n) channels range from 1-14. On 5Ghz (802.11 a/h/j/n/ac) channels available are 0, 34 to 173

**set interfaces wireless <interface> country-code <cc>**

Country code (ISO/IEC 3166-1). Used to set regulatory domain. Set as needed to indicate country in which device is operating. This can limit available channels and transmit power.

---

**Note:** This option is mandatory in Access-Point mode.

---

**set interfaces wireless <interface> disable-broadcast-ssid**

Send empty SSID in beacons and ignore probe request frames that do not specify full SSID, i.e., require stations to know SSID.

**set interfaces wireless <interface> expunge-failing-stations**

Disassociate stations based on excessive transmission failures or other indications of connection loss.

This depends on the driver capabilities and may not be available with all drivers.

**set interfaces wireless <interface> isolate-stations**

Client isolation can be used to prevent low-level bridging of frames between associated stations in the BSS.

By default, this bridging is allowed.

**set interfaces wireless <interface> max-stations**

Maximum number of stations allowed in station table. New stations will be rejected after the station table is full. IEEE 802.11 has a limit of 2007 different association IDs, so this number should not be larger than that.

This defaults to 2007.

**set interfaces wireless <interface> mgmt-frame-protection**

Management Frame Protection (MFP) according to IEEE 802.11w

**set interfaces wireless <interface> mode <a | b | g | n | ac>**

Operation mode of wireless radio.

- a - 802.11a - 54 Mbits/sec
- b - 802.11b - 11 Mbits/sec

- g - 802.11g - 54 Mbits/sec (default)
- n - 802.11n - 600 Mbits/sec
- ac - 802.11ac - 1300 Mbits/sec

**set interfaces wireless <interface> physical-device <device>**

Wireless hardware device used as underlay radio.

This defaults to phy0.

**set interfaces wireless <interface> reduce-transmit-power <number>**

Add Power Constraint element to Beacon and Probe Response frames.

This option adds Power Constraint element when applicable and Country element is added. Power Constraint element is required by Transmit Power Control.

Valid values are 0..255.

**set interfaces wireless <interface> ssid <ssid>**

SSID to be used in IEEE 802.11 management frames

**set interfaces wireless <interface> type <access-point | station | monitor>**

Wireless device type for this interface

- access-point - Access-point forwards packets between other nodes
- station - Connects to another access point
- monitor - Passively monitor all packets on the frequency/channel

**set interfaces wireless <interface> per-client-thread**

Provides a per-device control to enable/disable the threaded mode for all the NAPI instances of the given network device, without the need for a device up/down.

If CLI option is not specified, this feature is disabled.

Example:

```
set interfaces wireless wlan0 per-client-thread
```

## PPDU

**set interfaces wireless <interface> capabilities require-ht**

**set interfaces wireless <interface> capabilities require-hvt**

## HT (High Throughput) capabilities (802.11n)

**set interfaces wireless <interface> capabilities ht 40mhz-incapable**

Device is incapable of 40 MHz, do not advertise. This sets [40-INTOLERANT]

**set interfaces wireless <interface> capabilities ht auto-powersave**

WMM-PS Unscheduled Automatic Power Save Delivery [U-APSD]

**set interfaces wireless <interface> capabilities ht channel-set-width <ht20 | ht40+ | ht40->**

Supported channel width set.

- **ht40-** - Both 20 MHz and 40 MHz with secondary channel below the primary channel
- **ht40+** - Both 20 MHz and 40 MHz with secondary channel above the primary channel

**Note:** There are limits on which channels can be used with HT40- and HT40+. Following table shows the channels that may be available for HT40- and HT40+ use per IEEE 802.11n Annex J:

Depending on the location, not all of these channels may be available for use!

freq	HT40-	HT40+
2.4 GHz	5-13	1-7 (1-9 in Europe/Japan)
5 GHz	40, 48, 56, 64	36, 44, 52, 60

**Note:** 40 MHz channels may switch their primary and secondary channels if needed or creation of 40 MHz channel maybe rejected based on overlapping BSSes. These changes are done automatically when hostapd is setting up the 40 MHz channel.

**set interfaces wireless <interface> capabilities ht delayed-block-ack**

Enable HT-delayed Block Ack [DELAYED-BA]

**set interfaces wireless <interface> capabilities ht dsss-cck-40**

DSSS/CCK Mode in 40 MHz, this sets [DSSS\_CCK-40]

**set interfaces wireless <interface> capabilities ht greenfield**

This enables the greenfield option which sets the [GF] option

**set interfaces wireless <interface> capabilities ht ldpc**

Enable LDPC coding capability

**set interfaces wireless <interface> capabilities ht lsig-protection**

Enable L-SIG TXOP protection capability

**set interfaces wireless <interface> capabilities ht max-amsdu <3839 | 7935>**

Maximum A-MSDU length 3839 (default) or 7935 octets

**set interfaces wireless <interface> capabilities ht short-gi <20 | 40>**

Short GI capabilities for 20 and 40 MHz

**set interfaces wireless <interface> capabilities ht smps <static | dynamic>**

Spatial Multiplexing Power Save (SMPS) settings

**set interfaces wireless <interface> capabilities ht stbc rx <num>**

Enable receiving PPDU using STBC (Space Time Block Coding)

**set interfaces wireless <interface> capabilities ht stbc tx**

Enable sending PPDU using STBC (Space Time Block Coding)

**VHT (Very High Throughput) capabilities (802.11ac)**

**set interfaces wireless <interface> capabilities vht antenna-count**

Number of antennas on this card

**set interfaces wireless <interface> capabilities vht antenna-pattern-fixed**

Set if antenna pattern does not change during the lifetime of an association

**set interfaces wireless <interface> capabilities vht beamform <single-user-beamformer | single-user-beamformee | multi-user-beamformer | multi-user-beamformee>**

Beamforming capabilities:

- single-user-beamformer - Support for operation as single user beamformer
- single-user-beamformee - Support for operation as single user beamformee
- multi-user-beamformer - Support for operation as single user beamformer
- multi-user-beamformee - Support for operation as single user beamformer

**set interfaces wireless <interface> capabilities vht center-channel-freq <freq-1 | freq-2> <number>**

VHT operating channel center frequency - center freq 1 (for use with 80, 80+80 and 160 modes)

VHT operating channel center frequency - center freq 2 (for use with the 80+80 mode)

<number> must be from 34 - 173. For 80 MHz channels it should be channel + 6.

**set interfaces wireless <interface> capabilities vht channel-set-width <0 | 1 | 2 | 3>**

- 0 - 20 or 40 MHz channel width (default)
- 1 - 80 MHz channel width
- 2 - 160 MHz channel width
- 3 - 80+80 MHz channel width

**set interfaces wireless <interface> capabilities vht ldpc**

Enable LDPC (Low Density Parity Check) coding capability

**set interfaces wireless <interface> capabilities vht link-adaptation**

VHT link adaptation capabilities

**set interfaces wireless <interface> capabilities vht max-mpdu <value>**

Increase Maximum MPDU length to 7991 or 11454 octets (default 3895 octets)

**set interfaces wireless <interface> capabilities vht max-mpdu-exp <value>**

Set the maximum length of A-MPDU pre-EOF padding that the station can receive

**set interfaces wireless <interface> capabilities vht short-gi <80 | 160>**

Short GI capabilities

**set interfaces wireless <interface> capabilities vht stbc rx <num>**

Enable receiving PPDU using STBC (Space Time Block Coding)

**set interfaces wireless <interface> capabilities vht stbc tx**

Enable sending PPDU using STBC (Space Time Block Coding)

```
set interfaces wireless <interface> capabilities vht tx-powersave
```

Enable VHT TXOP Power Save Mode

```
set interfaces wireless <interface> capabilities vht vht-cf
```

Station supports receiving VHT variant HT Control field

### Wireless options (Station/Client)

The example creates a wireless station (commonly referred to as Wi-Fi client) that accesses the network through the WAP defined in the above example. The default physical device (`phy0`) is used.

```
set interfaces wireless wlan0 type station
set interfaces wireless wlan0 address dhcp
set interfaces wireless wlan0 country-code de
set interfaces wireless wlan0 ssid Test
set interfaces wireless wlan0 security wpa passphrase '12345678'
```

Resulting in

```
interfaces {
  [...]
  wireless wlan0 {
    address dhcp
    country-code de
    security {
      wpa {
        passphrase "12345678"
      }
    }
    ssid TEST
    type station
  }
}
```

### Security

WPA (Wi-Fi Protected Access) and WPA2 Enterprise in combination with 802.1x based authentication can be used to authenticate users or computers in a domain.

The wireless client (supplicant) authenticates against the RADIUS server (authentication server) using an EAP method configured on the RADIUS server. The WAP (also referred to as authenticator) role is to send all authentication messages between the supplicant and the configured authentication server, thus the RADIUS server is responsible for authenticating the users.

The WAP in this example has the following characteristics:

- IP address 192.168.2.1/24
- Network ID (SSID) Enterprise-TEST
- WPA passphrase 12345678
- Use 802.11n protocol
- Wireless channel 1

- RADIUS server at 192.168.3.10 with shared-secret VyOSPassword

```
set interfaces wireless wlan0 address '192.168.2.1/24'
set interfaces wireless wlan0 country-code de
set interfaces wireless wlan0 type access-point
set interfaces wireless wlan0 channel 1
set interfaces wireless wlan0 mode n
set interfaces wireless wlan0 ssid 'TEST'
set interfaces wireless wlan0 security wpa mode wpa2
set interfaces wireless wlan0 security wpa cipher CCMP
set interfaces wireless wlan0 security wpa radius server 192.168.3.10 key 'VyOSPassword'
set interfaces wireless wlan0 security wpa radius server 192.168.3.10 port 1812
```

Resulting in

```
interfaces {
  [...]
  wireless wlan0 {
    address 192.168.2.1/24
    country-code de
    channel 1
    mode n
    security {
      wpa {
        cipher CCMP
        mode wpa2
        radius {
          server 192.168.3.10 {
            key 'VyOSPassword'
            port 1812
          }
        }
      }
    }
    ssid "Enterprise-TEST"
    type access-point
  }
}
```

## VLAN

### Regular VLANs (802.1q)

IEEE 802.1q, often referred to as Dot1q, is the networking standard that supports virtual LANs (VLANs) on an IEEE 802.3 Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames. The standard also contains provisions for a quality-of-service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.

Portions of the network which are VLAN-aware (i.e., IEEE 802.1q conformant) can include VLAN tags. When a frame enters the VLAN-aware portion of the network, a tag is added to represent the VLAN membership. Each frame must be distinguishable as being within exactly one VLAN. A frame in the VLAN-aware portion of the network that does not contain a VLAN tag is assumed to be flowing on the native VLAN.

The standard was developed by IEEE 802.1, a working group of the IEEE 802 standards committee, and continues to be actively revised. One of the notable revisions is 802.1Q-2014 which incorporated IEEE 802.1aq (Shortest Path Bridging) and much of the IEEE 802.1d standard.

802.1q VLAN interfaces are represented as virtual sub-interfaces in VyOS. The term used for this is `vif`.

**set interfaces wireless <interface> vif <vlan-id>**

Create a new VLAN interface on interface `<interface>` using the VLAN number provided via `<vlan-id>`.

You can create multiple VLAN interfaces on a physical interface. The VLAN ID range is from 0 to 4094.

---

**Note:** Only 802.1Q-tagged packets are accepted on Ethernet vifs.

---

**set interfaces wireless <interface> vif <vlan-id> address <address | dhcp | dhcpv6>**

Configure interface `<interface>` with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces wireless wlan0 vif 10 address 192.0.2.1/24
set interfaces wireless wlan0 vif 10 address 2001:db8::1/64
set interfaces wireless wlan0 vif 10 address dhcp
set interfaces wireless wlan0 vif 10 address dhcpv6
```

**set interfaces wireless <interface> vif <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces wireless wlan0 vif 10 description 'This is an awesome interface_
↳running on VyOS'
```

**set interfaces wireless <interface> vif <vlan-id> disable**

Disable given `<interface>`. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces wireless wlan0 vif 10 disable
```

**set interfaces wireless <interface> vif <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces wireless wlan0 vif 10 disable-link-detect
```

**set interfaces wireless <interface> vif <vlan-id> mac <xx:xx:xx:xx:xx:xx>**

Configure user defined MAC address on given <interface>.

Example:

```
set interfaces wireless wlan0 vif 10 mac '00:01:02:03:04:05'
```

**set interfaces wireless <interface> vif <vlan-id> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces wireless wlan0 vif 10 mtu 1600
```

**set interfaces wireless <interface> vif <vlan-id> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces wireless <interface> vif <vlan-id> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces wireless wlan0 vif 10 ip arp-cache-timeout 180
```

**set interfaces wireless <interface> vif <vlan-id> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces wireless wlan0 vif 10 ip disable-arp-filter
```

#### **set interfaces wireless <interface> vif <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces wireless wlan0 vif 10 ip disable-forwarding
```

#### **set interfaces wireless <interface> vif <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces wireless wlan0 vif 10 ip enable-directed-broadcast
```

#### **set interfaces wireless <interface> vif <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces wireless wlan0 vif 10 ip enable-arp-accept
```

#### **set interfaces wireless <interface> vif <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces wireless wlan0 vif 10 ip enable-arp-announce
```

#### **set interfaces wireless <interface> vif <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces wireless wlan0 vif 10 ip enable-arp-ignore
```

#### **set interfaces wireless <interface> vif <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces wireless wlan0 vif 10 ip enable-proxy-arp
```

### **set interfaces wireless <interface> vif <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### **set interfaces wireless <interface> vif <vlan-id> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### **set interfaces wireless <interface> vif <vlan-id> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces wireless wlan0 vif 10 ipv6 address autoconf
```

### **set interfaces wireless <interface> vif <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces wireless wlan0 vif 10 ipv6 address eui64 2001:db8:beef::/64
```

**set interfaces wireless <interface> vif <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces wireless wlan0 vif 10 ipv6 address no-default-link-local
```

**set interfaces wireless <interface> vif <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces wireless wlan0 vif 10 ipv6 disable-forwarding
```

**set interfaces wireless <interface> vif <vlan-id> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces wireless <interface> vif <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces wireless wlan0 vif 10 ipv6 accept-dad 2
```

**set interfaces wireless <interface> vif <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces wireless wlan0 vif 10 ipv6 dup-addr-detect-transmits 5
```

**set interfaces wireless <interface> vif <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces wireless wlan0 vif 10 vrf red
```

### DHCP(v6)

**set interfaces wireless <interface> vif <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options client-id 'foo-bar'
```

**set interfaces wireless <interface> vif <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options host-name 'VyOS'
```

**set interfaces wireless <interface> vif <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options vendor-class-id 'VyOS'
```

**set interfaces wireless <interface> vif <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options no-default-route
```

**set interfaces wireless <interface> vif <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options default-route-distance 220
```

**set interfaces wireless <interface> vif <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options reject 192.168.100.0/24
```

**set interfaces wireless <interface> vif <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces wireless wlan0 vif 10 dhcp-options user-class VyOS
```

**set interfaces wireless <interface> vif <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces wireless wlan0 vif 10 duid
↪ '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces wireless <interface> vif <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces wireless wlan0 vif 10 dhcpv6-options no-release
```

**set interfaces wireless <interface> vif <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces wireless wlan0 vif 10 dhcpv6-options parameters-only
```

**set interfaces wireless <interface> vif <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces wireless wlan0 vif 10 dhcpv6-options rapid-commit
```

**set interfaces wireless <interface> vif <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces wireless wlan0 vif 10 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

```
set interfaces wireless <interface> vif <vlan-id> dhcpv6-options pd <id> length <length>
```

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces wireless wlan0 vif 10 dhcpv6-options pd 0 length 56
```

```
set interfaces wireless <interface> vif <vlan-id> dhcpv6-options pd <id> interface
<delegatee> address <address>
```

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces wireless wlan0 vif 10 dhcpv6-options pd 0 interface eth8 address_
→65534
```

```
set interfaces wireless <interface> vif <vlan-id> dhcpv6-options pd <id> interface
<delegatee> sla-id <id>
```

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces wireless wlan0 vif 10 dhcpv6-options pd 0 interface eth8 sla-id 1
```

### QinQ (802.1ad)

IEEE 802.1ad was an Ethernet networking standard informally known as QinQ as an amendment to IEEE standard 802.1q VLAN interfaces as described above. 802.1ad was incorporated into the base 802.1q standard in 2011. The technique is also known as provider bridging, Stacked VLANs, or simply QinQ or Q-in-Q. “Q-in-Q” can for supported devices apply to C-tag stacking on C-tag (Ethernet Type = 0x8100).

The original 802.1q specification allows a single Virtual Local Area Network (VLAN) header to be inserted into an Ethernet frame. QinQ allows multiple VLAN tags to be inserted into a single frame, an essential capability for implementing Metro Ethernet network topologies. Just as QinQ extends 802.1Q, QinQ itself is extended by other Metro Ethernet protocols.

In a multiple VLAN header context, out of convenience the term “VLAN tag” or just “tag” for short is often used in place of “802.1q VLAN header”. QinQ allows multiple VLAN tags in an Ethernet frame; together these tags constitute

a tag stack. When used in the context of an Ethernet frame, a QinQ frame is a frame that has 2 VLAN 802.1q headers (double-tagged).

In VyOS the terms *vif-s* and *vif-c* stand for the ethertype tags that are used.

The inner tag is the tag which is closest to the payload portion of the frame. It is officially called C-TAG (customer tag, with ethertype 0x8100). The outer tag is the one closer/closest to the Ethernet header, its name is S-TAG (service tag with Ethernet Type = 0x88a8).

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> address <address | dhcp | dhcpv6>**

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
- /config/scripts/dhcp-client/post-hooks.d/

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 address 192.0.2.1/24
set interfaces wireless wlan0 vif-s 1000 vif-c 20 address 2001:db8::1/64
set interfaces wireless wlan0 vif-s 1000 vif-c 20 address dhcp
set interfaces wireless wlan0 vif-s 1000 vif-c 20 address dhcpv6
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 description 'This is an awesome_
↳interface running on VyOS'
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> disable**

Disable given *<interface>*. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 disable
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 disable-link-detect
```

```
set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> mac
<xx:xx:xx:xx:xx:xx>
```

Configure user defined MAC address on given *<interface>*.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 mac '00:01:02:03:04:05'
```

```
set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> mtu <mtu>
```

Configure MTU on given *<interface>*. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 mtu 1600
```

```
set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip adjust-mss <mss |
clamp-mss-to-pmtu>
```

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---



---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

```
set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip arp-cache-timeout
```

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip arp-cache-timeout 180
```

```
set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip disable-arp-filter
```

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip disable-arp-filter
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip disable-forwarding
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip enable-directed-broadcast
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip enable-arp-accept
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip enable-arp-announce
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip enable-arp-ignore
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ip enable-proxy-arp
```

### **set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

### **set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.
- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

### **set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ipv6 address autoconf
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-bit IPv6 address.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ipv6 address eui64_
↳2001:db8:beef::/64
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ipv6 address no-default-link-local
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ipv6 disable-forwarding
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 adjust-mss <mss> | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value *clamp-mss-to-pmtu* can be used to automatically set the proper value.

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ipv6 accept-dad 2
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 ipv6 dup-addr-detect-transmits 5
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a *VRF*, please check this for additional information.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 vrf red
```

## DHCP(v6)

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options client-id 'foo-bar'
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options host-name 'VyOS'
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options vendor-class-id 'VyOS
↪'
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options no-default-route
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options default-route-
→distance 220
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options reject 192.168.100.0/
→24
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcp-options user-class VyOS
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 duid
→'0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options no-release
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options parameters-only
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options rapid-commit
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options pd 0 length 56
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options pd 0 interface_
->eth8 address 65534
```

**set interfaces wireless <interface> vif-s <vlan-id> vif-c <vlan-id> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces wireless wlan0 vif-s 1000 vif-c 20 dhcpv6-options pd 0 interface_
↳eth8 sla-id 1
```

## Operation

### show interfaces wireless info

Use this command to view operational status and wireless-specific information about all wireless interfaces.

```
vyos@vyos:~$ show interfaces wireless info
Interface Type          SSID                      Channel
wlan0      access-point  VyOS-TEST-0              1
```

### show interfaces wireless detail

Use this command to view operational status and details wireless-specific information about all wireless interfaces.

```
vyos@vyos:~$ show interfaces wireless detail
wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default_
↳qlen 1000
  link/ether XX:XX:XX:XX:XX:c3 brd XX:XX:XX:XX:XX:ff
  inet xxx.xxx.99.254/24 scope global wlan0
    valid_lft forever preferred_lft forever
  inet6 fe80::xxxx:xxxx:fe54:2fc3/64 scope link
    valid_lft forever preferred_lft forever

  RX:  bytes  packets  errors  dropped  overrun  mcast
      66072    282      0        0        0        0
  TX:  bytes  packets  errors  dropped  carrier  collisions
      83413    430      0        0        0        0

wlan1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default_
↳qlen 1000
  link/ether XX:XX:XX:XX:XX:c3 brd XX:XX:XX:XX:XX:ff
  inet xxx.xxx.100.254/24 scope global wlan0
    valid_lft forever preferred_lft forever
  inet6 fe80::xxxx:xxxx:ffff:2ed3/64 scope link
    valid_lft forever preferred_lft forever

  RX:  bytes  packets  errors  dropped  overrun  mcast
      166072   5282      0        0        0        0
  TX:  bytes  packets  errors  dropped  carrier  collisions
      183413   5430      0        0        0        0
```

### show interfaces wireless <wlanX>

This command shows both status and statistics on the specified wireless interface. The wireless interface identifier can range from wlan0 to wlan999.

```
vyos@vyos:~$ show interfaces wireless wlan0
wlan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default_
```

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```

↪qlen 1000
link/ether XX:XX:XX:XX:XX:c3 brd XX:XX:XX:XX:XX:ff
inet xxx.xxx.99.254/24 scope global wlan0
    valid_lft forever preferred_lft forever
inet6 fe80::xxxx:xxxx:fe54:2fc3/64 scope link
    valid_lft forever preferred_lft forever

RX:  bytes    packets    errors    dropped    overrun    mcast
     66072      282         0         0         0         0
TX:  bytes    packets    errors    dropped    carrier    collisions
     83413      430         0         0         0         0
    
```

### show interfaces wireless <wlanX> brief

This command gives a brief status overview of a specified wireless interface. The wireless interface identifier can range from wlan0 to wlan999.

```

vyos@vyos:~$ show interfaces wireless wlan0 brief
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface          IP Address          S/L Description
-----
wlan0              192.168.2.254/24   u/u
    
```

### show interfaces wireless <wlanX> queue

Use this command to view wireless interface queue information. The wireless interface identifier can range from wlan0 to wlan999.

```

vyos@vyos:~$ show interfaces wireless wlan0 queue
qdisc pfifo_fast 0: root bands 3 priomap 1 2 2 2 1 2 0 0 1 1 1 1 1 1 1 1
Sent 810323 bytes 6016 pkt (dropped 0, overlimits 0 requeues 0)
rate 0bit 0pps backlog 0b 0p requeues 0
    
```

### show interfaces wireless <wlanX> scan

This command is used to retrieve information about WAP within the range of your wireless interface. This command is useful on wireless interfaces configured in station mode.

**Note:** Scanning is not supported on all wireless drivers and wireless hardware. Refer to your driver and wireless hardware documentation for further details.

```

vyos@vyos:~$ show interfaces wireless wlan0 scan
Address          SSID                Channel  Signal (dbm)
00:53:3b:88:6e:d8 WLAN-576405         1      -64.00
00:53:3b:88:6e:da Telekom_FON         1      -64.00
00:53:00:f2:c2:a4 BabyView_F2C2A4    6      -60.00
00:53:3b:88:6e:d6 Telekom_FON        100     -72.00
00:53:3b:88:6e:d4 WLAN-576405        100     -71.00
00:53:44:a4:96:ec KabelBox-4DC8      56     -81.00
00:53:d9:7a:67:c2 WLAN-741980        1      -75.00
00:53:7c:99:ce:76 Vodafone Homespot  1      -86.00
00:53:44:a4:97:21 KabelBox-4DC8      1      -78.00
00:53:44:a4:97:21 Vodafone Hotspot   1      -79.00
    
```

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00:53:44:a4:97:21	Vodafone Homespot	1	-79.00
00:53:86:40:30:da	Telekom_FON	1	-86.00
00:53:7c:99:ce:76	Vodafone Hotspot	1	-86.00
00:53:44:46:d2:0b	Vodafone Hotspot	1	-87.00

## Examples

The following example creates a WAP. When configuring multiple WAP interfaces, you must specify unique IP addresses, channels, Network IDs commonly referred to as SSID (Service Set Identifier), and MAC addresses.

The WAP in this example has the following characteristics:

- IP address 192.168.2.1/24
- Network ID (SSID) TEST
- WPA passphrase 12345678
- Use 802.11n protocol
- Wireless channel 1

```
set interfaces wireless wlan0 address '192.168.2.1/24'
set interfaces wireless wlan0 type access-point
set interfaces wireless wlan0 channel 1
set interfaces wireless wlan0 mode n
set interfaces wireless wlan0 ssid 'TEST'
set interfaces wireless wlan0 security wpa mode wpa2
set interfaces wireless wlan0 security wpa cipher CCMP
set interfaces wireless wlan0 security wpa passphrase '12345678'
set interfaces wireless wlan0 country-code de
```

Resulting in

```
interfaces {
  [...]
  wireless wlan0 {
    address 192.168.2.1/24
    channel 1
    country-code de
    mode n
    security {
      wpa {
        cipher CCMP
        mode wpa2
        passphrase "12345678"
      }
    }
    ssid "TEST"
    type access-point
  }
}
system {
  [...]
```

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```
wifi-regulatory-domain DE
}
```

To get it to work as an access point with this configuration you will need to set up a DHCP server to work with that network. You can - of course - also bridge the Wireless interface with any configured bridge (*Bridge*) on the system.

## Intel AX200

The Intel AX200 card does not work out of the box in AP mode, see <https://unix.stackexchange.com/questions/598275/intel-ax200-ap-mode>. You can still put this card into AP mode using the following configuration:

```
set interfaces wireless wlan0 channel '1'
set interfaces wireless wlan0 country-code 'us'
set interfaces wireless wlan0 mode 'n'
set interfaces wireless wlan0 physical-device 'phy0'
set interfaces wireless wlan0 ssid 'VyOS'
set interfaces wireless wlan0 type 'access-point'
```

## 8.4.19 WWAN - Wireless Wide-Area-Network

The Wireless Wide-Area-Network interface provides access (through a wireless modem/wwan) to wireless networks provided by various cellular providers.

VyOS uses the *interfaces wwan* subsystem for configuration.

### Configuration

#### Common interface configuration

```
set interfaces wwan <interface> address <address | dhcp | dhcpv6>
```

Configure interface *<interface>* with one or more interface addresses.

- **address** can be specified multiple times as IPv4 and/or IPv6 address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
- **dhcp** interface address is received by DHCP from a DHCP server on this segment.
- **dhcpv6** interface address is received by DHCPv6 from a DHCPv6 server on this segment.

---

**Note:** When using DHCP to retrieve IPv4 address and if local customizations are needed, they should be possible using the enter and exit hooks provided. The hook dirs are:

- /config/scripts/dhcp-client/pre-hooks.d/
  - /config/scripts/dhcp-client/post-hooks.d/
- 

Example:

```
set interfaces wwan wwan0 address 192.0.2.1/24
set interfaces wwan wwan0 address 2001:db8::1/64
set interfaces wwan wwan0 address dhcp
set interfaces wwan wwan0 address dhcpv6
```

### **set interfaces wwan <interface> description <description>**

Set a human readable, descriptive alias for this connection. Alias is used by e.g. the `show interfaces` command or SNMP based monitoring tools.

Example:

```
set interfaces wwan wwan0 description 'This is an awesome interface running on VyOS'
```

### **set interfaces wwan <interface> disable**

Disable given <interface>. It will be placed in administratively down (A/D) state.

Example:

```
set interfaces wwan wwan0 disable
```

### **set interfaces wwan <interface> disable-link-detect**

Use this command to direct an interface to not detect any physical state changes on a link, for example, when the cable is unplugged.

Default is to detects physical link state changes.

Example:

```
set interfaces wwan wwan0 disable-link-detect
```

### **set interfaces wwan <interface> mtu <mtu>**

Configure MTU on given <interface>. It is the size (in bytes) of the largest ethernet frame sent on this link.

Example:

```
set interfaces wwan wwan0 mtu 1600
```

### **set interfaces wwan <interface> ip adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss <value>`

---

---

**Hint:** MSS value = MTU - 20 (IP header) - 20 (TCP header), resulting in 1452 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

### **set interfaces wwan <interface> ip arp-cache-timeout**

Once a neighbor has been found, the entry is considered to be valid for at least for this specific time. An entry's validity will be extended if it receives positive feedback from higher level protocols.

This defaults to 30 seconds.

Example:

```
set interfaces wwan wwan0 ip arp-cache-timeout 180
```

#### **set interfaces wwan <interface> ip disable-arp-filter**

If set the kernel can respond to arp requests with addresses from other interfaces. This may seem wrong but it usually makes sense, because it increases the chance of successful communication. IP addresses are owned by the complete host on Linux, not by particular interfaces. Only for more complex setups like load-balancing, does this behaviour cause problems.

If not set (default) allows you to have multiple network interfaces on the same subnet, and have the ARPs for each interface be answered based on whether or not the kernel would route a packet from the ARP'd IP out that interface (therefore you must use source based routing for this to work).

In other words it allows control of which cards (usually 1) will respond to an arp request.

Example:

```
set interfaces wwan wwan0 ip disable-arp-filter
```

#### **set interfaces wwan <interface> ip disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

```
set interfaces wwan wwan0 ip disable-forwarding
```

#### **set interfaces wwan <interface> ip enable-directed-broadcast**

Define different modes for IP directed broadcast forwarding as described in [RFC 1812](#) and [RFC 2644](#).

If configured, incoming IP directed broadcast packets on this interface will be forwarded.

If this option is unset (default), incoming IP directed broadcast packets will not be forwarded.

```
set interfaces wwan wwan0 ip enable-directed-broadcast
```

#### **set interfaces wwan <interface> ip enable-arp-accept**

Define behavior for gratuitous ARP frames who's IP is not already present in the ARP table. If configured create new entries in the ARP table.

Both replies and requests type gratuitous arp will trigger the ARP table to be updated, if this setting is on.

If the ARP table already contains the IP address of the gratuitous arp frame, the arp table will be updated regardless if this setting is on or off.

```
set interfaces wwan wwan0 ip enable-arp-accept
```

#### **set interfaces wwan <interface> ip enable-arp-announce**

Define different restriction levels for announcing the local source IP address from IP packets in ARP requests sent on interface.

Use any local address, configured on any interface if this is not set.

If configured, try to avoid local addresses that are not in the target's subnet for this interface. This mode is useful when target hosts reachable via this interface require the source IP address in ARP requests to be part of their logical network configured on the receiving interface. When we generate the request we will check all our subnets that include the target IP and will preserve the source address if it is from such subnet. If there is no such subnet we select source address according to the rules for level 2.

```
set interfaces wwan wwan0 ip enable-arp-announce
```

#### **set interfaces wwan <interface> ip enable-arp-ignore**

Define different modes for sending replies in response to received ARP requests that resolve local target IP addresses:

If configured, reply only if the target IP address is local address configured on the incoming interface.

If this option is unset (default), reply for any local target IP address, configured on any interface.

```
set interfaces wwan wwan0 ip enable-arp-ignore
```

#### **set interfaces wwan <interface> ip enable-proxy-arp**

Use this command to enable proxy Address Resolution Protocol (ARP) on this interface. Proxy ARP allows an Ethernet interface to respond with its own MAC address to ARP requests for destination IP addresses on subnets attached to other interfaces on the system. Subsequent packets sent to those destination IP addresses are forwarded appropriately by the system.

Example:

```
set interfaces wwan wwan0 ip enable-proxy-arp
```

#### **set interfaces wwan <interface> ip proxy-arp-pvlan**

Private VLAN proxy arp. Basically allow proxy arp replies back to the same interface (from which the ARP request/solicitation was received).

This is done to support (ethernet) switch features, like [RFC 3069](#), where the individual ports are NOT allowed to communicate with each other, but they are allowed to talk to the upstream router. As described in [RFC 3069](#), it is possible to allow these hosts to communicate through the upstream router by proxy\_arp'ing.

---

**Note:** Does not need to be used together with proxy\_arp.

---

This technology is known by different names:

- In [RFC 3069](#) it is called VLAN Aggregation
- Cisco and Allied Telesyn call it Private VLAN
- Hewlett-Packard call it Source-Port filtering or port-isolation
- Ericsson call it MAC-Forced Forwarding (RFC Draft)

#### **set interfaces wwan <interface> ip source-validation <strict | loose | disable>**

Enable policy for source validation by reversed path, as specified in [RFC 3704](#). Current recommended practice in [RFC 3704](#) is to enable strict mode to prevent IP spoofing from DDos attacks. If using asymmetric routing or other complicated routing, then loose mode is recommended.

- strict: Each incoming packet is tested against the FIB and if the interface is not the best reverse path the packet check will fail. By default failed packets are discarded.

- loose: Each incoming packet's source address is also tested against the FIB and if the source address is not reachable via any interface the packet check will fail.
- disable: No source validation

#### **set interfaces wwan <interface> ipv6 address autoconf**

SLAAC [RFC 4862](#). IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to such a request with a router advertisement packet that contains Internet Layer configuration parameters.

---

**Note:** This method automatically disables IPv6 traffic forwarding on the interface in question.

---

Example:

```
set interfaces wwan wwan0 ipv6 address autoconf
```

#### **set interfaces wwan <interface> ipv6 address eui64 <prefix>**

EUI-64 as specified in [RFC 4291](#) allows a host to assign itself a unique 64-Bit IPv6 address.

Example:

```
set interfaces wwan wwan0 ipv6 address eui64 2001:db8:beef::/64
```

#### **set interfaces wwan <interface> ipv6 address no-default-link-local**

Do not assign a link-local IPv6 address to this interface.

Example:

```
set interfaces wwan wwan0 ipv6 address no-default-link-local
```

#### **set interfaces wwan <interface> ipv6 disable-forwarding**

Configure interface-specific Host/Router behaviour. If set, the interface will switch to host mode and IPv6 forwarding will be disabled on this interface.

Example:

```
set interfaces wwan wwan0 ipv6 disable-forwarding
```

#### **set interfaces wwan <interface> ipv6 adjust-mss <mss | clamp-mss-to-pmtu>**

As Internet wide PMTU discovery rarely works, we sometimes need to clamp our TCP MSS value to a specific value. This is a field in the TCP options part of a SYN packet. By setting the MSS value, you are telling the remote side unequivocally 'do not try to send me packets bigger than this value'.

---

**Note:** This command was introduced in VyOS 1.4 - it was previously called: `set firewall options interface <name> adjust-mss6 <value>`

---



---

**Hint:** MSS value = MTU - 40 (IPv6 header) - 20 (TCP header), resulting in 1432 bytes on a 1492 byte MTU.

---

Instead of a numerical MSS value `clamp-mss-to-pmtu` can be used to automatically set the proper value.

#### **set interfaces wwan <interface> ipv6 accept-dad <1-3>**

Whether to accept DAD (Duplicate Address Detection).

- 0: Disable DAD
- 1: Enable DAD (default)
- 2: Enable DAD, and disable IPv6 operation if MAC-based duplicate link-local address has been found.

Example:

```
set interfaces wwan wwan0 ipv6 accept-dad 2
```

**set interfaces wwan <interface> ipv6 dup-addr-detect-transmits <n>**

The amount of Duplicate Address Detection probes to send.

Default: 1

Example:

```
set interfaces wwan wwan0 ipv6 dup-addr-detect-transmits 5
```

**set interfaces wwan <interface> vrf <vrf>**

Place interface in given VRF instance.

**See also:**

There is an entire chapter about how to configure a [VRF](#), please check this for additional information.

Example:

```
set interfaces wwan wwan0 vrf red
```

## DHCP(v6)

**set interfaces wwan <interface> dhcp-options client-id <description>**

**RFC 2131** states: The client MAY choose to explicitly provide the identifier through the ‘client identifier’ option. If the client supplies a ‘client identifier’, the client MUST use the same ‘client identifier’ in all subsequent messages, and the server MUST use that identifier to identify the client.

Example:

```
set interfaces wwan wwan0 dhcp-options client-id 'foo-bar'
```

**set interfaces wwan <interface> dhcp-options host-name <hostname>**

Instead of sending the real system hostname to the DHCP server, overwrite the host-name with this given-value.

Example:

```
set interfaces wwan wwan0 dhcp-options host-name 'VyOS'
```

**set interfaces wwan <interface> dhcp-options vendor-class-id <vendor-id>**

This option is used by some DHCP clients to identify the vendor type and possibly the configuration of a DHCP client. The information is a string of bytes whose contents are specific to the vendor and are not specified in a standard.

The vendor-class-id option can be used to request a specific class of vendor options from the server.

Example:

```
set interfaces wwan wwan0 dhcp-options vendor-class-id 'VyOS'
```

#### **set interfaces wwan <interface> dhcp-options no-default-route**

Only request an address from the DHCP server but do not request a default gateway.

Example:

```
set interfaces wwan wwan0 dhcp-options no-default-route
```

#### **set interfaces wwan <interface> dhcp-options default-route-distance <distance>**

Set the distance for the default gateway sent by the DHCP server.

Example:

```
set interfaces wwan wwan0 dhcp-options default-route-distance 220
```

#### **set interfaces wwan <interface> dhcp-options reject <address>**

Reject DHCP leases from a given address or range. This is useful when a modem gives a local IP when first starting.

- **address** can be specified multiple times, e.g. 192.168.100.1 and/or 192.168.100.0/24

Example:

```
set interfaces wwan wwan0 dhcp-options reject 192.168.100.0/24
```

#### **set interfaces wwan <interface> dhcp-options user-class <string>**

This option is used by some DHCP clients as a way for users to specify identifying information to the client. This can be used in a similar way to the vendor-class-identifier option, but the value of the option is specified by the user, not the vendor.

Example:

```
set interfaces wwan wwan0 dhcp-options user-class VyOS
```

#### **set interfaces wwan <interface> dhcpv6-options duid <duid>**

The DHCP unique identifier (DUID) is used by a client to get an IP address from a DHCPv6 server. It has a 2-byte DUID type field, and a variable-length identifier field up to 128 bytes. Its actual length depends on its type. The server compares the DUID with its database and delivers configuration data (address, lease times, DNS servers, etc.) to the client.

```
set interfaces wwan wwan0 duid '0e:00:00:01:00:01:27:71:db:f0:00:50:56:bf:c5:6d'
```

#### **set interfaces wwan <interface> dhcpv6-options no-release**

When no-release is specified, dhcp6c will send a release message on client exit to prevent losing an assigned address or prefix.

```
set interfaces wwan wwan0 dhcpv6-options no-release
```

#### **set interfaces wwan <interface> dhcpv6-options parameters-only**

This statement specifies dhcp6c to only exchange informational configuration parameters with servers. A list of DNS server addresses is an example of such parameters. This statement is useful when the client does not need stateful configuration parameters such as IPv6 addresses or prefixes.

```
set interfaces wwan wwan0 dhcpv6-options parameters-only
```

**set interfaces wwan <interface> dhcpv6-options rapid-commit**

When rapid-commit is specified, dhcp6c will include a rapid-commit option in solicit messages and wait for an immediate reply instead of advertisements.

```
set interfaces wwan wwan0 dhcpv6-options rapid-commit
```

**set interfaces wwan <interface> dhcpv6-options temporary**

Request only a temporary address and not form an IA\_NA (Identity Association for Non-temporary Addresses) partnership.

```
set interfaces wwan wwan0 dhcpv6-options temporary
```

### DHCPv6 Prefix Delegation (PD)

VyOS 1.3 (equuleus) supports DHCPv6-PD ([RFC 3633](#)). DHCPv6 Prefix Delegation is supported by most ISPs who provide native IPv6 for consumers on fixed networks.

**set interfaces wwan <interface> dhcpv6-options pd <id> length <length>**

Some ISPs by default only delegate a /64 prefix. To request for a specific prefix size use this option to request for a bigger delegation for this pd <id>. This value is in the range from 32 - 64 so you could request up to a /32 prefix (if your ISP allows this) down to a /64 delegation.

The default value corresponds to 64.

To request a /56 prefix from your ISP use:

```
set interfaces wwan wwan0 dhcpv6-options pd 0 length 56
```

**set interfaces wwan <interface> dhcpv6-options pd <id> interface <delegatee> address <address>**

Specify the interface address used locally on the interface where the prefix has been delegated to. ID must be a decimal integer.

It will be combined with the delegated prefix and the sla-id to form a complete interface address. The default is to use the EUI-64 address of the interface.

Example: Delegate a /64 prefix to interface eth8 which will use a local address on this router of <prefix>::ffff, as the address 65534 will correspond to ffff in hexadecimal notation.

```
set interfaces wwan wwan0 dhcpv6-options pd 0 interface eth8 address 65534
```

**set interfaces wwan <interface> dhcpv6-options pd <id> interface <delegatee> sla-id <id>**

Specify the identifier value of the site-level aggregator (SLA) on the interface. ID must be a decimal number greater than 0 which fits in the length of SLA IDs (see below).

Example: If ID is 1 and the client is delegated an IPv6 prefix 2001:db8:fff::/48, dhcp6c will combine the two values into a single IPv6 prefix, 2001:db8:fff:1::/64, and will configure the prefix on the specified interface.

```
set interfaces wwan wwan0 dhcpv6-options pd 0 interface eth8 sla-id 1
```

## WirelessModem (WWAN) options

**set interfaces wwan <interface> apn <apn>**

Every WWAN connection requires an APN (Access Point Name) which is used by the client to dial into the ISPs network. This is a mandatory parameter. Contact your Service Provider for correct APN.

## Operation

**show interfaces wwan <interface>**

Show detailed information on given <interface>

```
vyos@vyos:~$ show interfaces wwan wwan0
wwan0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UNKNOWN
↳group default qlen 1000
  link/ether 02:c2:f3:00:01:02 brd ff:ff:ff:ff:ff:ff
  inet 10.155.144.12/30 brd 10.155.144.15 scope global dynamic wwan0
    valid_lft 7012sec preferred_lft 7012sec
  inet6 fe80::c2:f3ff:fe00:0102/64 scope link
    valid_lft forever preferred_lft forever

RX: bytes  packets  errors  dropped  overrun  mcast
    640      2         0        0         0         0
TX: bytes  packets  errors  dropped  carrier  collisions
   3229     16         0        0         0         0
```

**show interfaces wwan <interface> summary**

Show detailed information summary on given <interface>

```
vyos@vyos:~$ show interfaces wwan wwan0 summary
-----
General |          dbus path: /org/freedesktop/ModemManager1/Modem/0
        |          device id: 79f4e9cc2e9fc8d4a3b8c8f6327c2e363170194d
-----
Hardware |          manufacturer: Sierra Wireless, Incorporated
        |          model: MC7710
        |          revision: SWI9200X_03.05.29.03ap r6485 CNSHZ-ED-XP0031
↳2014/12/02 17:53:15
        |          h/w revision: 1.0
        |          supported: gsm-umts, lte
        |          current: gsm-umts, lte
        |          equipment id: 358xxxxxxxxxxx
-----
System   |          device: /sys/devices/pci0000:00/0000:00:13.0/usb3/3-1/3-
↳1.3
        |          drivers: qcserial, qmi_wwan
        |          plugin: Generic
        |          primary port: cdc-wdm0
        |          ports: ttyUSB0 (qcdm), ttyUSB2 (at), cdc-wdm0 (qmi),
↳wwan0 (net)
-----
Numbers |          own: 4917xxxxxxxx
```

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```

-----
Status | lock: sim-pin2
      | unlock retries: sim-pin (3), sim-pin2 (3), sim-puk (10), sim-
->puk2 (10)
      | state: connected
      | power state: on
      | access tech: lte
      | signal quality: 63% (recent)
-----
Modes | supported: allowed: 2g; preferred: none
      | allowed: 3g; preferred: none
      | allowed: 4g; preferred: none
      | allowed: 2g, 3g; preferred: 3g
      | allowed: 2g, 3g; preferred: 2g
      | allowed: 2g, 4g; preferred: 4g
      | allowed: 2g, 4g; preferred: 2g
      | allowed: 3g, 4g; preferred: 3g
      | allowed: 3g, 4g; preferred: 4g
      | allowed: 2g, 3g, 4g; preferred: 4g
      | allowed: 2g, 3g, 4g; preferred: 3g
      | allowed: 2g, 3g, 4g; preferred: 2g
      | current: allowed: 2g, 3g, 4g; preferred: 2g
-----
Bands | supported: egsm, dcs, pcs, utran-1, utran-8, eutran-1,
->eutran-3,
      | eutran-7, eutran-8, eutran-20
      | current: egsm, dcs, pcs, utran-1, utran-8, eutran-1,
->eutran-3,
      | eutran-7, eutran-8, eutran-20
-----
IP | supported: ipv4, ipv6, ipv4v6
-----
3GPP | imei: 358xxxxxxxxxxxx
      | operator id: 26201
      | operator name: Telekom.de
      | registration: home
-----
3GPP EPS | ue mode of operation: ps-1
-----
SIM | dbus path: /org/freedesktop/ModemManager1/SIM/0
-----
Bearer | dbus path: /org/freedesktop/ModemManager1/Bearer/0

```

**show interfaces wwan <interface> capabilities**

Show WWAN module hardware capabilities.

```

vyos@vyos:~$ show interfaces wwan wwan0 capabilities
Max TX channel rate: '500000000'
Max RX channel rate: '1000000000'
Data Service: 'simultaneous-cs-ps'
SIM: 'supported'
Networks: 'gsm, umts, lte'

```

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```
Bands: 'gsm-dcs-1800, gsm-900-extended, gsm-900-primary, gsm-pcs-1900, wcdma-2100,
↪wcdma-900'
LTE bands: '1, 3, 7, 8, 20'
```

#### show interfaces wwan <interface> firmware

Show WWAN module firmware.

```
vyos@vyos:~$ show interfaces wwan wwan0 firmware
Model: MC7710
Boot version: SWI9200X_03.05.29.03bt r6485 CNSHZ-ED-XP0031 2014/12/02 17:33:08
AMSS version: SWI9200X_03.05.29.03ap r6485 CNSHZ-ED-XP0031 2014/12/02 17:53:15
SKU ID: unknown
Package ID: unknown
Carrier ID: 0
Config version: unknown
```

#### show interfaces wwan <interface> imei

Show WWAN module IMEI.

```
vyos@vyos:~$ show interfaces wwan wwan0 imei
ESN: '0'
IMEI: '358xxxxxxxxxxxxx'
MEID: 'unknown'
```

#### show interfaces wwan <interface> imsi

Show WWAN module IMSI.

```
vyos@vyos:~$ show interfaces wwan wwan0 imsi
IMSI: '262xxxxxxxxxxxxx'
```

#### show interfaces wwan <interface> model

Show WWAN module model.

```
vyos@vyos:~$ show interfaces wwan wwan0 model
Model: 'MC7710'
```

#### show interfaces wwan <interface> msisdn

Show WWAN module MSISDN.

```
vyos@vyos:~$ show interfaces wwan wwan0 msisdn
MSISDN: '4917xxxxxxx'
```

#### show interfaces wwan <interface> revision

Show WWAN module hardware revision.

```
vyos@vyos:~$ show interfaces wwan wwan0 revision
Revision: 'SWI9200X_03.05.29.03ap r6485 CNSHZ-ED-XP0031 2014/12/02 17:53:15'
```

#### show interfaces wwan <interface> signal

Show WWAN module signal strength.

```
vyos@vyos:~$ show interfaces wwan wwan0 signal
LTE:
RSSI: '-74 dBm'
RSRQ: '-7 dB'
RSRP: '-100 dBm'
SNR: '13.0 dB'
Radio Interface: 'lte'
Active Band Class: 'eutran-3'
Active Channel: '1300'
```

### show interfaces wwan <interface> sim

Show WWAN module SIM card information.

```
vyos@vyos:~$ show interfaces wwan wwan0 sim
Provisioning applications:
Primary GW: slot '1', application '1'
Primary 1X: session doesn't exist
Secondary GW: session doesn't exist
Secondary 1X: session doesn't exist
Slot [1]:
Card state: 'present'
UPIN state: 'not-initialized'
UPIN retries: '0'
UPUK retries: '0'
Application [1]:
Application type: 'usim (2)'
Application state: 'ready'
Application ID:
A0:00:00:00:87:10:02:FF:49:94:20:89:03:10:00:00
Personalization state: 'ready'
UPIN replaces PIN1: 'no'
PIN1 state: 'disabled'
PIN1 retries: '3'
PUK1 retries: '10'
PIN2 state: 'enabled-not-verified'
PIN2 retries: '3'
PUK2 retries: '10'
```

### Example

The following example is based on a Sierra Wireless MC7710 miniPCIe card (only the form factor in reality it runs UBS) and Deutsche Telekom as ISP. The card is assembled into a *PC Engines APU4*.

```
set interfaces wwan wwan0 apn 'internet.telekom'
set interfaces wwan wwan0 address 'dhcp'
```

## Supported Modules

The following hardware modules have been tested successfully in an *PC Engines APU4* board:

- Sierra Wireless AirPrime MC7304 miniPCIe card (LTE)
- Sierra Wireless AirPrime MC7430 miniPCIe card (LTE)
- Sierra Wireless AirPrime MC7455 miniPCIe card (LTE)
- Sierra Wireless AirPrime MC7710 miniPCIe card (LTE)
- Huawei ME909u-521 miniPCIe card (LTE)
- Huawei ME909s-120 miniPCIe card (LTE)

## Firmware Update

All available WWAN cards have a build in, reprogrammable firmware. Most of the vendors provide a regular update to the firmware used in the baseband chip.

As VyOS makes use of the QMI interface to connect to the WWAN modem cards, also the firmware can be reprogrammed.

To update the firmware, VyOS also ships the *qmi-firmware-update* binary. To upgrade the firmware of an e.g. Sierra Wireless MC7710 module to the firmware provided in the file `9999999_9999999_9200_03.05.14.00_00_generic_000.000_001_SPKG_MC.cwe` use the following command:

```
$ sudo qmi-firmware-update --update -d 1199:68a2 \
  9999999_9999999_9200_03.05.14.00_00_generic_000.000_001_SPKG_MC.cwe
```

## 8.5 Load-balancing

### 8.5.1 WAN load balancing

Outbound traffic can be balanced between two or more outbound interfaces. If a path fails, traffic is balanced across the remaining healthy paths, a recovered path is automatically added back to the routing table and used by the load balancer. The load balancer automatically adds routes for each path to the routing table and balances traffic across the configured interfaces, determined by interface health and weight.

In a minimal configuration, the following must be provided:

- an interface with a nexthop
- one rule with a LAN (inbound-interface) and the WAN (interface).

Let's assume we have two DHCP WAN interfaces and one LAN (eth2):

```
set load-balancing wan interface-health eth0 nexthop 'dhcp'
set load-balancing wan interface-health eth1 nexthop 'dhcp'
set load-balancing wan rule 1 inbound-interface 'eth2'
set load-balancing wan rule 1 interface eth0
set load-balancing wan rule 1 interface eth1
```

---

**Note:** WAN Load Balancing should not be used when dynamic routing protocol is used/needed. This feature creates customized routing tables and firewall rules, that makes it incompatible to use with routing protocols.

---

## Balancing Rules

Interfaces, their weight and the type of traffic to be balanced are defined in numbered balancing rule sets. The rule sets are executed in numerical order against outgoing packets. In case of a match the packet is sent through an interface specified in the matching rule. If a packet doesn't match any rule it is sent by using the system routing table. Rule numbers can't be changed.

Create a load balancing rule, it can be a number between 1 and 9999:

```
vyos@vyos# set load-balancing wan rule 1
Possible completions:
description          Description for this rule
> destination        Destination
exclude              Exclude packets matching this rule from wan load balance
failover             Enable failover for packets matching this rule from wan load
↪ balance
inbound-interface    Inbound interface name (e.g., "eth0") [REQUIRED]
+> interface         Interface name [REQUIRED]
> limit              Enable packet limit for this rule
per-packet-balancing Option to match traffic per-packet instead of the default, per-
↪ flow
protocol             Protocol to match
> source             Source information
```

## Interface weight

Let's expand the example from above and add weight to the interfaces. The bandwidth from eth0 is larger than eth1. Per default, outbound traffic is distributed randomly across available interfaces. Weights can be assigned to interfaces to influence the balancing.

```
set load-balancing wan rule 1 interface eth0 weight 2
set load-balancing wan rule 1 interface eth1 weight 1
```

66% of traffic is routed to eth0, eth1 gets 33% of traffic.

## Rate limit

A packet rate limit can be set for a rule to apply the rule to traffic above or below a specified threshold. To configure the rate limiting use:

```
set load-balancing wan rule <rule> limit <parameter>
```

- **burst:** Number of packets allowed to overshoot the limit within period. Default 5.
- **period:** Time window for rate calculation. Possible values: **second** (one second), **minute** (one minute), **hour** (one hour). Default is second.
- **rate:** Number of packets. Default 5.

- threshold: below or above the specified rate limit.

## Flow and packet-based balancing

Outgoing traffic is balanced in a flow-based manner. A connection tracking table is used to track flows by their source address, destination address and port. Each flow is assigned to an interface according to the defined balancing rules and subsequent packets are sent through the same interface. This has the advantage that packets always arrive in order if links with different speeds are in use.

Packet-based balancing can lead to a better balance across interfaces when out of order packets are no issue. Per-packet-based balancing can be set for a balancing rule with:

```
set load-balancing wan rule <rule> per-packet-balancing
```

## Exclude traffic

To exclude traffic from load balancing, traffic matching an exclude rule is not balanced but routed through the system routing table instead:

```
set load-balancing wan rule <rule> exclude
```

## Health checks

The health of interfaces and paths assigned to the load balancer is periodically checked by sending ICMP packets (ping) to remote destinations, a TTL test or the execution of a user defined script. If an interface fails the health check it is removed from the load balancer's pool of interfaces. To enable health checking for an interface:

```
vyos@vyos# set load-balancing wan interface-health <interface>
Possible completions:
failure-count      Failure count
nexthop            Outbound interface nexthop address. Can be 'dhcp or ip address'
↔ [REQUIRED]
success-count      Success count
+> test           Rule number
```

Specify nexthop on the path to the destination, ipv4-address can be set to dhcp

```
set load-balancing wan interface-health <interface> nexthop <ipv4-address>
```

Set the number of health check failures before an interface is marked as unavailable, range for number is 1 to 10, default 1. Or set the number of successful health checks before an interface is added back to the interface pool, range for number is 1 to 10, default 1.

```
set load-balancing wan interface-health <interface> failure-count <number>
set load-balancing wan interface-health <interface> success-count <number>
```

Each health check is configured in its own test, tests are numbered and processed in numeric order. For multi target health checking multiple tests can be defined:

```
vyos@vyos# set load-balancing wan interface-health eth1 test 0
Possible completions:
resp-time    Ping response time (seconds)
target       Health target address
test-script  Path to user defined script
ttl-limit    Ttl limit (hop count)
type         WLB test type
```

- `resp-time`: the maximum response time for ping in seconds. Range 1...30, default 5
- `target`: the target to be sent ICMP packets to, address can be an IPv4 address or hostname
- `test-script`: A user defined script must return 0 to be considered successful and non-zero to fail. Scripts are located in `/config/scripts`, for different locations the full path needs to be provided
- `ttl-limit`: For the UDP TTL limit test the hop count limit must be specified. The limit must be shorter than the path length, an ICMP time expired message is needed to be returned for a successful test. default 1
- `type`: Specify the type of test. type can be ping, ttl or a user defined script

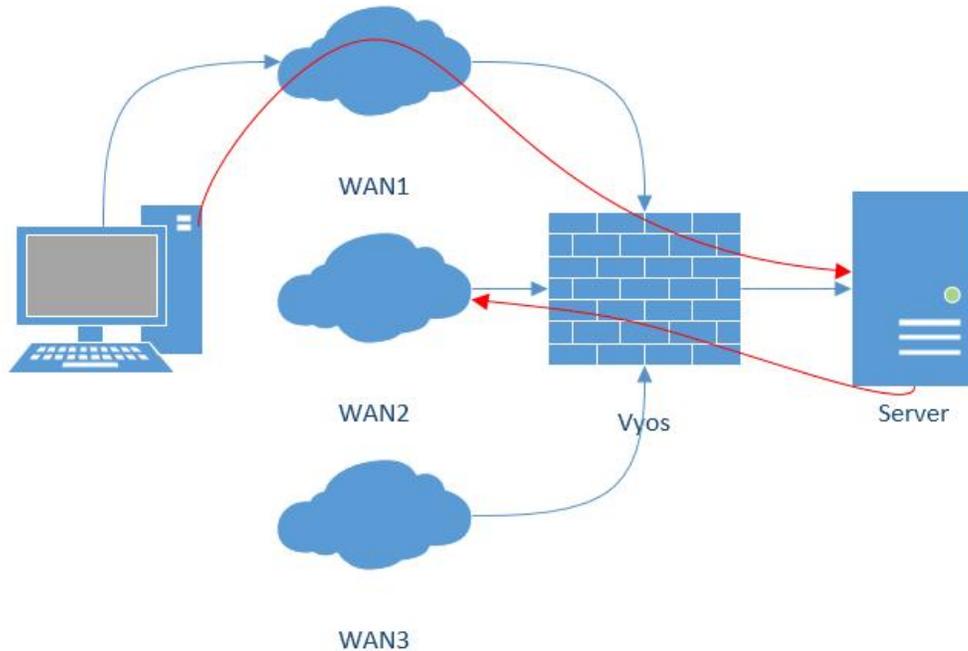
### Source NAT rules

Per default, interfaces used in a load balancing pool replace the source IP of each outgoing packet with its own address to ensure that replies arrive on the same interface. This works through automatically generated source NAT (SNAT) rules, these rules are only applied to balanced traffic. In cases where this behaviour is not desired, the automatic generation of SNAT rules can be disabled:

```
set load-balancing wan disable-source-nat
```

### Sticky Connections

Inbound connections to a WAN interface can be improperly handled when the reply is sent back to the client.



Upon reception of an incoming packet, when a response is sent, it might be desired to ensure that it leaves from the same interface as the inbound one. This can be achieved by enabling sticky connections in the load balancing:

```
set load-balancing wan sticky-connections inbound
```

### Failover

In failover mode, one interface is set to be the primary interface and other interfaces are secondary or spare. Instead of balancing traffic across all healthy interfaces, only the primary interface is used and in case of failure, a secondary interface selected from the pool of available interfaces takes over. The primary interface is selected based on its weight and health, others become secondary interfaces. Secondary interfaces to take over a failed primary interface are chosen from the load balancer's interface pool, depending on their weight and health. Interface roles can also be selected based on rule order by including interfaces in balancing rules and ordering those rules accordingly. To put the load balancer in failover mode, create a failover rule:

```
set load-balancing wan rule <number> failover
```

Because existing sessions do not automatically fail over to a new path, the session table can be flushed on each connection state change:

```
set load-balancing wan flush-connections
```

**Warning:** Flushing the session table will cause other connections to fall back from flow-based to packet-based balancing until each flow is reestablished.

## Script execution

A script can be run when an interface state change occurs. Scripts are run from /config/scripts, for a different location specify the full path:

```
set load-balancing wan hook script-name
```

Two environment variables are available:

- WLB\_INTERFACE\_NAME=[interfacename]: Interface to be monitored
- WLB\_INTERFACE\_STATE=[ACTIVE|FAILED]: Interface state

**Warning:** Blocking call with no timeout. System will become unresponsive if script does not return!

## Handling and monitoring

Show WAN load balancer information including test types and targets. A character at the start of each line depicts the state of the test

- + successful
- - failed
- a blank indicates that no test has been carried out

```
vyos@vyos:~$ show wan-load-balance
Interface: eth0
Status: failed
Last Status Change: Tue Jun 11 20:12:19 2019
-Test: ping Target:
  Last Interface Success: 55s
  Last Interface Failure: 0s
  # Interface Failure(s): 5

Interface: eth1
Status: active
Last Status Change: Tue Jun 11 20:06:42 2019
+Test: ping Target:
  Last Interface Success: 0s
  Last Interface Failure: 6m26s
  # Interface Failure(s): 0
```

Show connection data of load balanced traffic:

```
vyos@vyos:~$ show wan-load-balance connection
conntrack v1.4.2 (conntrack-tools): 3 flow entries have been shown.
Type   State      Src                Dst                Packets Bytes
tcp    TIME_WAIT  10.1.1.13:38040    203.0.113.2:80     203.0.113.2 192.
↪168.188.71
udp    10.1.1.13:41891    198.51.100.3:53    198.51.100.3 192.
↪168.188.71
udp    10.1.1.13:55437    198.51.100.3:53    198.51.100.3 192.
↪168.188.71
```

## Restart

```
restart wan-load-balance
```

## 8.5.2 Reverse-proxy

VyOS reverse-proxy is balancer and proxy server that provides high-availability, load balancing and proxying for TCP (level 4) and HTTP-based (level 7) applications.

### Configuration

Service configuration is responsible for binding to a specific port, while the backend configuration determines the type of load balancing to be applied and specifies the real servers to be utilized.

### Service

```
set load-balancing reverse-proxy service <name> listen-address <address>
```

Set service to bind on IP address, by default listen on any IPv4 and IPv6

```
set load-balancing reverse-proxy service <name> port <port>
```

Create service <name> to listen on <port>

```
set load-balancing reverse-proxy service <name> mode <tcp|http>
```

Configure service <name> mode TCP or HTTP

```
set load-balancing reverse-proxy service <name> backend <name>
```

Configure service <name> to use the backend <name>

```
set load-balancing reverse-proxy service <name> ssl certificate <name>
```

Set SSL certificate <name> for service <name>

### Rules

Rules allow to control and route incoming traffic to specific backend based on predefined conditions. Rules allow to define matching criteria and perform action accordingly.

```
set load-balancing reverse-proxy service <name> rule <rule> domain-name <name>
```

Match domain name

```
set load-balancing reverse-proxy service <name> rule <rule> ssl <sni>
```

**SSL match Server Name Indication (SNI) option:**

- req-ssl-sni SSL Server Name Indication (SNI) request match
- ssl-fc-sni SSL frontend connection Server Name Indication match
- ssl-fc-sni-end SSL frontend match end of connection Server Name

Indication

```
set load-balancing reverse-proxy service <name> rule <rule> url-path <match> <url>
```

Allows to define URL path matching rules for a specific service.

With this command, you can specify how the URL path should be matched against incoming requests.

**The available options for <match> are:**

- **begin** Matches the beginning of the URL path
- **end** Matches the end of the URL path.
- **exact** Requires an exactly match of the URL path

**set load-balancing reverse-proxy service <name> rule <rule> set backend <name>**

Assign a specific backend to a rule

**set load-balancing reverse-proxy service <name> rule <rule> redirect-location <url>**

Redirect URL to a new location

## Backend

**set load-balancing reverse-proxy backend <name> balance <balance>**

Load-balancing algorithms to be used for distributed requests among the available servers

**Balance algorithms:**

- **source-address** Distributes requests based on the source IP address of the client
- **round-robin** Distributes requests in a circular manner, sequentially sending each request to the next server in line
- **least-connection** Distributes requests to the server with the fewest active connections

**set load-balancing reverse-proxy backend <name> mode <mode>**

Configure backend <name> mode TCP or HTTP

**set load-balancing reverse-proxy backend <name> parameters http-check**

Enable layer 7 HTTP health check

**set load-balancing reverse-proxy backend <name> server <name> address <x.x.x.x>**

Set the address of the backend server to which the incoming traffic will be forwarded

**set load-balancing reverse-proxy backend <name> server <name> port <port>**

Set the address of the backend port

**set load-balancing reverse-proxy backend <name> server <name> check**

Active health check backend server

**set load-balancing reverse-proxy backend <name> server <name> send-proxy**

Send a Proxy Protocol version 1 header (text format)

**set load-balancing reverse-proxy backend <name> server <name> send-proxy-v2**

Send a Proxy Protocol version 2 header (binary format)

**set load-balancing reverse-proxy backend <name> ssl ca-certificate <ca-certificate>**

Configure requests to the backend server to use SSL encryption and authenticate backend against <ca-certificate>

**set load-balancing reverse-proxy backend <name> ssl no-verify**

Configure requests to the backend server to use SSL encryption without validating server certificate

## HTTP health check

For web application providing information about their state HTTP health checks can be used to determine their availability.

**set load-balancing reverse-proxy backend <name> http-check**

Enables HTTP health checks using OPTION HTTP requests against '/' and expecting a successful response code in the 200-399 range.

**set load-balancing reverse-proxy backend <name> http-check method <method>**

Sets the HTTP method to be used, can be either: option, get, post, put

**set load-balancing reverse-proxy backend <name> http-check uri <path>**

Sets the endpoint to be used for health checks

**set load-balancing reverse-proxy backend <name> http-check expect <condition>**

Sets the expected result condition for considering a server healthy. Some possible examples are:

- **status 200** Expecting a 200 response code
- **status 200-399** Expecting a non-failure response code
- **string success** Expecting the string *success* in the response body

## Global

Global parameters

**set load-balancing reverse-proxy global-parameters max-connections <num>**

Limit maximum number of connections

**set load-balancing reverse-proxy global-parameters ssl-bind-ciphers <ciphers>**

Limit allowed cipher algorithms used during SSL/TLS handshake

**set load-balancing reverse-proxy global-parameters tls-version-min <version>**

Specify the minimum required TLS version 1.2 or 1.3

## Redirect HTTP to HTTPS

Configure the load-balancing reverse-proxy service for HTTP.

This configuration listen on port 80 and redirect incoming requests to HTTPS:

```
set load-balancing reverse-proxy service http port '80'
set load-balancing reverse-proxy service http redirect-http-to-https
```

The name of the service can be different, in this example it is only for convenience.

## Examples

### Level 4 balancing

This configuration enables the TCP reverse proxy for the “my-tcp-api” service. Incoming TCP connections on port 8888 will be load balanced across the backend servers (srv01 and srv02) using the round-robin load-balancing algorithm.

```
set load-balancing reverse-proxy service my-tcp-api backend 'bk-01'
set load-balancing reverse-proxy service my-tcp-api mode 'tcp'
set load-balancing reverse-proxy service my-tcp-api port '8888'

set load-balancing reverse-proxy backend bk-01 balance 'round-robin'
set load-balancing reverse-proxy backend bk-01 mode 'tcp'

set load-balancing reverse-proxy backend bk-01 server srv01 address '192.0.2.11'
set load-balancing reverse-proxy backend bk-01 server srv01 port '8881'
set load-balancing reverse-proxy backend bk-01 server srv02 address '192.0.2.12'
set load-balancing reverse-proxy backend bk-01 server srv02 port '8882'
```

### Balancing based on domain name

The following configuration demonstrates how to use VyOS to achieve load balancing based on the domain name.

The HTTP service listen on TCP port 80.

Rule 10 matches requests with the domain name node1.example.com forwards to the backend bk-api-01

Rule 20 matches requests with the domain name node2.example.com forwards to the backend bk-api-02

```
set load-balancing reverse-proxy service http description 'bind app listen on 443 port'
set load-balancing reverse-proxy service http mode 'tcp'
set load-balancing reverse-proxy service http port '80'

set load-balancing reverse-proxy service http rule 10 domain-name 'node1.example.com'
set load-balancing reverse-proxy service http rule 10 set backend 'bk-api-01'
set load-balancing reverse-proxy service http rule 20 domain-name 'node2.example.com'
set load-balancing reverse-proxy service http rule 20 set backend 'bk-api-02'

set load-balancing reverse-proxy backend bk-api-01 description 'My API-1'
set load-balancing reverse-proxy backend bk-api-01 mode 'tcp'
set load-balancing reverse-proxy backend bk-api-01 server api01 address '127.0.0.1'
set load-balancing reverse-proxy backend bk-api-01 server api01 port '4431'
set load-balancing reverse-proxy backend bk-api-02 description 'My API-2'
set load-balancing reverse-proxy backend bk-api-02 mode 'tcp'
set load-balancing reverse-proxy backend bk-api-02 server api01 address '127.0.0.2'
set load-balancing reverse-proxy backend bk-api-02 server api01 port '4432'
```

## Terminate SSL

The following configuration terminates SSL on the router.

The `http` service is listens on port 80 and force redirects from HTTP to HTTPS.

The `https` service listens on port 443 with backend `bk-default` to handle HTTPS traffic. It uses certificate named `cert` for SSL termination.

Rule 10 matches requests with the exact URL path `/.well-known/xxx` and redirects to location `/certs/`.

Rule 20 matches requests with URL paths ending in `/mail` or exact path `/email/bar` redirect to location `/postfix/`.

Additional global parameters are set, including the maximum number connection limit of 4000 and a minimum TLS version of 1.3.

```
set load-balancing reverse-proxy service http description 'Force redirect to HTTPS'
set load-balancing reverse-proxy service http port '80'
set load-balancing reverse-proxy service http redirect-http-to-https

set load-balancing reverse-proxy service https backend 'bk-default'
set load-balancing reverse-proxy service https description 'listen on 443 port'
set load-balancing reverse-proxy service https mode 'http'
set load-balancing reverse-proxy service https port '443'
set load-balancing reverse-proxy service https ssl certificate 'cert'

set load-balancing reverse-proxy service https rule 10 url-path exact '/.well-known/xxx'
set load-balancing reverse-proxy service https rule 10 set redirect-location '/certs/'
set load-balancing reverse-proxy service https rule 20 url-path end '/mail'
set load-balancing reverse-proxy service https rule 20 url-path exact '/email/bar'
set load-balancing reverse-proxy service https rule 20 set redirect-location '/postfix/'

set load-balancing reverse-proxy backend bk-default description 'Default backend'
set load-balancing reverse-proxy backend bk-default mode 'http'
set load-balancing reverse-proxy backend bk-default server sr01 address '192.0.2.23'
set load-balancing reverse-proxy backend bk-default server sr01 port '80'

set load-balancing reverse-proxy global-parameters max-connections '4000'
set load-balancing reverse-proxy global-parameters tls-version-min '1.3'
```

## SSL Bridging

The following configuration terminates incoming HTTPS traffic on the router, then re-encrypts the traffic and sends to the backend server via HTTPS. This is useful if encryption is required for both legs, but you do not want to install publicly trusted certificates on each backend server.

Backend service certificates are checked against the certificate authority specified in the configuration, which could be an internal CA.

The `https` service listens on port 443 with backend `bk-bridge-ssl` to handle HTTPS traffic. It uses certificate named `cert` for SSL termination.

The `bk-bridge-ssl` backend connects to `sr01` server on port 443 via HTTPS and checks backend server has a valid certificate trusted by CA `cacert`

```

set load-balancing reverse-proxy service https backend 'bk-bridge-ssl'
set load-balancing reverse-proxy service https description 'listen on 443 port'
set load-balancing reverse-proxy service https mode 'http'
set load-balancing reverse-proxy service https port '443'
set load-balancing reverse-proxy service https ssl certificate 'cert'

set load-balancing reverse-proxy backend bk-bridge-ssl description 'SSL backend'
set load-balancing reverse-proxy backend bk-bridge-ssl mode 'http'
set load-balancing reverse-proxy backend bk-bridge-ssl ssl ca-certificate 'cacert'
set load-balancing reverse-proxy backend bk-bridge-ssl server sr01 address '192.0.2.23'
set load-balancing reverse-proxy backend bk-bridge-ssl server sr01 port '443'

```

## Balancing with HTTP health checks

This configuration enables HTTP health checks on backend servers.

```

set load-balancing reverse-proxy service my-tcp-api backend 'bk-01'
set load-balancing reverse-proxy service my-tcp-api mode 'tcp'
set load-balancing reverse-proxy service my-tcp-api port '8888'

set load-balancing reverse-proxy backend bk-01 balance 'round-robin'
set load-balancing reverse-proxy backend bk-01 mode 'tcp'

set load-balancing reverse-proxy backend bk-01 http-check method 'get'
set load-balancing reverse-proxy backend bk-01 http-check uri '/health'
set load-balancing reverse-proxy backend bk-01 http-check expect 'status 200'

set load-balancing reverse-proxy backend bk-01 server srv01 address '192.0.2.11'
set load-balancing reverse-proxy backend bk-01 server srv01 port '8881'
set load-balancing reverse-proxy backend bk-01 server srv01 check
set load-balancing reverse-proxy backend bk-01 server srv02 address '192.0.2.12'
set load-balancing reverse-proxy backend bk-01 server srv02 port '8882'
set load-balancing reverse-proxy backend bk-01 server srv02 check

```

## 8.6 NAT

### 8.6.1 NAT44

NAT (Network Address Translation) is a common method of remapping one IP address space into another by modifying network address information in the IP header of packets while they are in transit across a traffic routing device. The technique was originally used as a shortcut to avoid the need to readdress every host when a network was moved. It has become a popular and essential tool in conserving global address space in the face of IPv4 address exhaustion. One Internet-routable IP address of a NAT gateway can be used for an entire private network.

IP masquerading is a technique that hides an entire IP address space, usually consisting of private IP addresses, behind a single IP address in another, usually public address space. The hidden addresses are changed into a single (public) IP address as the source address of the outgoing IP packets so they appear as originating not from the hidden host but from the routing device itself. Because of the popularity of this technique to conserve IPv4 address space, the term NAT has become virtually synonymous with IP masquerading.

As network address translation modifies the IP address information in packets, NAT implementations may vary in their specific behavior in various addressing cases and their effect on network traffic. The specifics of NAT behavior are not commonly documented by vendors of equipment containing NAT implementations.

The computers on an internal network can use any of the addresses set aside by the IANA (Internet Assigned Numbers Authority) for private addressing (see [RFC 1918](#)). These reserved IP addresses are not in use on the Internet, so an external machine will not directly route to them. The following addresses are reserved for private use:

- 10.0.0.0 to 10.255.255.255 (CIDR: 10.0.0.0/8)
- 172.16.0.0 to 172.31.255.255 (CIDR: 172.16.0.0/12)
- 192.168.0.0 to 192.168.255.255 (CIDR: 192.168.0.0/16)

If an ISP deploys a CGN (Carrier-grade NAT), and uses [RFC 1918](#) address space to number customer gateways, the risk of address collision, and therefore routing failures, arises when the customer network already uses an [RFC 1918](#) address space.

This prompted some ISPs to develop a policy within the ARIN (American Registry for Internet Numbers) to allocate new private address space for CGNs, but ARIN deferred to the IETF before implementing the policy indicating that the matter was not a typical allocation issue but a reservation of addresses for technical purposes (per [RFC 2860](#)).

IETF published [RFC 6598](#), detailing a shared address space for use in ISP CGN deployments that can handle the same network prefixes occurring both on inbound and outbound interfaces. ARIN returned address space to the IANA for this allocation.

The allocated address block is 100.64.0.0/10.

Devices evaluating whether an IPv4 address is public must be updated to recognize the new address space. Allocating more private IPv4 address space for NAT devices might prolong the transition to IPv6.

## Overview

### Different NAT Types

#### SNAT

SNAT (Source Network Address Translation) is the most common form of NAT and is typically referred to simply as NAT. To be more correct, what most people refer to as NAT is actually the process of PAT (Port Address Translation), or NAT overload. SNAT is typically used by internal users/private hosts to access the Internet - the source address is translated and thus kept private.

#### DNAT

DNAT (Destination Network Address Translation) changes the destination address of packets passing through the router, while *SNAT* changes the source address of packets. DNAT is typically used when an external (public) host needs to initiate a session with an internal (private) host. A customer needs to access a private service behind the routers public IP. A connection is established with the routers public IP address on a well known port and thus all traffic for this port is rewritten to address the internal (private) host.

## Bidirectional NAT

This is a common scenario where both *SNAT* and *DNAT* are configured at the same time. It's commonly used when internal (private) hosts need to establish a connection with external resources and external systems need to access internal (private) resources.

## NAT, Routing, Firewall Interaction

There is a very nice picture/explanation in the Vyatta documentation which should be rewritten here.

## NAT Ruleset

NAT is configured entirely on a series of so called *rules*. Rules are numbered and evaluated by the underlying OS in numerical order! The rule numbers can be changed by utilizing the `rename` and `copy` commands.

---

**Note:** Changes to the NAT system only affect newly established connections. Already established connections are not affected.

---



---

**Hint:** When designing your NAT ruleset leave some space between consecutive rules for later extension. Your ruleset could start with numbers 10, 20, 30. You thus can later extend the ruleset and place new rules between existing ones.

---

Rules will be created for both *SNAT* and *DNAT*.

For *Bidirectional NAT* a rule for both *SNAT* and *DNAT* needs to be created.

## Traffic Filters

Traffic Filters are used to control which packets will have the defined NAT rules applied. Five different filters can be applied within a NAT rule.

- **outbound-interface** - applicable only to *SNAT*. It configures the interface which is used for the outside traffic that this translation rule applies to. Interface groups, inverted selection and wildcard, are also supported.

Examples:

```
set nat source rule 20 outbound-interface name eth0
set nat source rule 30 outbound-interface name bond1*
set nat source rule 20 outbound-interface name !vtun2
set nat source rule 20 outbound-interface group GROUP1
set nat source rule 20 outbound-interface group !GROUP2
```

- **inbound-interface** - applicable only to *DNAT*. It configures the interface which is used for the inside traffic the translation rule applies to. Interface groups, inverted selection and wildcard, are also supported.

Example:

```
set nat destination rule 20 inbound-interface name eth0
set nat destination rule 30 inbound-interface name bond1*
set nat destination rule 20 inbound-interface name !vtun2
```

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```
set nat destination rule 20 inbound-interface group GROUP1
set nat destination rule 20 inbound-interface group !GROUP2
```

- **protocol** - specify which types of protocols this translation rule applies to. Only packets matching the specified protocol are NATed. By default this applies to *all* protocols.

Example:

- Set SNAT rule 20 to only NAT TCP and UDP packets
- Set DNAT rule 20 to only NAT UDP packets

```
set nat source rule 20 protocol tcp_udp
set nat destination rule 20 protocol udp
```

- **source** - specifies which packets the NAT translation rule applies to based on the packets source IP address and/or source port. Only matching packets are considered for NAT.

Example:

- Set SNAT rule 20 to only NAT packets arriving from the 192.0.2.0/24 network
- Set SNAT rule 30 to only NAT packets arriving from the 203.0.113.0/24 network with a source port of 80 and 443

```
set nat source rule 20 source address 192.0.2.0/24
set nat source rule 30 source address 203.0.113.0/24
set nat source rule 30 source port 80,443
```

- **destination** - specify which packets the translation will be applied to, only based on the destination address and/or port number configured.

---

**Note:** If no destination is specified the rule will match on any destination address and port.

---

Example:

- Configure SNAT rule (40) to only NAT packets with a destination address of 192.0.2.1.

```
set nat source rule 40 destination address 192.0.2.1
```

## Address Conversion

Every NAT rule has a translation command defined. The address defined for the translation is the address used when the address information in a packet is replaced.

## Source Address

For *SNAT* rules the packets source address will be replaced with the address specified in the translation command. A port translation can also be specified and is part of the translation address.

---

**Note:** The translation address must be set to one of the available addresses on the configured *outbound-interface* or it must be set to *masquerade* which will use the primary IP address of the *outbound-interface* as its translation address.

---

---

**Note:** When using NAT for a large number of host systems it recommended that a minimum of 1 IP address is used to NAT every 256 private host systems. This is due to the limit of 65,000 port numbers available for unique translations and a reserving an average of 200-300 sessions per host system.

---

Example:

- Define a discrete source IP address of 100.64.0.1 for SNAT rule 20
- Use address *masquerade* (the interfaces primary address) on rule 30
- For a large amount of private machines behind the NAT your address pool might to be bigger. Use any address in the range 100.64.0.10 - 100.64.0.20 on SNAT rule 40 when doing the translation

```
set nat source rule 20 translation address 100.64.0.1
set nat source rule 30 translation address 'masquerade'
set nat source rule 40 translation address 100.64.0.10-100.64.0.20
```

## Destination Address

For *DNAT* rules the packets destination address will be replaced by the specified address in the *translation address* command.

Example:

- DNAT rule 10 replaces the destination address of an inbound packet with 192.0.2.10

```
set nat destination rule 10 translation address 192.0.2.10
```

Also, in *DNAT*, redirection to localhost is supported. The *redirect* statement is a special form of *dnat* which always translates the destination address to the local host's one.

Example of redirection:

```
set nat destination rule 10 translation redirect port 22
```

## NAT Load Balance

Advanced configuration can be used in order to apply source or destination NAT, and within a single rule, be able to define multiple translated addresses, so NAT balances the translations among them.

NAT Load Balance uses an algorithm that generates a hash and based on it, then it applies corresponding translation. This hash can be generated randomly, or can use data from the ip header: source-address, destination-address, source-port and/or destination-port. By default, it will generate the hash randomly.

When defining the translated address, called **backends**, a **weight** must be configured. This lets the user define load balance distribution according to their needs. The sum of all the weights defined for the backends should be equal to 100. In other words, the weight defined for the backend is the percentage of the connections that will receive such backend.

```
set nat [source | destination] rule <rule> load-balance hash [source-address |
destination-address | source-port | destination-port | random]
```

```
set nat [source | destination] rule <rule> load-balance backend <x.x.x.x> weight <1-100>
```

## Configuration Examples

To setup SNAT, we need to know:

- The internal IP addresses we want to translate
- The outgoing interface to perform the translation on
- The external IP address to translate to

In the example used for the Quick Start configuration above, we demonstrate the following configuration:

```
set nat source rule 100 outbound-interface name 'eth0'
set nat source rule 100 source address '192.168.0.0/24'
set nat source rule 100 translation address 'masquerade'
```

Which generates the following configuration:

```
rule 100 {
  outbound-interface {
    name eth0
  }
  source {
    address 192.168.0.0/24
  }
  translation {
    address masquerade
  }
}
```

In this example, we use **masquerade** as the translation address instead of an IP address. The **masquerade** target is effectively an alias to say “use whatever IP address is on the outgoing interface”, rather than a statically configured IP address. This is useful if you use DHCP for your outgoing interface and do not know what the external address will be.

When using NAT for a large number of host systems it is recommended that a minimum of 1 IP address is used to NAT every 256 host systems. This is due to the limit of 65,000 port numbers available for unique translations and a reserving an average of 200-300 sessions per host system.

Example: For an ~8,000 host network a source NAT pool of 32 IP addresses is recommended.

A pool of addresses can be defined by using a hyphen between two IP addresses:

```
set nat source rule 100 translation address '203.0.113.32-203.0.113.63'
```

## Avoiding “leaky” NAT

Linux netfilter will not NAT traffic marked as INVALID. This often confuses people into thinking that Linux (or specifically VyOS) has a broken NAT implementation because non-NATed traffic is seen leaving an external interface. This is actually working as intended, and a packet capture of the “leaky” traffic should reveal that the traffic is either an additional TCP “RST”, “FIN,ACK”, or “RST,ACK” sent by client systems after Linux netfilter considers the connection closed. The most common is the additional TCP RST some host implementations send after terminating a connection (which is implementation-specific).

In other words, connection tracking has already observed the connection be closed and has transition the flow to INVALID to prevent attacks from attempting to reuse the connection.

You can avoid the “leaky” behavior by using a firewall policy that drops “invalid” state packets.

Having control over the matching of INVALID state traffic, e.g. the ability to selectively log, is an important troubleshooting tool for observing broken protocol behavior. For this reason, VyOS does not globally drop invalid state traffic, instead allowing the operator to make the determination on how the traffic is handled.

## Hairpin NAT/NAT Reflection

A typical problem with using NAT and hosting public servers is the ability for internal systems to reach an internal server using it’s external IP address. The solution to this is usually the use of split-DNS to correctly point host systems to the internal address when requests are made internally. Because many smaller networks lack DNS infrastructure, a work-around is commonly deployed to facilitate the traffic by NATing the request from internal hosts to the source address of the internal interface on the firewall.

This technique is commonly referred to as NAT Reflection or Hairpin NAT.

Example:

- Redirect Microsoft RDP traffic from the outside (WAN, external) world via *DNAT* in rule 100 to the internal, private host 192.0.2.40.
- Redirect Microsoft RDP traffic from the internal (LAN, private) network via *DNAT* in rule 110 to the internal, private host 192.0.2.40. We also need a *SNAT* rule 110 for the reverse path of the traffic. The internal network 192.0.2.0/24 is reachable via interface *eth0.10*.

```
set nat destination rule 100 description 'Regular destination NAT from external'
set nat destination rule 100 destination port '3389'
set nat destination rule 100 inbound-interface name 'pppoe0'
set nat destination rule 100 protocol 'tcp'
set nat destination rule 100 translation address '192.0.2.40'

set nat destination rule 110 description 'NAT Reflection: INSIDE'
set nat destination rule 110 destination port '3389'
set nat destination rule 110 inbound-interface name 'eth0.10'
set nat destination rule 110 protocol 'tcp'
set nat destination rule 110 translation address '192.0.2.40'

set nat source rule 110 description 'NAT Reflection: INSIDE'
set nat source rule 110 destination address '192.0.2.0/24'
```

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```
set nat source rule 110 outbound-interface name 'eth0.10'  
set nat source rule 110 protocol 'tcp'  
set nat source rule 110 source address '192.0.2.0/24'  
set nat source rule 110 translation address 'masquerade'
```

Which results in a configuration of:

```
vyos@vyos# show nat  
destination {  
  rule 100 {  
    description "Regular destination NAT from external"  
    destination {  
      port 3389  
    }  
    inbound-interface {  
      name pppoe0  
    }  
    protocol tcp  
    translation {  
      address 192.0.2.40  
    }  
  }  
  rule 110 {  
    description "NAT Reflection: INSIDE"  
    destination {  
      port 3389  
    }  
    inbound-interface {  
      name eth0.10  
    }  
    protocol tcp  
    translation {  
      address 192.0.2.40  
    }  
  }  
}  
source {  
  rule 110 {  
    description "NAT Reflection: INSIDE"  
    destination {  
      address 192.0.2.0/24  
    }  
    outbound-interface {  
      name eth0.10  
    }  
    protocol tcp  
    source {  
      address 192.0.2.0/24  
    }  
    translation {  
      address masquerade  
    }  
  }  
}
```

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```
}
}
```

## Destination NAT

DNAT is typically referred to as a **Port Forward**. When using VyOS as a NAT router and firewall, a common configuration task is to redirect incoming traffic to a system behind the firewall.

In this example, we will be using the example Quick Start configuration above as a starting point.

To setup a destination NAT rule we need to gather:

- The interface traffic will be coming in on;
- The protocol and port we wish to forward;
- The IP address of the internal system we wish to forward traffic to.

In our example, we will be forwarding web server traffic to an internal web server on 192.168.0.100. HTTP traffic makes use of the TCP protocol on port 80. For other common port numbers, see: [https://en.wikipedia.org/wiki/List\\_of\\_TCP\\_and\\_UDP\\_port\\_numbers](https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers)

Our configuration commands would be:

```
set nat destination rule 10 description 'Port Forward: HTTP to 192.168.0.100'
set nat destination rule 10 destination port '80'
set nat destination rule 10 inbound-interface name 'eth0'
set nat destination rule 10 protocol 'tcp'
set nat destination rule 10 translation address '192.168.0.100'
```

Which would generate the following NAT destination configuration:

```
nat {
  destination {
    rule 10 {
      description "Port Forward: HTTP to 192.168.0.100"
      destination {
        port 80
      }
      inbound-interface {
        name eth0
      }
      protocol tcp
      translation {
        address 192.168.0.100
      }
    }
  }
}
```

**Note:** If forwarding traffic to a different port than it is arriving on, you may also configure the translation port using `set nat destination rule [n] translation port`.

This establishes our Port Forward rule, but if we created a firewall policy it will likely block the traffic.

## Firewall rules for Destination NAT

It is important to note that when creating firewall rules, the DNAT translation occurs **before** traffic traverses the firewall. In other words, the destination address has already been translated to 192.168.0.100.

So in our firewall ruleset, we want to allow traffic which previously matched a destination nat rule. In order to avoid creating many rules, one for each destination nat rule, we can accept all **'dnat'** connections with one simple rule, using `connection-status` matcher:

```
set firewall ipv4 forward filter rule 10 action accept
set firewall ipv4 forward filter rule 10 connection-status nat destination
set firewall ipv4 forward filter rule 10 state new enable
```

This would generate the following configuration:

```
ipv4 {
  forward {
    filter {
      rule 10 {
        action accept
        connection-status {
          nat destination
        }
        state {
          new enable
        }
      }
    }
  }
}
```

## 1-to-1 NAT

Another term often used for DNAT is **1-to-1 NAT**. For a 1-to-1 NAT configuration, both DNAT and SNAT are used to NAT all traffic from an external IP address to an internal IP address and vice-versa.

Typically, a 1-to-1 NAT rule omits the destination port (all ports) and replaces the protocol with either **all** or **ip**.

Then a corresponding SNAT rule is created to NAT outgoing traffic for the internal IP to a reserved external IP. This dedicates an external IP address to an internal IP address and is useful for protocols which don't have the notion of ports, such as GRE.

Here's an extract of a simple 1-to-1 NAT configuration with one internal and one external interface:

```
set interfaces ethernet eth0 address '192.168.1.1/24'
set interfaces ethernet eth0 description 'Inside interface'
set interfaces ethernet eth1 address '192.0.2.30/24'
set interfaces ethernet eth1 description 'Outside interface'
set nat destination rule 2000 description '1-to-1 NAT example'
set nat destination rule 2000 destination address '192.0.2.30'
set nat destination rule 2000 inbound-interface name 'eth1'
set nat destination rule 2000 translation address '192.168.1.10'
set nat source rule 2000 description '1-to-1 NAT example'
set nat source rule 2000 outbound-interface name 'eth1'
```

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```
set nat source rule 2000 source address '192.168.1.10'  
set nat source rule 2000 translation address '192.0.2.30'
```

Firewall rules are written as normal, using the internal IP address as the source of outbound rules and the destination of inbound rules.

## NAT before VPN

Some application service providers (ASPs) operate a VPN gateway to provide access to their internal resources, and require that a connecting organisation translate all traffic to the service provider network to a source address provided by the ASP.

## Load Balance

Here we provide two examples on how to apply NAT Load Balance.

First scenario: apply destination NAT for all HTTP traffic coming through interface eth0, and use 4 backends. First backend should receive 30% of the request, second backend should get 20%, third 15% and the fourth 35%. We will use source and destination address for hash generation.

```
set nat destination rule 10 inbound-interface name eth0  
set nat destination rule 10 protocol tcp  
set nat destination rule 10 destination port 80  
set nat destination rule 10 load-balance hash source-address  
set nat destination rule 10 load-balance hash destination-address  
set nat destination rule 10 load-balance backend 198.51.100.101 weight 30  
set nat destination rule 10 load-balance backend 198.51.100.102 weight 20  
set nat destination rule 10 load-balance backend 198.51.100.103 weight 15  
set nat destination rule 10 load-balance backend 198.51.100.104 weight 35
```

Second scenario: apply source NAT for all outgoing connections from LAN 10.0.0.0/8, using 3 public addresses and equal distribution. We will generate the hash randomly.

```
set nat source rule 10 outbound-interface name eth0  
set nat source rule 10 source address 10.0.0.0/8  
set nat source rule 10 load-balance hash random  
set nat source rule 10 load-balance backend 192.0.2.251 weight 33  
set nat source rule 10 load-balance backend 192.0.2.252 weight 33  
set nat source rule 10 load-balance backend 192.0.2.253 weight 34
```

## Example Network

Here's one example of a network environment for an ASP. The ASP requests that all connections from this company should come from 172.29.41.89 - an address that is assigned by the ASP and not in use at the customer site.

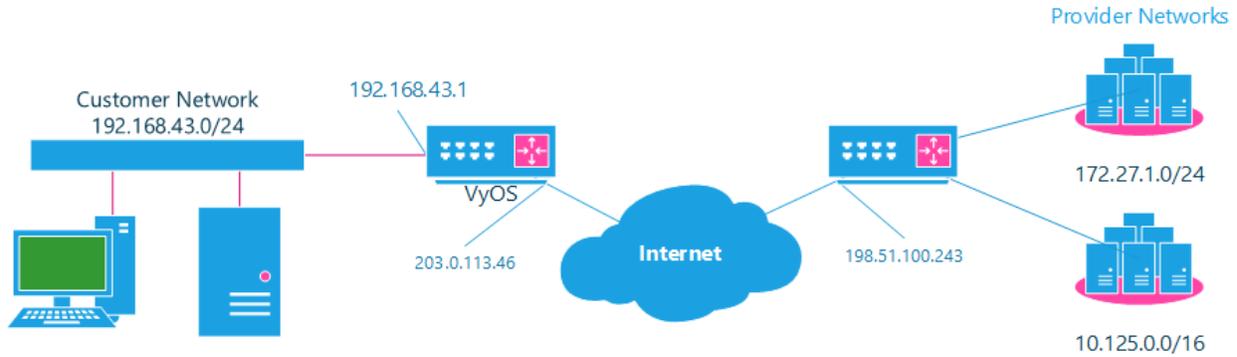


Fig. 1: NAT before VPN Topology

## Configuration

The required configuration can be broken down into 4 major pieces:

- A dummy interface for the provider-assigned IP;
- NAT (specifically, Source NAT);
- IPSec IKE and ESP Groups;
- IPSec VPN tunnels.

### Dummy interface

The dummy interface allows us to have an equivalent of the Cisco IOS Loopback interface - a router-internal interface we can use for IP addresses the router must know about, but which are not actually assigned to a real network.

We only need a single step for this interface:

```
set interfaces dummy dum0 address '172.29.41.89/32'
```

### NAT Configuration

```
set nat source rule 110 description 'Internal to ASP'
set nat source rule 110 destination address '172.27.1.0/24'
set nat source rule 110 source address '192.168.43.0/24'
set nat source rule 110 translation address '172.29.41.89'
set nat source rule 120 description 'Internal to ASP'
set nat source rule 120 destination address '10.125.0.0/16'
set nat source rule 120 source address '192.168.43.0/24'
set nat source rule 120 translation address '172.29.41.89'
```

## IPSec IKE and ESP

The ASP has documented their IPSec requirements:

- IKE Phase:
  - aes256 Encryption
  - sha256 Hashes
- ESP Phase:
  - aes256 Encryption
  - sha256 Hashes
  - DH Group 14

Additionally, we want to use VPNs only on our eth1 interface (the external interface in the image above)

```
set vpn ipsec ike-group my-ike key-exchange 'ikev1'
set vpn ipsec ike-group my-ike lifetime '7800'
set vpn ipsec ike-group my-ike proposal 1 dh-group '14'
set vpn ipsec ike-group my-ike proposal 1 encryption 'aes256'
set vpn ipsec ike-group my-ike proposal 1 hash 'sha256'

set vpn ipsec esp-group my-esp lifetime '3600'
set vpn ipsec esp-group my-esp mode 'tunnel'
set vpn ipsec esp-group my-esp pfs 'disable'
set vpn ipsec esp-group my-esp proposal 1 encryption 'aes256'
set vpn ipsec esp-group my-esp proposal 1 hash 'sha256'

set vpn ipsec interface 'eth1'
```

## IPSec VPN Tunnels

We'll use the IKE and ESP groups created above for this VPN. Because we need access to 2 different subnets on the far side, we will need two different tunnels. If you changed the names of the ESP group and IKE group in the previous step, make sure you use the correct names here too.

```
set vpn ipsec authentication psk vyos id '203.0.113.46'
set vpn ipsec authentication psk vyos id '198.51.100.243'
set vpn ipsec authentication psk vyos secret 'MYSECRETPASSWORD'
set vpn ipsec site-to-site peer branch authentication local-id '203.0.113.46'
set vpn ipsec site-to-site peer branch authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer branch authentication remote-id '198.51.100.243'
set vpn ipsec site-to-site peer branch connection-type 'initiate'
set vpn ipsec site-to-site peer branch default-esp-group 'my-esp'
set vpn ipsec site-to-site peer branch ike-group 'my-ike'
set vpn ipsec site-to-site peer branch ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer branch local-address '203.0.113.46'
set vpn ipsec site-to-site peer branch remote-address '198.51.100.243'
set vpn ipsec site-to-site peer branch tunnel 0 local prefix '172.29.41.89/32'
set vpn ipsec site-to-site peer branch tunnel 0 remote prefix '172.27.1.0/24'
set vpn ipsec site-to-site peer branch tunnel 1 local prefix '172.29.41.89/32'
set vpn ipsec site-to-site peer branch tunnel 1 remote prefix '10.125.0.0/16'
```

## Testing and Validation

If you've completed all the above steps you no doubt want to see if it's all working.

Start by checking for IPsec SAs (Security Associations) with:

```
$ show vpn ipsec sa
```

Peer ID / IP	Local ID / IP								
-----	-----								
198.51.100.243	203.0.113.46								
Tunnel	State	Bytes Out/In	Encrypt	Hash	NAT-T	A-Time	L-Time	Proto	
----	----	-----	-----	-----	-----	-----	-----	-----	-----
0	up	0.0/0.0	aes256	sha256	no	1647	3600	all	
1	up	0.0/0.0	aes256	sha256	no	865	3600	all	

That looks good - we defined 2 tunnels and they're both up and running.

## 8.6.2 NAT64

NAT64 (IPv6-to-IPv4 Prefix Translation) is a critical component in modern networking, facilitating communication between IPv6 and IPv4 networks. This documentation outlines the setup, configuration, and usage of the NAT64 feature in your project. Whether you are transitioning to IPv6 or need to seamlessly connect IPv4 and IPv6 devices. NAT64 is a stateful translation mechanism that translates IPv6 addresses to IPv4 addresses and IPv4 addresses to IPv6 addresses. NAT64 is used to enable IPv6-only clients to contact IPv4 servers using unicast UDP, TCP, or ICMP.

### Overview

#### Different NAT Types

##### SNAT64

SNAT64 (IPv6-to-IPv4 Source Address Translation) is a stateful translation mechanism that translates IPv6 addresses to IPv4 addresses.

64:ff9b::/96 is the well-known prefix for IPv4-embedded IPv6 addresses. The prefix is used to represent IPv4 addresses in an IPv6 address format. The IPv4 address is encoded in the low-order 32 bits of the IPv6 address. The high-order 32 bits are set to the well-known prefix 64:ff9b::/96.

### Configuration Examples

The following examples show how to configure NAT64 on a VyOS router. The 192.0.2.10 address is used as the IPv4 address for the translation pool.

NAT64 server configuration:

```
set interfaces ethernet eth0 address '192.0.2.1/24'
set interfaces ethernet eth0 address '192.0.2.10/24'
set interfaces ethernet eth0 description 'WAN'
set interfaces ethernet eth1 address '2001:db8::1/64'
set interfaces ethernet eth1 description 'LAN'
```

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```

set service dns forwarding allow-from '2001:db8::/64'
set service dns forwarding dns64-prefix '64:ff9b::/96'
set service dns forwarding listen-address '2001:db8::1'

set nat64 source rule 100 source prefix '64:ff9b::/96'
set nat64 source rule 100 translation pool 10 address '192.0.2.10'
set nat64 source rule 100 translation pool 10 port '1-65535'

```

NAT64 client configuration:

```

set interfaces ethernet eth1 address '2001:db8::2/64'
set protocols static route6 64:ff9b::/96 next-hop 2001:db8::1
set system name-server '2001:db8::1'

```

Test from the IPv6 only client:

```

vyos@r1:~$ ping 64:ff9b::192.0.2.1 count 2
PING 64:ff9b::192.0.2.1(64:ff9b::c000:201) 56 data bytes
64 bytes from 64:ff9b::c000:201: icmp_seq=1 ttl=63 time=0.351 ms
64 bytes from 64:ff9b::c000:201: icmp_seq=2 ttl=63 time=0.373 ms

--- 64:ff9b::192.0.2.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1023ms
rtt min/avg/max/mdev = 0.351/0.362/0.373/0.011 ms

```

### 8.6.3 NAT66(NPTv6)

NPTv6 (IPv6-to-IPv6 Network Prefix Translation) is an address translation technology based on IPv6 networks, used to convert an IPv6 address prefix in an IPv6 message into another IPv6 address prefix. We call this address translation method NAT66. Devices that support the NAT66 function are called NAT66 devices, which can provide NAT66 source and destination address translation functions.

#### Overview

#### Different NAT Types

#### SNAT66

SNPTv6 (Source IPv6-to-IPv6 Network Prefix Translation) The conversion function is mainly used in the following scenarios:

- A single internal network and external network. Use the NAT66 device to connect a single internal network and public network, and the hosts in the internal network use IPv6 address prefixes that only support routing within the local range. When a host in the internal network accesses the external network, the source IPv6 address prefix in the message will be converted into a global unicast IPv6 address prefix by the NAT66 device.
- Redundancy and load sharing. There are multiple NAT66 devices at the edge of an IPv6 network to another IPv6 network. The path through the NAT66 device to another IPv6 network forms an equivalent route, and traffic can be load-shared on these NAT66 devices. In this case, you can configure the same source address translation rules on these NAT66 devices, so that any NAT66 device can handle IPv6 traffic between different sites.

- Multi-homed. In a multi-homed network environment, the NAT66 device connects to an internal network and simultaneously connects to different external networks. Address translation can be configured on each external network side interface of the NAT66 device to convert the same internal network address into different external network addresses, and realize the mapping of the same internal address to multiple external addresses.

## DNAT66

The DNPTv6 (Destination IPv6-to-IPv6 Network Prefix Translation) destination address translation function is used in scenarios where the server in the internal network provides services to the external network, such as providing Web services or FTP services to the external network. By configuring the mapping relationship between the internal server address and the external network address on the external network side interface of the NAT66 device, external network users can access the internal network server through the designated external network address.

## Prefix Conversion

### Source Prefix

Every SNAT66 rule has a translation command defined. The prefix defined for the translation is the prefix used when the address information in a packet is replaced.

The *SNAT66* rule replaces the source address of the packet and calculates the converted address using the prefix specified in the rule.

Example:

- Convert the address prefix of a single *fc01::/64* network to *fc00::/64*
- Output from *eth0* network interface

```
set nat66 source rule 1 outbound-interface name 'eth0'
set nat66 source rule 1 source prefix 'fc01::/64'
set nat66 source rule 1 translation address 'fc00::/64'
```

### Destination Prefix

For the *DNAT66* rule, the destination address of the packet is replaced by the address calculated from the specified address or prefix in the *translation address* command

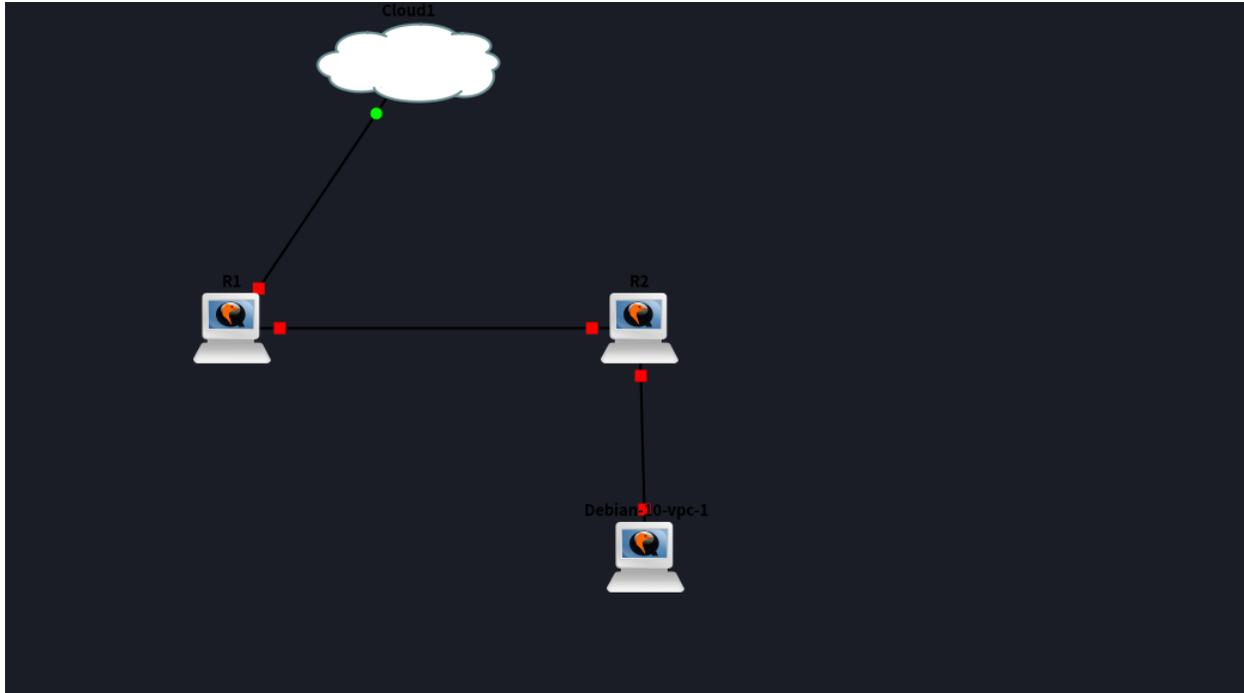
Example:

- Convert the address prefix of a single *fc00::/64* network to *fc01::/64*
- Input from *eth0* network interface

```
set nat66 destination rule 1 inbound-interface name 'eth0'
set nat66 destination rule 1 destination address 'fc00::/64'
set nat66 destination rule 1 translation address 'fc01::/64'
```

## Configuration Examples

Use the following topology to build a nat66 based isolated network between internal and external networks (dynamic prefix is not supported):



R1:

```
set interfaces ethernet eth0 ipv6 address autoconf
set interfaces ethernet eth1 address 'fc01::1/64'
set nat66 destination rule 1 destination address 'fc00:470:f1cd:101::/64'
set nat66 destination rule 1 inbound-interface name 'eth0'
set nat66 destination rule 1 translation address 'fc01::/64'
set nat66 source rule 1 outbound-interface name 'eth0'
set nat66 source rule 1 source prefix 'fc01::/64'
set nat66 source rule 1 translation address 'fc00:470:f1cd:101::/64'
```

R2:

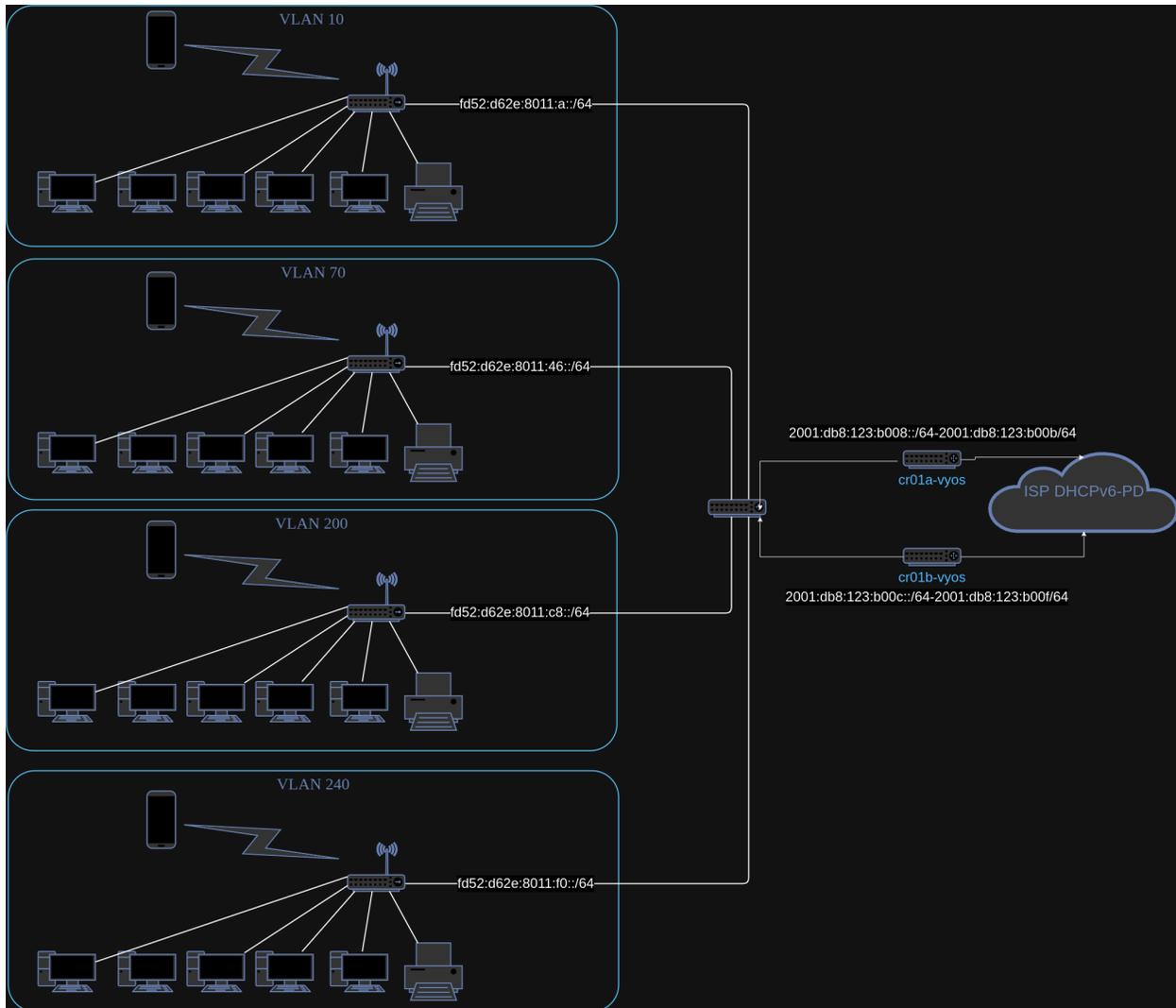
```
set interfaces bridge br1 address 'fc01::2/64'
set interfaces bridge br1 member interface eth0
set interfaces bridge br1 member interface eth1
set protocols static route6 ::/0 next-hop fc01::1
set service router-advert interface br1 prefix ::/0
```

Use the following topology to translate internal user local addresses (`fc::/7`) to DHCPv6-PD provided prefixes from an ISP connected to a VyOS HA pair.

Configure both routers (a and b) for DHCPv6-PD via dummy interface:

```
set interfaces dummy dum1 description 'DHCPv6-PD NPT dummy'
set interfaces bonding bond0 vif 20 dhcpv6-options pd 0 interface dum1 address '0'
set interfaces bonding bond0 vif 20 dhcpv6-options pd 1 interface dum1 address '0'
```

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```
set interfaces bonding bond0 vif 20 dhcpv6-options pd 2 interface dum1 address '0'
set interfaces bonding bond0 vif 20 dhcpv6-options pd 3 interface dum1 address '0'
set interfaces bonding bond0 vif 20 dhcpv6-options rapid-commit
commit
```

Get the DHCPv6-PD prefixes from both routers:

```
trae@cr01a-vyos# run show interfaces dummy dum1 br
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L Description
-----
dum1           2001:db8:123:b008::/64      u/u DHCPv6-PD NPT dummy
              2001:db8:123:b00a::/64
              2001:db8:123:b00b::/64
              2001:db8:123:b009::/64

trae@cr01b-vyos# run show int dummy dum1 brief
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L Description
-----
dum1           2001:db8:123:b00d::/64      u/u DHCPv6-PD NPT dummy
              2001:db8:123:b00c::/64
              2001:db8:123:b00e::/64
              2001:db8:123:b00f::/64
```

Configure the A-side router for NPTv6 using the prefixes above:

```
set nat66 source rule 10 description 'NPT to VLAN 10'
set nat66 source rule 10 outbound-interface name 'bond0.20'
set nat66 source rule 10 source prefix 'fd52:d62e:8011:a::/64'
set nat66 source rule 10 translation address '2001:db8:123:b008::/64'
set nat66 source rule 20 description 'NPT to VLAN 70'
set nat66 source rule 20 outbound-interface name 'bond0.20'
set nat66 source rule 20 source prefix 'fd52:d62e:8011:46::/64'
set nat66 source rule 20 translation address '2001:db8:123:b009::/64'
set nat66 source rule 30 description 'NPT to VLAN 200'
set nat66 source rule 30 outbound-interface name 'bond0.20'
set nat66 source rule 30 source prefix 'fd52:d62e:8011:c8::/64'
set nat66 source rule 30 translation address '2001:db8:123:b00a::/64'
set nat66 source rule 40 description 'NPT to VLAN 240'
set nat66 source rule 40 outbound-interface name 'bond0.20'
set nat66 source rule 40 source prefix 'fd52:d62e:8011:f0::/64'
set nat66 source rule 40 translation address '2001:db8:123:b00b::/64'
commit
```

Configure the B-side router for NPTv6 using the prefixes above:

```
set nat66 source rule 10 description 'NPT to VLAN 10'
set nat66 source rule 10 outbound-interface name 'bond0.20'
set nat66 source rule 10 source prefix 'fd52:d62e:8011:a::/64'
set nat66 source rule 10 translation address '2001:db8:123:b00c::/64'
set nat66 source rule 20 description 'NPT to VLAN 70'
set nat66 source rule 20 outbound-interface name 'bond0.20'
```

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```
set nat66 source rule 20 source prefix 'fd52:d62e:8011:46::/64'
set nat66 source rule 20 translation address '2001:db8:123:b00d::/64'
set nat66 source rule 30 description 'NPT to VLAN 200'
set nat66 source rule 30 outbound-interface name 'bond0.20'
set nat66 source rule 30 source prefix 'fd52:d62e:8011:c8::/64'
set nat66 source rule 30 translation address '2001:db8:123:b00e::/64'
set nat66 source rule 40 description 'NPT to VLAN 240'
set nat66 source rule 40 outbound-interface name 'bond0.20'
set nat66 source rule 40 source prefix 'fd52:d62e:8011:f0::/64'
set nat66 source rule 40 translation address '2001:db8:123:b00f::/64'
commit
```

Verify that connections are hitting the rule on both sides:

```
trae@cr01a-vyos# run show nat66 source statistics
Rule      Packets      Bytes      Interface
-----
10         1            104       bond0.20
20         1            104       bond0.20
30        8093         669445    bond0.20
40        2446         216912    bond0.20
```

:lastproofread:2021-07-12

## 8.7 Policy

Policies are used for filtering and traffic management. With policies, network administrators could filter and treat traffic according to their needs.

There could be a wide range of routing policies. Some examples are listed below:

- Filter traffic based on source/destination address.
- Set some metric to routes learned from a particular neighbor.
- Set some attributes (like AS PATH or Community value) to advertised routes to neighbors.
- Prefer a specific routing protocol routes over another routing protocol running on the same router.

Policies, in VyOS, are implemented using FRR filtering and route maps. Detailed information of FRR could be found in <http://docs.frrouting.org/>

### 8.7.1 Policy Sections

#### Access List Policy

Filtering is used for both input and output of the routing information. Once filtering is defined, it can be applied in any direction. VyOS makes filtering possible using acls and prefix lists.

Basic filtering can be done using access-list and access-list6.

## Configuration

### Access Lists

**set policy access-list <acl\_number>**

This command creates the new access list policy, where <acl\_number> must be a number from 1 to 2699.

**set policy access-list <acl\_number> description <text>**

Set description for the access list.

**set policy access-list <acl\_number> rule <1-65535> action <permit|deny>**

This command creates a new rule in the access list and defines an action.

**set policy access-list <acl\_number> rule <1-65535> <destination|source>  
<any|host|inverse-mask|network>**

This command defines matching parameters for access list rule. Matching criteria could be applied to destination or source parameters:

- any: any IP address to match.
- host: single host IP address to match.
- inverse-match: network/netmask to match (requires network be defined).
- network: network/netmask to match (requires inverse-match be defined).

### IPv6 Access List

Basic filtering could also be applied to IPv6 traffic.

**set policy access-list6 <text>**

This command creates the new IPv6 access list, identified by <text>

**set policy access-list6 <text> description <text>**

Set description for the IPv6 access list.

**set policy access-list6 <text> rule <1-65535> action <permit|deny>**

This command creates a new rule in the IPv6 access list and defines an action.

**set policy access-list6 <text> rule <1-65535> source <any|exact-match|network>**

This command defines matching parameters for IPv6 access list rule. Matching criteria could be applied to source parameters:

- any: any IPv6 address to match.
- exact-match: exact match of the network prefixes.
- network: network/netmask to match (requires inverse-match be defined) BUG, NO invert-match option in access-list6

## Prefix List Policy

Prefix lists provides the most powerful prefix based filtering mechanism. In addition to access-list functionality, ip prefix-list has prefix length range specification.

If no ip prefix list is specified, it acts as permit. If ip prefix list is defined, and no match is found, default deny is applied.

Prefix filtering can be done using prefix-list and prefix-list6.

## Configuration

### Prefix Lists

```
set policy prefix-list <text>
```

This command creates the new prefix-list policy, identified by <text>.

```
set policy prefix-list <text> description <text>
```

Set description for the prefix-list policy.

```
set policy prefix-list <text> rule <1-65535> action <permit|deny>
```

This command creates a new rule in the prefix-list and defines an action.

```
set policy prefix-list <text> rule <1-65535> description <text>
```

Set description for rule in the prefix-list.

```
set policy prefix-list <text> rule <1-65535> prefix <x.x.x.x/x>
```

Prefix to match against.

```
set policy prefix-list <text> rule <1-65535> ge <0-32>
```

Netmask greater than length.

```
set policy prefix-list <text> rule <1-65535> le <0-32>
```

Netmask less than length

### IPv6 Prefix Lists

```
set policy prefix-list6 <text>
```

This command creates the new IPv6 prefix-list policy, identified by <text>.

```
set policy prefix-list6 <text> description <text>
```

Set description for the IPv6 prefix-list policy.

```
set policy prefix-list6 <text> rule <1-65535> action <permit|deny>
```

This command creates a new rule in the IPv6 prefix-list and defines an action.

```
set policy prefix-list6 <text> rule <1-65535> description <text>
```

Set description for rule in IPv6 prefix-list.

```
set policy prefix-list6 <text> rule <1-65535> prefix <h:h:h:h:h:h:h/x>
```

IPv6 prefix.

```
set policy prefix-list6 <text> rule <1-65535> ge <0-128>
```

Netmask greater than length.

```
set policy prefix-list6 <text> rule <1-65535> le <0-128>
```

Netmask less than length

## Route and Route6 Policy

IPv4 route and IPv6 route policies are defined in this section. These route policies can then be associated to interfaces.

### Rule-Sets

A rule-set is a named collection of rules that can be applied to an interface. Each rule is numbered, has an action to apply if the rule is matched, and the ability to specify the criteria to match. Data packets go through the rules from 1 - 999999, at the first match the action of the rule will be executed.

```
set policy route <name> description <text>
```

```
set policy route6 <name> description <text>
```

Provide a rule-set description.

```
set policy route <name> enable-default-log
```

```
set policy route6 <name> enable-default-log
```

Option to log packets hitting default-action.

```
set policy route <name> rule <n> description <text>
```

```
set policy route6 <name> rule <n> description <text>
```

Provide a description for each rule.

```
set policy route <name> rule <n> log <enable|disable>
```

```
set policy route6 <name> rule <n> log <enable|disable>
```

Option to enable or disable log matching rule.

### Matching criteria

There are a lot of matching criteria options available, both for policy route and policy route6. These options are listed in this section.

```
set policy route <name> rule <n> connection-mark <1-2147483647>
```

```
set policy route6 <name> rule <n> connection-mark <1-2147483647>
```

Set match criteria based on connection mark.

```
set policy route <name> rule <n> source address <match_criteria>
```

```
set policy route <name> rule <n> destination address <match_criteria>
```

```
set policy route6 <name> rule <n> source address <match_criteria>
```

```
set policy route6 <name> rule <n> destination address <match_criteria>
```

Set match criteria based on source or destination ipv4|ipv6 address, where <match\_criteria> could be:

**For ipv4:**

- <x.x.x.x>: IP address to match.
- <x.x.x.x/x>: Subnet to match.
- <x.x.x.x>-<x.x.x.x>: IP range to match.
- !<x.x.x.x>: Match everything except the specified address.
- !<x.x.x.x/x>: Match everything except the specified subnet.
- !<x.x.x.x>-<x.x.x.x>: Match everything except the specified range.

**And for ipv6:**

- <h:h:h:h:h:h>: IPv6 address to match.
- <h:h:h:h:h:h/x>: IPv6 prefix to match.
- <h:h:h:h:h:h>-<h:h:h:h:h:h>: IPv6 range to match.
- !<h:h:h:h:h:h>: Match everything except the specified address.
- !<h:h:h:h:h:h/x>: Match everything except the specified prefix.
- !<h:h:h:h:h:h>-<h:h:h:h:h:h>: Match everything except the specified range.

```
set policy route <name> rule <n> source group <address-group|domain-group|mac-group|network-group|port-
<text>
```

```
set policy route <name> rule <n> destination group <address-group|domain-group|mac-group|network-group|
<text>
```

```
set policy route6 <name> rule <n> source group <address-group|domain-group|mac-group|network-group|port-
<text>
```

```
set policy route6 <name> rule <n> destination group <address-group|domain-group|mac-group|network-group|
<text>
```

Set match criteria based on source or destination groups, where <text> would be the group name/identifier. Prepend character '!' for inverted matching criteria.

```
set policy route <name> rule <n> destination port <match_criteria>
```

```
set policy route6 <name> rule <n> destination port <match_criteria>
```

Set match criteria based on destination port, where <match\_criteria> could be:

- <port name>: Named port (any name in /etc/services, e.g., http).
- <1-65535>: Numbered port.
- <start>-<end>: Numbered port range (e.g., 1001-1005).

Multiple destination ports can be specified as a comma-separated list. The whole list can also be “negated” using '!'. For example: '!22,telnet,http,123,1001-1005'

```
set policy route <name> rule <n> disable
```

```
set policy route6 <name> rule <n> disable
```

Option to disable rule.

```
set policy route <name> rule <n> dscp <text>
```

```
set policy route6 <name> rule <n> dscp <text>
```

```
set policy route <name> rule <n> dscp-exclude <text>
```

```
set policy route6 <name> rule <n> dscp-exclude <text>
```

Match based on dscp value criteria. Multiple values from 0 to 63 and ranges are supported.

```
set policy route <name> rule <n> fragment <match-grag|match-non-frag>
set policy route6 <name> rule <n> fragment <match-grag|match-non-frag>
```

Set IP fragment match, where:

- match-frag: Second and further fragments of fragmented packets.
- match-non-frag: Head fragments or unfragmented packets.

```
set policy route <name> rule <n> icmp <code | type>
set policy route6 <name> rule <n> icmpv6 <code | type>
```

Match based on icmp|icmpv6 code and type.

```
set policy route <name> rule <n> icmp type-name <text>
set policy route6 <name> rule <n> icmpv6 type-name <text>
```

Match based on icmp|icmpv6 type-name criteria. Use tab for information about what type-name criteria are supported.

```
set policy route <name> rule <n> ipsec <match-ipsec|match-none>
set policy route6 <name> rule <n> ipsec <match-ipsec|match-none>
```

Set IPsec inbound match criterias, where:

- match-ipsec: match inbound IPsec packets.
- match-none: match inbound non-IPsec packets.

```
set policy route <name> rule <n> limit burst <0-4294967295>
set policy route6 <name> rule <n> limit burst <0-4294967295>
```

Set maximum number of packets to allow in excess of rate.

```
set policy route <name> rule <n> limit rate <text>
set policy route6 <name> rule <n> limit rate <text>
```

Set maximum average matching rate. Format for rate: integer/time\_unit, where time\_unit could be any one of second, minute, hour or day. For example 1/second implies rule to be matched at an average of once per second.

```
set policy route <name> rule <n> protocol <text | 0-255 | tcp_udp | all >
set policy route6 <name> rule <n> protocol <text | 0-255 | tcp_udp | all >
```

Match a protocol criteria. A protocol number or a name which is defined in: /etc/protocols. Special names are all for all protocols and tcp\_udp for tcp and udp based packets. The ! negates the selected protocol.

```
set policy route <name> rule <n> packet-length <text>
set policy route6 <name> rule <n> packet-length <text>
set policy route <name> rule <n> packet-length-exclude <text>
set policy route6 <name> rule <n> packet-length-exclude <text>
```

Match based on packet length criteria. Multiple values from 1 to 65535 and ranges are supported.

```
set policy route <name> rule <n> packet-type [broadcast | host | multicast | other]
set policy route6 <name> rule <n> packet-type [broadcast | host | multicast | other]
```

Match based on packet type criteria.

```

set policy route <name> rule <n> recent count <1-255>
set policy route6 <name> rule <n> recent count <1-255>
set policy route <name> rule <n> recent time <1-4294967295>
set policy route6 <name> rule <n> recent time <1-4294967295>

```

Set parameters for matching recently seen sources. This match could be used by setting count (source address seen more than <1-255> times) and/or time (source address seen in the last <0-4294967295> seconds).

```

set policy route <name> rule <n> state <established | invalid | new | related>
set policy route6 <name> rule <n> state <established | invalid | new | related>

```

Set match criteria based on session state.

```

set policy route <name> rule <n> tcp flags <text>
set policy route6 <name> rule <n> tcp flags <text>

```

Set match criteria based on tcp flags. Allowed values for TCP flags: SYN ACK FIN RST URG PSH ALL. When specifying more than one flag, flags should be comma-separated. For example : value of 'SYN,!ACK,!FIN,!RST' will only match packets with the SYN flag set, and the ACK, FIN and RST flags unset.

```

set policy route <name> rule <n> time monthdays <text>
set policy route6 <name> rule <n> time monthdays <text>
set policy route <name> rule <n> time startdate <text>
set policy route6 <name> rule <n> time startdate <text>
set policy route <name> rule <n> time starttime <text>
set policy route6 <name> rule <n> time starttime <text>
set policy route <name> rule <n> time stopdate <text>
set policy route6 <name> rule <n> time stopdate <text>
set policy route <name> rule <n> time stoptime <text>
set policy route6 <name> rule <n> time stoptime <text>
set policy route <name> rule <n> time weekdays <text>
set policy route6 <name> rule <n> time weekdays <text>
set policy route <name> rule <n> time utc
set policy route6 <name> rule <n> time utc

```

Time to match the defined rule.

```

set policy route rule <n> ttl <eq | gt | lt> <0-255>

```

Match time to live parameter, where 'eq' stands for 'equal'; 'gt' stands for 'greater than', and 'lt' stands for 'less than'.

```

set policy route6 rule <n> hop-limit <eq | gt | lt> <0-255>

```

Match hop-limit parameter, where 'eq' stands for 'equal'; 'gt' stands for 'greater than', and 'lt' stands for 'less than'.

## Actions

When matching all patterns defined in a rule, then different actions can be made. This includes dropping the packet, modifying certain data, or setting a different routing table.

```
set policy route <name> rule <n> action drop
```

```
set policy route6 <name> rule <n> action drop
```

Set rule action to drop.

```
set policy route <name> rule <n> set connection-mark <1-2147483647>
```

```
set policy route6 <name> rule <n> set connection-mark <1-2147483647>
```

Set a specific connection mark.

```
set policy route <name> rule <n> set dscp <0-63>
```

```
set policy route6 <name> rule <n> set dscp <0-63>
```

Set packet modifications: Packet Differentiated Services Codepoint (DSCP)

```
set policy route <name> rule <n> set mark <1-2147483647>
```

```
set policy route6 <name> rule <n> set mark <1-2147483647>
```

Set a specific packet mark.

```
set policy route <name> rule <n> set table <main | 1-200>
```

```
set policy route6 <name> rule <n> set table <main | 1-200>
```

Set the routing table to forward packet with.

```
set policy route <name> rule <n> set tcp-mss <500-1460>
```

```
set policy route6 <name> rule <n> set tcp-mss <500-1460>
```

Set packet modifications: Explicitly set TCP Maximum segment size value.

## Route Map Policy

Route map is a powerful command, that gives network administrators a very useful and flexible tool for traffic manipulation.

## Configuration

### Route Map

```
set policy route-map <text>
```

This command creates a new route-map policy, identified by <text>.

```
set policy route-map <text> description <text>
```

Set description for the route-map policy.

```
set policy route-map <text> rule <1-65535> action <permit|deny>
```

Set action for the route-map policy.

```
set policy route-map <text> rule <1-65535> call <text>
```

Call another route-map policy on match.

```
set policy route-map <text> rule <1-65535> continue <1-65535>
```

Jump to a different rule in this route-map on a match.

```
set policy route-map <text> rule <1-65535> description <text>
```

Set description for the rule in the route-map policy.

```
set policy route-map <text> rule <1-65535> match as-path <text>
```

BGP as-path list to match.

```
set policy route-map <text> rule <1-65535> match community community-list <text>
```

BGP community-list to match.

```
set policy route-map <text> rule <1-65535> match community exact-match
```

Set BGP community-list to exactly match.

```
set policy route-map <text> rule <1-65535> match extcommunity <text>
```

BGP extended community to match.

```
set policy route-map <text> rule <1-65535> match interface <text>
```

First hop interface of a route to match.

```
set policy route-map <text> rule <1-65535> match ip address access-list <1-2699>
```

IP address of route to match, based on access-list.

```
set policy route-map <text> rule <1-65535> match ip address prefix-list <text>
```

IP address of route to match, based on prefix-list.

```
set policy route-map <text> rule <1-65535> match ip address prefix-len <0-32>
```

IP address of route to match, based on specified prefix-length. Note that this can be used for kernel routes only. Do not apply to the routes of dynamic routing protocols (e.g. BGP, RIP, OSPF), as this can lead to unexpected results..

```
set policy route-map <text> rule <1-65535> match ip nexthop access-list <1-2699>
```

IP next-hop of route to match, based on access-list.

```
set policy route-map <text> rule <1-65535> match ip nexthop address <x.x.x.x>
```

IP next-hop of route to match, based on ip address.

```
set policy route-map <text> rule <1-65535> match ip nexthop prefix-len <0-32>
```

IP next-hop of route to match, based on prefix length.

```
set policy route-map <text> rule <1-65535> match ip nexthop prefix-list <text>
```

IP next-hop of route to match, based on prefix-list.

```
set policy route-map <text> rule <1-65535> match ip nexthop type <blackhole>
```

IP next-hop of route to match, based on type.

```
set policy route-map <text> rule <1-65535> match ip route-source access-list <1-2699>
```

IP route source of route to match, based on access-list.

```
set policy route-map <text> rule <1-65535> match ip route-source prefix-list <text>
```

IP route source of route to match, based on prefix-list.

**set policy route-map <text> rule <1-65535> match ipv6 address access-list <text>**

IPv6 address of route to match, based on IPv6 access-list.

**set policy route-map <text> rule <1-65535> match ipv6 address prefix-list <text>**

IPv6 address of route to match, based on IPv6 prefix-list.

**set policy route-map <text> rule <1-65535> match ipv6 address prefix-len <0-128>**

IPv6 address of route to match, based on specified prefix-length. Note that this can be used for kernel routes only. Do not apply to the routes of dynamic routing protocols (e.g. BGP, RIP, OSPF), as this can lead to unexpected results..

**set policy route-map <text> rule <1-65535> match ipv6 nexthop <h:h:h:h:h:h:h>**

Nexthop IPv6 address to match.

**set policy route-map <text> rule <1-65535> match large-community large-community-list <text>**

Match BGP large communities.

**set policy route-map <text> rule <1-65535> match local-preference <0-4294967295>**

Match local preference.

**set policy route-map <text> rule <1-65535> match metric <1-65535>**

Match route metric.

**set policy route-map <text> rule <1-65535> match origin <egp|igp|incomplete>**

Boarder Gateway Protocol (BGP) origin code to match.

**set policy route-map <text> rule <1-65535> match peer <x.x.x.x>**

Peer IP address to match.

**set policy route-map <text> rule <1-65535> match protocol <protocol>**

**Source protocol to match.**

- `babel` - Babel routing protocol (Babel)
- `bgp` - Border Gateway Protocol (BGP)
- `connected` - Connected routes (directly attached subnet or host)
- `isis` - Intermediate System to Intermediate System (IS-IS)
- `kernel` - Kernel routes
- `ospf` - Open Shortest Path First (OSPFv2)
- `ospfv3` - Open Shortest Path First (IPv6) (OSPFv3)
- `rip` - Routing Information Protocol (RIP)
- `ripng` - Routing Information Protocol next-generation (IPv6) (RIPng)
- `static` - Statically configured routes
- `table` - Non-main Kernel Routing Table
- `vnc` - Virtual Network Control (VNC)

**set policy route-map <text> rule <1-65535> match rpki <invalid|notfound|valid>**

Match RPKI validation result.

```
set policy route-map <text> rule <1-65535> match tag <1-65535>
```

Route tag to match.

```
set policy route-map <text> rule <1-65535> on-match goto <1-65535>
```

Exit policy on match: go to rule <1-65535>

```
set policy route-map <text> rule <1-65535> on-match next
```

Exit policy on match: go to next sequence number.

```
set policy route-map <text> rule <1-65535> set aggregator <as|ip> <1-4294967295|x.x.x.x>
```

BGP aggregator attribute: AS number or IP address of an aggregation.

```
set policy route-map <text> rule <1-65535> set as-path exclude <1-4294967295 | all>
```

Drop AS-NUMBER from the BGP AS path.

If all is specified, remove all AS numbers from the AS\_PATH of the BGP path's NLRI.

```
set policy route-map <text> rule <1-65535> set as-path prepend <1-4294967295>
```

Prepend the given string of AS numbers to the AS\_PATH of the BGP path's NLRI.

```
set policy route-map <text> rule <1-65535> set as-path prepend-last-as <n>
```

Prepend the existing last AS number (the leftmost ASN) to the AS\_PATH.

```
set policy route-map <text> rule <1-65535> set atomic-aggregate
```

BGP atomic aggregate attribute.

```
set policy route-map <text> rule <1-65535> set community <add|replace> <community>
```

Add or replace BGP community attribute in format <0-65535:0-65535> or from well-known community list

```
set policy route-map <text> rule <1-65535> set community none
```

Delete all BGP communities

```
set policy route-map <text> rule <1-65535> set community delete <text>
```

Delete BGP communities matching the community-list.

```
set policy route-map <text> rule <1-65535> set large-community <add|replace>
<GA:LDP1:LDP2>
```

Add or replace BGP large-community attribute in format <0-4294967295:0-4294967295:0-4294967295>

```
set policy route-map <text> rule <1-65535> set large-community none
```

Delete all BGP large-communities

```
set policy route-map <text> rule <1-65535> set large-community delete <text>
```

Delete BGP communities matching the large-community-list.

```
set policy route-map <text> rule <1-65535> set extcommunity bandwidth
<1-25600|cumulative|num-multipaths>
```

Set extcommunity bandwidth

```
set policy route-map <text> rule <1-65535> set extcommunity bandwidth-non-transitive
```

The link bandwidth extended community is encoded as non-transitive

```
set policy route-map <text> rule <1-65535> set extcommunity rt <text>
```

Set route target value in format <0-65535:0-4294967295> or <IP:0-65535>.

```
set policy route-map <text> rule <1-65535> set extcommunity soo <text>
```

Set site of origin value in format <0-65535:0-4294967295> or <IP:0-65535>.

```
set policy route-map <text> rule <1-65535> set extcommunity none
```

Clear all BGP extcommunities.

```
set policy route-map <text> rule <1-65535> set distance <0-255>
```

Locally significant administrative distance.

```
set policy route-map <text> rule <1-65535> set ip-next-hop <x.x.x.x>
```

Nexthop IP address.

```
set policy route-map <text> rule <1-65535> set ip-next-hop unchanged
```

Set the next-hop as unchanged. Pass through the route-map without changing its value

```
set policy route-map <text> rule <1-65535> set ip-next-hop peer-address
```

Set the BGP nexthop address to the address of the peer. For an incoming route-map this means the ip address of our peer is used. For an outgoing route-map this means the ip address of our self is used to establish the peering with our neighbor.

```
set policy route-map <text> rule <1-65535> set ipv6-next-hop <global|local>  
<h:h:h:h:h:h:h:h>
```

Nexthop IPv6 address.

```
set policy route-map <text> rule <1-65535> set ipv6-next-hop peer-address
```

Set the BGP nexthop address to the address of the peer. For an incoming route-map this means the ip address of our peer is used. For an outgoing route-map this means the ip address of our self is used to establish the peering with our neighbor.

```
set policy route-map <text> rule <1-65535> set ipv6-next-hop prefer-global
```

For Incoming and Import Route-maps if we receive a v6 global and v6 LL address for the route, then prefer to use the global address as the nexthop.

```
set policy route-map <text> rule <1-65535> set local-preference <0-4294967295>
```

Set BGP local preference attribute.

```
set policy route-map <text> rule <1-65535> set metric <+/-metric|0-4294967295|rtt|+rtt|-rtt>
```

Set the route metric. When used with BGP, set the BGP attribute MED to a specific value. Use +/- to add or subtract the specified value to/from the existing/MED. Use rtt to set the MED to the round trip time or +rtt/-rtt to add/subtract the round trip time to/from the MED.

```
set policy route-map <text> rule <1-65535> set metric-type <type-1|type-2>
```

Set OSPF external metric-type.

```
set policy route-map <text> rule <1-65535> set origin <igp|egp|incomplete>
```

Set BGP origin code.

```
set policy route-map <text> rule <1-65535> set originator-id <x.x.x.x>
```

Set BGP originator ID attribute.

```
set policy route-map <text> rule <1-65535> set src <x.x.x.x|h:h:h:h:h:h:h:h>
```

Set source IP/IPv6 address for route.

```
set policy route-map <text> rule <1-65535> set table <1-200>
```

Set prefixes to table.

```
set policy route-map <text> rule <1-65535> set tag <1-65535>
```

Set tag value for routing protocol.

```
set policy route-map <text> rule <1-65535> set weight <0-4294967295>
```

Set BGP weight attribute

### List of well-known communities

- local-as - Well-known communities value NO\_EXPORT\_SUBCONFED 0xFFFFFFFF03
- no-advertise - Well-known communities value NO\_ADVERTISE 0xFFFFFFFF02
- no-export - Well-known communities value NO\_EXPORT 0xFFFFFFFF01
- internet - Well-known communities value 0
- graceful-shutdown - Well-known communities value GRACEFUL\_SHUTDOWN 0xFFFF0000
- accept-own - Well-known communities value ACCEPT\_OWN 0xFFFF0001
- route-filter-translated-v4 - Well-known communities value ROUTE\_FILTER\_TRANSLATED\_v4 0xFFFF0002
- route-filter-v4 - Well-known communities value ROUTE\_FILTER\_v4 0xFFFF0003
- route-filter-translated-v6 - Well-known communities value ROUTE\_FILTER\_TRANSLATED\_v6 0xFFFF0004
- route-filter-v6 - Well-known communities value ROUTE\_FILTER\_v6 0xFFFF0005
- llgr-stale - Well-known communities value LLGR\_STALE 0xFFFF0006
- no-llgr - Well-known communities value NO\_LLGR 0xFFFF0007
- accept-own-nexthop - Well-known communities value accept-own-nexthop 0xFFFF0008
- blackhole - Well-known communities value BLACKHOLE 0xFFFF029A
- no-peer - Well-known communities value NOPEER 0xFFFFFFFF04

### Local Route Policy

Policies for local traffic are defined in this section.

#### Configuration

##### Local Route IPv4

```
set policy local-route rule <1-32765> set table <1-200|main>
```

Set routing table to forward packet to.

```
set policy local-route rule <1-32765> source <x.x.x.x|x.x.x.x/x>
```

Set source address or prefix to match.

```
set policy local-route rule <1-32765> destination <x.x.x.x|x.x.x.x/x>
```

Set destination address or prefix to match.

```
set policy local-route rule <1-32765> inbound-interface <interface>
```

Set inbound interface to match.

## Local Route IPv6

```
set policy local-route6 rule <1-32765> set table <1-200|main>
```

Set routing table to forward packet to.

```
set policy local-route6 rule <1-32765> source <h:h:h:h:h:h:h:h | h:h:h:h:h:h:h:h/x>
```

Set source address or prefix to match.

```
set policy local-route6 rule <1-32765> destination <h:h:h:h:h:h:h:h | h:h:h:h:h:h:h:h/x>
```

Set destination address or prefix to match.

```
set policy local-route6 rule <1-32765> inbound-interface <interface>
```

Set inbound interface to match.

## BGP - AS Path Policy

VyOS provides policies commands exclusively for BGP traffic filtering and manipulation: **as-path-list** is one of them.

### Configuration

#### policy as-path-list

```
set policy as-path-list <text>
```

Create as-path-policy identified by name <text>.

```
set policy as-path-list <text> description <text>
```

Set description for as-path-list policy.

```
set policy as-path-list <text> rule <1-65535> action <permit|deny>
```

Set action to take on entries matching this rule.

```
set policy as-path-list <text> rule <1-65535> description <text>
```

Set description for rule.

```
set policy as-path-list <text> rule <1-65535> regex <text>
```

Regular expression to match against an AS path. For example "64501 64502".

## BGP - Community List

VyOS provides policies commands exclusively for BGP traffic filtering and manipulation: **community-list** is one of them.

### Configuration

#### policy community-list

```
set policy community-list <text>
```

Creat community-list policy identified by name <text>.

```
set policy community-list <text> description <text>
```

Set description for community-list policy.

```
set policy community-list <text> rule <1-65535> action <permit|deny>
```

Set action to take on entries matching this rule.

```
set policy community-list <text> rule <1-65535> description <text>
```

Set description for rule.

```
set policy community-list <text> rule <1-65535> regex <aa:nn|local-AS|no-advertise|no-export|internet|a
```

Regular expression to match against a community-list.

## BGP - Extended Community List

VyOS provides policies commands exclusively for BGP traffic filtering and manipulation: **extcommunity-list** is one of them.

### Configuration

#### policy extcommunity-list

```
set policy extcommunity-list <text>
```

Creat extcommunity-list policy identified by name <text>.

```
set policy extcommunity-list <text> description <text>
```

Set description for extcommunity-list policy.

```
set policy extcommunity-list <text> rule <1-65535> action <permit|deny>
```

Set action to take on entries matching this rule.

```
set policy extcommunity-list <text> rule <1-65535> description <text>
```

Set description for rule.

```
set policy extcommunity-list <text> rule <1-65535> regex <text>
```

Regular expression to match against an extended community list, where text could be:

- <aa:nn:nn>: Extended community list regular expression.
- <rt aa:nn:nn>: Route Target regular expression.

- <soo aa:nn:nn>: Site of Origin regular expression.

## BGP - Large Community List

VyOS provides policies commands exclusively for BGP traffic filtering and manipulation: **large-community-list** is one of them.

### Configuration

#### policy large-community-list

**set policy large-community-list <text>**

Create large-community-list policy identified by name <text>.

**set policy large-community-list <text> description <text>**

Set description for large-community-list policy.

**set policy large-community-list <text> rule <1-65535> action <permit|deny>**

Set action to take on entries matching this rule.

**set policy large-community-list <text> rule <1-65535> description <text>**

Set description for rule.

**set policy large-community-list <text> rule <1-65535> regex <aa:nn:nn>**

Regular expression to match against a large community list.

## 8.7.2 Examples

Examples of policies usage:

### BGP Example

#### Policy definition:

```
# Create policy
set policy route-map setmet rule 2 action 'permit'
set policy route-map setmet rule 2 set as-path prepend '2 2 '

# Apply policy to BGP
set protocols bgp system-as 1
set protocols bgp neighbor 203.0.113.2 address-family ipv4-unicast route-map import
↪ 'setmet'
set protocols bgp neighbor 203.0.113.2 address-family ipv4-unicast soft-reconfiguration
↪ 'inbound'
```

Using 'soft-reconfiguration' we get the policy update without bouncing the neighbor.

#### Routes learned before routing policy applied:

```
vyos@vos1:~$ show ip bgp
BGP table version is 0, local router ID is 192.168.56.101
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 198.51.100.3/32  203.0.113.2      1             0 2 i < Path

Total number of prefixes 1
```

#### Routes learned after routing policy applied:

```
vyos@vos1:~$ show ip bgp
BGP table version is 0, local router ID is 192.168.56.101
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 198.51.100.3/32  203.0.113.2      1             0 2 2 2 2 i

Total number of prefixes 1
vyos@vos1:~$
```

You now see the longer AS path.

## Transparent Proxy

The following example will show how VyOS can be used to redirect web traffic to an external transparent proxy:

```
set policy route FILTER-WEB rule 1000 destination port 80
set policy route FILTER-WEB rule 1000 protocol tcp
set policy route FILTER-WEB rule 1000 set table 100
```

This creates a route policy called FILTER-WEB with one rule to set the routing table for matching traffic (TCP port 80) to table ID 100 instead of the default routing table.

To create routing table 100 and add a new default gateway to be used by traffic matching our route policy:

```
set protocols static table 100 route 0.0.0.0/0 next-hop 10.255.0.2
```

This can be confirmed using the `show ip route table 100` operational command.

Finally, to apply the policy route to ingress traffic on our LAN interface, we use:

```
set policy route FILTER-WEB interface eth1
```

## Multiple Uplinks

VyOS Policy-Based Routing (PBR) works by matching source IP address ranges and forwarding the traffic using different routing tables.

Routing tables that will be used in this example are:

- `table 10` Routing table used for VLAN 10 (192.168.188.0/24)
- `table 11` Routing table used for VLAN 11 (192.168.189.0/24)
- `main` Routing table used by VyOS and other interfaces not participating in PBR

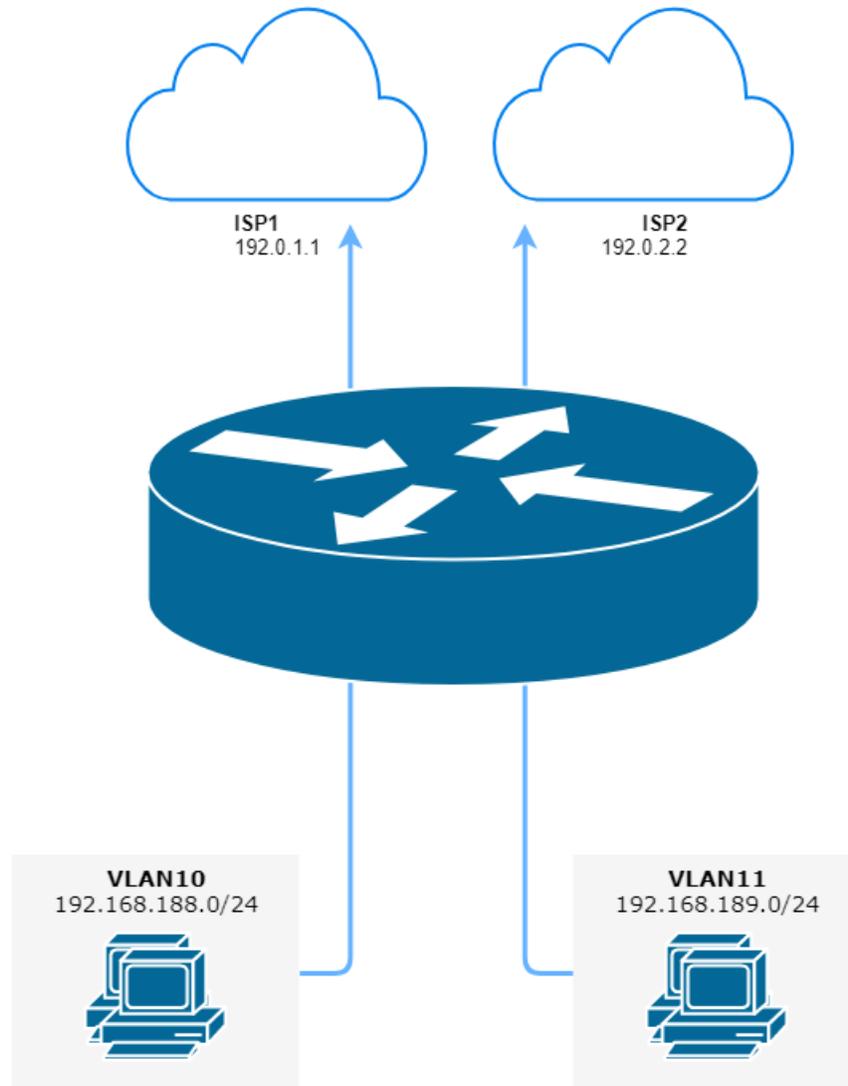


Fig. 2: Policy-Based Routing with multiple ISP uplinks (source `./draw.io/pbr_example_1.drawio`)

Add default routes for routing table `10` and table `11`

```
set protocols static table 10 route 0.0.0.0/0 next-hop 192.0.1.1
set protocols static table 11 route 0.0.0.0/0 next-hop 192.0.2.2
```

Add policy route matching VLAN source addresses

```

set policy route PBR rule 20 set table '10'
set policy route PBR rule 20 description 'Route VLAN10 traffic to table 10'
set policy route PBR rule 20 source address '192.168.188.0/24'

set policy route PBR rule 30 set table '11'
set policy route PBR rule 30 description 'Route VLAN11 traffic to table 11'
set policy route PBR rule 30 source address '192.168.189.0/24'

```

Apply routing policy to **inbound** direction of out VLAN interfaces

```

set policy route 'PBR' interface eth0.10
set policy route 'PBR' interface eth0.11

```

**OPTIONAL:** Exclude Inter-VLAN traffic (between VLAN10 and VLAN11) from PBR

```

set firewall group network-group VLANS-GR description 'VLANS networks'
set firewall group network-group VLANS-GR network '192.168.188.0/24'
set firewall group network-group VLANS-GR network '192.168.189.0/24'

set policy route PBR rule 10 description 'VLAN10 <-> VLAN11 shortcut'
set policy route PBR rule 10 destination group network-group 'VLANS-GR'
set policy route PBR rule 10 set table 'main'

```

These commands allow the VLAN10 and VLAN11 hosts to communicate with each other using the main routing table.

## Local route

The following example allows VyOS to use PBR (Policy-Based Routing) for traffic, which originated from the router itself. That solution for multiple ISP's and VyOS router will respond from the same interface that the packet was received. Also, it used, if we want that one VPN tunnel to be through one provider, and the second through another.

- 203.0.113.254 IP address on VyOS eth1 from ISP1
- 192.168.2.254 IP address on VyOS eth2 from ISP2
- table 10 Routing table used for ISP1
- table 11 Routing table used for ISP2

```

set policy local-route rule 101 set table '10'
set policy local-route rule 101 source '203.0.113.254'
set policy local-route rule 102 set table '11'
set policy local-route rule 102 source '192.0.2.254'
set protocols static table 10 route 0.0.0.0/0 next-hop '203.0.113.1'
set protocols static table 11 route 0.0.0.0/0 next-hop '192.0.2.2'

```

Add multiple source IP in one rule with same priority

```

set policy local-route rule 101 set table '10'
set policy local-route rule 101 source '203.0.113.254'
set policy local-route rule 101 source '203.0.113.253'
set policy local-route rule 101 source '198.51.100.0/24'

```

## Clamp MSS for a specific IP

This example shows how to target an MSS clamp (in our example to 1360 bytes) to a specific destination IP.

```
set policy route IP-MSS-CLAMP rule 10 description 'Clamp TCP session MSS to 1360 for 198.
→51.100.30'
set policy route IP-MSS-CLAMP rule 10 destination address '198.51.100.30/32'
set policy route IP-MSS-CLAMP rule 10 protocol 'tcp'
set policy route IP-MSS-CLAMP rule 10 set tcp-mss '1360'
set policy route IP-MSS-CLAMP rule 10 tcp flags 'SYN'
```

To apply this policy to the correct interface, configure it on the interface the inbound local host will send through to reach our destined target host (in our example eth1).

```
set policy route IP-MSS-CLAMP interface eth1
```

You can view that the policy is being correctly (or incorrectly) utilised with the following command:

```
show policy route statistics
```

## 8.8 PKI

VyOS 1.4 changed the way in how encryption keys or certificates are stored on the system. In the pre VyOS 1.4 era, certificates got stored under /config and every service referenced a file. That made copying a running configuration from system A to system B a bit harder, as you had to copy the files and their permissions by hand.

T3642 describes a new CLI subsystem that serves as a “certstore” to all services requiring any kind of encryption key(s). In short, public and private certificates are now stored in PKCS#8 format in the regular VyOS CLI. Keys can now be added, edited, and deleted using the regular set/edit/delete CLI commands.

VyOS not only can now manage certificates issued by 3rd party Certificate Authorities, it can also act as a CA on its own. You can create your own root CA and sign keys with it by making use of some simple op-mode commands.

Don't be afraid that you need to re-do your configuration. Key transformation is handled, as always, by our migration scripts, so this will be a smooth transition for you!

### 8.8.1 Key Generation

#### Certificate Authority (CA)

VyOS now also has the ability to create CAs, keys, Diffie-Hellman and other keypairs from an easy to access operational level command.

##### **generate pki ca**

Create a new CA and output the CAs public and private key on the console.

##### **generate pki ca install <name>**

Create a new CA and output the CAs public and private key on the console.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

`name` is used for the VyOS CLI command to identify this key. This key `name` is then used in the CLI configuration to reference the key instance.

---

**generate pki ca sign <ca-name>**

Create a new subordinate CA and sign it using the private key referenced by `ca-name`.

**generate pki ca sign <ca-name> install <name>**

Create a new subordinate CA and sign it using the private key referenced by `name`.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

`name` is used for the VyOS CLI command to identify this key. This key `name` is then used in the CLI configuration to reference the key instance.

---

## Certificates

**generate pki certificate**

Create a new public/private keypair and output the certificate on the console.

**generate pki certificate install <name>**

Create a new public/private keypair and output the certificate on the console.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

`name` is used for the VyOS CLI command to identify this key. This key `name` is then used in the CLI configuration to reference the key instance.

---

**generate pki certificate self-signed**

Create a new self-signed certificate. The public/private is then shown on the console.

**generate pki certificate self-signed install <name>**

Create a new self-signed certificate. The public/private is then shown on the console.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

`name` is used for the VyOS CLI command to identify this key. This key `name` is then used in the CLI configuration to reference the key instance.

---

**generate pki certificate sign <ca-name>**

Create a new public/private keypair which is signed by the CA referenced by `ca-name`. The signed certificate is then output to the console.

**generate pki certificate sign <ca-name> install <name>**

Create a new public/private keypair which is signed by the CA referenced by `ca-name`. The signed certificate is then output to the console.

---

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

name is used for the VyOS CLI command to identify this key. This key name is then used in the CLI configuration to reference the key instance.

---

## Diffie-Hellman parameters

### **generate pki dh**

Generate a new set of DH (Diffie-Hellman) parameters. The key size is requested by the CLI and defaults to 2048 bit.

The generated parameters are then output to the console.

### **generate pki dh install <name>**

Generate a new set of DH parameters. The key size is requested by the CLI and defaults to 2048 bit.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

name is used for the VyOS CLI command to identify this key. This key name is then used in the CLI configuration to reference the key instance.

---

## OpenVPN

### **generate pki openvpn shared-secret**

Generate a new OpenVPN shared secret. The generated secret is the output to the console.

### **generate pki openvpn shared-secret install <name>**

Generate a new OpenVPN shared secret. The generated secret is the output to the console.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

name is used for the VyOS CLI command to identify this key. This key name is then used in the CLI configuration to reference the key instance.

---

## WireGuard

### **generate pki wireguard key-pair**

Generate a new WireGuard public/private key portion and output the result to the console.

### **generate pki wireguard key-pair install <interface>**

Generate a new WireGuard public/private key portion and output the result to the console.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

`interface` is used for the VyOS CLI command to identify the WireGuard interface where this private key is to be used.

---

### **generate pki wireguard preshared-key**

Generate a WireGuard pre-shared secret used for peers to communicate.

### **generate pki wireguard preshared-key install <peer>**

Generate a WireGuard pre-shared secret used for peers to communicate.

---

**Note:** In addition to the command above, the output is in a format which can be used to directly import the key into the VyOS CLI by simply copy-pasting the output from op-mode into configuration mode.

`peer` is used for the VyOS CLI command to identify the WireGuard peer where this secret is to be used.

---

## 8.8.2 Key usage (CLI)

### CA (Certificate Authority)

#### **set pki ca <name> certificate**

Add the public CA certificate for the CA named *name* to the VyOS CLI.

---

**Note:** When loading the certificate you need to manually strip the -----BEGIN CERTIFICATE----- and -----END CERTIFICATE----- tags. Also, the certificate/key needs to be presented in a single line without line breaks (`\n`), this can be done using the following shell command:

```
$ tail -n +2 ca.pem | head -n -1 | tr -d '\n'
```

---

#### **set pki ca <name> crl**

Certificate revocation list in PEM format.

#### **set pki ca <name> description**

A human readable description what this CA is about.

#### **set pki ca <name> private key**

Add the CAs private key to the VyOS CLI. This should never leave the system, and is only required if you use VyOS as your certificate generator as mentioned above.

---

**Note:** When loading the certificate you need to manually strip the -----BEGIN KEY----- and -----END KEY----- tags. Also, the certificate/key needs to be presented in a single line without line breaks (`\n`), this can be done using the following shell command:

```
$ tail -n +2 ca.key | head -n -1 | tr -d '\n'
```

---

#### **set pki ca <name> private password-protected**

Mark the CAs private key as password protected. User is asked for the password when the key is referenced.

## Server Certificate

After we have imported the CA certificate(s) we can now import and add certificates used by services on this router.

**set pki certificate <name> certificate**

Add public key portion for the certificate named *name* to the VyOS CLI.

---

**Note:** When loading the certificate you need to manually strip the -----BEGIN CERTIFICATE----- and -----END CERTIFICATE----- tags. Also, the certificate/key needs to be presented in a single line without line breaks (\n), this can be done using the following shell command:

```
$ tail -n +2 cert.pem | head -n -1 | tr -d '\n'
```

---

**set pki certificate <name> description**

A human readable description what this certificate is about.

**set pki certificate <name> private key**

Add the private key portion of this certificate to the CLI. This should never leave the system as it is used to decrypt the data.

---

**Note:** When loading the certificate you need to manually strip the -----BEGIN KEY----- and -----END KEY----- tags. Also, the certificate/key needs to be presented in a single line without line breaks (\n), this can be done using the following shell command:

```
$ tail -n +2 cert.key | head -n -1 | tr -d '\n'
```

---

**set pki certificate <name> private password-protected**

Mark the private key as password protected. User is asked for the password when the key is referenced.

**set pki certificate <name> revoke**

If CA is present, this certificate will be included in generated CRLs

## Import files to PKI format

VyOS provides this utility to import existing certificates/key files directly into PKI from op-mode. Previous to VyOS 1.4, certificates were stored under the /config folder permanently and will be retained post upgrade.

**import pki ca <name> file <Path to CA certificate file>**

Import the public CA certificate from the defined file to VyOS CLI.

**import pki ca <name> key-file <Path to private key file>**

Import the CA's private key portion to the CLI. This should never leave the system as it is used to decrypt the data. The key is required if you use VyOS as your certificate generator.

**import pki certificate <name> file <path to certificate>**

Import the certificate from the file to VyOS CLI.

**import pki certificate <name> key-file <path to private key>**

Import the private key of the certificate to the VyOS CLI. This should never leave the system as it is used to decrypt the data.

**import pki openvpn shared-secret <name> file <path to OpenVPN secret key>**

Import the OpenVPN shared secret stored in file to the VyOS CLI.

## ACME

The VyOS PKI subsystem can also be used to automatically retrieve Certificates using the ACME (Automatic Certificate Management Environment) protocol.

```
set pki certificate <name> acme domain-name <name>
```

Domain names to apply, multiple domain-names can be specified.

This is a mandatory option

```
set pki certificate <name> acme email <address>
```

Email used for registration and recovery contact.

This is a mandatory option

```
set pki certificate <name> acme listen-address <address>
```

The address the server listens to during http-01 challenge

```
set pki certificate <name> acme rsa-key-size <2048 | 3072 | 4096>
```

Size of the RSA key.

This options defaults to 2048

```
set pki certificate <name> acme url <url>
```

ACME Directory Resource URI.

This defaults to <https://acme-v02.api.letsencrypt.org/directory>

---

**Note:** During initial deployment we recommend using the staging API of LetsEncrypt to prevent and black-listing of your system. The API endpoint is <https://acme-staging-v02.api.letsencrypt.org/directory>

---

### 8.8.3 Operation

VyOS operational mode commands are not only available for generating keys but also to display them.

```
show pki ca
```

Show a list of installed CA certificates.

```
vyos@vyos:~$ show pki ca
Certificate Authorities:
Name          Subject          Expiry          Private Key      Parent          Issuer CN
-----
->-----
DST_Root_CA_X3  CN=ISRG Root X1,0=Internet Security Research Group,C=US  CN=DST_R
->Root CA X3    2021-01-20 19:14:03  2024-09-30 18:14:03  No              N/A
R3              CN=R3,0=Let's Encrypt,C=US                                CN=ISRG_R
->Root X1      2020-09-04 00:00:00  2025-09-15 16:00:00  No              DST_Root_CA_X3
vyos_rw        CN=VyOS RW CA,0=VyOS,L=Some-City,ST=Some-State,C=GB      CN=VyOS RW
->CA           2021-07-05 13:46:03  2026-07-04 13:46:03  Yes             N/A
```

**show pki ca <name>**

Show only information for specified Certificate Authority.

**show pki certificate**

Show a list of installed certificates

```
vyos@vyos:~$ show pki certificate
Certificates:
Name          Type      Subject CN          Issuer CN          Issued
↳Expiry      Revoked   Private Key        CA Present
-----
↳-----
ac2           Server   CN=ac2.vyos.net    CN=R3              2021-07-05 07:29:59 2021-
↳10-03 07:29:58 No        Yes                Yes (R3)
rw_server    Server   CN=VyOS RW         CN=VyOS RW CA     2021-07-05 13:48:02 2022-
↳07-05 13:48:02 No        Yes                Yes (vyos_rw)
```

**show pki certificate <name>**

Show only information for specified certificate.

**show pki crl**

Show a list of installed CRLs (Certificate Revocation List).

**renew certbot**

Manually trigger certificate renewal. This will be done twice a day.

## 8.8.4 Examples

### Create a CA chain and leaf certificates

This configuration generates & installs into the VyOS PKI system a root certificate authority, alongside two intermediary certificate authorities for client & server certificates. These CAs are then used to generate a server certificate for the router, and a client certificate for a user.

- vyos\_root\_ca is the root certificate authority.
- vyos\_client\_ca and vyos\_server\_ca are intermediary certificate authorities, which are signed by the root CA.
- vyos\_cert is a leaf server certificate used to identify the VyOS router, signed by the server intermediary CA.
- vyos\_example\_user is a leaf client certificate used to identify a user, signed by client intermediary CA.

First, we create the root certificate authority.

```
[edit]
vyos@vyos# run generate pki ca install vyos_root_ca
Enter private key type: [rsa, dsa, ec] (Default: rsa) rsa
Enter private key bits: (Default: 2048) 2048
Enter country code: (Default: GB) GB
Enter state: (Default: Some-State) Some-State
Enter locality: (Default: Some-City) Some-City
Enter organization name: (Default: VyOS) VyOS
Enter common name: (Default: vyos.io) VyOS Root CA
```

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```

Enter how many days certificate will be valid: (Default: 1825) 1825
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] n
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.

```

Secondly, we create the intermediary certificate authorities, which are used to sign the leaf certificates.

```

[edit]
vyos@vyos# run generate pki ca sign vyos_root_ca install vyos_server_ca
Do you already have a certificate request? [y/N] n
Enter private key type: [rsa, dsa, ec] (Default: rsa) rsa
Enter private key bits: (Default: 2048) 2048
Enter country code: (Default: GB) GB
Enter state: (Default: Some-State) Some-State
Enter locality: (Default: Some-City) Some-City
Enter organization name: (Default: VyOS) VyOS
Enter common name: (Default: vyos.io) VyOS Intermediary Server CA
Enter how many days certificate will be valid: (Default: 1825) 1095
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] n
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.

```

```

[edit]
vyos@vyos# run generate pki ca sign vyos_root_ca install vyos_client_ca
Do you already have a certificate request? [y/N] n
Enter private key type: [rsa, dsa, ec] (Default: rsa) rsa
Enter private key bits: (Default: 2048) 2048
Enter country code: (Default: GB) GB
Enter state: (Default: Some-State) Some-State
Enter locality: (Default: Some-City) Some-City
Enter organization name: (Default: VyOS) VyOS
Enter common name: (Default: vyos.io) VyOS Intermediary Client CA
Enter how many days certificate will be valid: (Default: 1825) 1095
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] n
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.

```

Lastly, we can create the leaf certificates that devices and users will utilise.

```

[edit]
vyos@vyos# run generate pki certificate sign vyos_server_ca install vyos_cert
Do you already have a certificate request? [y/N] n
Enter private key type: [rsa, dsa, ec] (Default: rsa) rsa
Enter private key bits: (Default: 2048) 2048
Enter country code: (Default: GB) GB
Enter state: (Default: Some-State) Some-State
Enter locality: (Default: Some-City) Some-City
Enter organization name: (Default: VyOS) VyOS

```

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```
Enter common name: (Default: vyos.io) vyos.net
Do you want to configure Subject Alternative Names? [y/N] y
Enter alternative names in a comma separate list, example: ipv4:1.1.1.1,ipv6:fe80::1,
↪dns:vyos.net
Enter Subject Alternative Names: dns:vyos.net,dns:www.vyos.net
Enter how many days certificate will be valid: (Default: 365) 365
Enter certificate type: (client, server) (Default: server) server
Note: If you plan to use the generated key on this router, do not encrypt the private_
↪key.
Do you want to encrypt the private key with a passphrase? [y/N] n
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.

[edit]
vyos@vyos# run generate pki certificate sign vyos_client_ca install vyos_example_user
Do you already have a certificate request? [y/N] n
Enter private key type: [rsa, dsa, ec] (Default: rsa) rsa
Enter private key bits: (Default: 2048) 2048
Enter country code: (Default: GB) GB
Enter state: (Default: Some-State) Some-State
Enter locality: (Default: Some-City) Some-City
Enter organization name: (Default: VyOS) VyOS
Enter common name: (Default: vyos.io) Example User
Do you want to configure Subject Alternative Names? [y/N] y
Enter alternative names in a comma separate list, example: ipv4:1.1.1.1,ipv6:fe80::1,
↪dns:vyos.net,rfc822:user@vyos.net
Enter Subject Alternative Names: rfc822:example.user@vyos.net
Enter how many days certificate will be valid: (Default: 365) 365
Enter certificate type: (client, server) (Default: server) client
Note: If you plan to use the generated key on this router, do not encrypt the private_
↪key.
Do you want to encrypt the private key with a passphrase? [y/N] n
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.
```

## 8.9 Protocols

### 8.9.1 Babel

Babel is a modern routing protocol designed to be robust and efficient both in ordinary wired networks and in wireless mesh networks. By default, it uses hop-count on wired networks and a variant of ETX on wireless links. It can be configured to take radio diversity into account and to automatically compute a link's latency and include it in the metric. It is defined in [RFC 8966](#).

Babel a dual stack protocol. A single Babel instance is able to perform routing for both IPv4 and IPv6.

## General Configuration

VyOS does not have a special command to start the Babel process. The Babel process starts when the first Babel enabled interface is configured.

**set protocols babel interface <interface>**

This command specifies a Babel enabled interface by interface name. Both the sending and receiving of Babel packets will be enabled on the interface specified in this command.

## Optional Configuration

**set protocols babel parameters diversity**

This command enables routing using radio frequency diversity. This is highly recommended in networks with many wireless nodes.

---

**Note:** If you enable this, you will probably want to set diversity-factor and channel below.

---

**set protocols babel parameters diversity-factor <1-256>**

This command sets the multiplicative factor used for diversity routing, in units of 1/256; lower values cause diversity to play a more important role in route selection. The default is 256, which means that diversity plays no role in route selection; you will probably want to set that to 128 or less on nodes with multiple independent radios.

**set protocols babel parameters resend-delay <milliseconds>**

This command specifies the time in milliseconds after which an 'important' request or update will be resent. The default is 2000 ms.

**set protocols babel parameters smoothing-half-life <seconds>**

This command specifies the time constant, in seconds, of the smoothing algorithm used for implementing hysteresis. Larger values reduce route oscillation at the cost of very slightly increasing convergence time. The value 0 disables hysteresis, and is suitable for wired networks. The default is 4 s.

## Interfaces Configuration

**set protocols babel interface <interface> type <auto|wired|wireless>**

This command sets the interface type:

**auto** – automatically determines the interface type. **wired** – enables optimisations for wired interfaces. **wireless** – disables a number of optimisations that are only correct on wired interfaces. Specifying wireless is always correct, but may cause slower convergence and extra routing traffic.

**set protocols babel interface <interface> split-horizon <default|disable|enable>**

This command specifies whether to perform split-horizon on the interface. Specifying no babel split-horizon is always correct, while babel split-horizon is an optimisation that should only be used on symmetric and transitive (wired) networks.

**default** – enable split-horizon on wired interfaces, and disable split-horizon on wireless interfaces. **enable** – enable split-horizon on this interfaces. **disable** – disable split-horizon on this interfaces.

**set protocols babel interface <interface> hello-interval <milliseconds>**

This command specifies the time in milliseconds between two scheduled hellos. On wired links, Babel notices a link failure within two hello intervals; on wireless links, the link quality value is reestimated at every hello interval. The default is 4000 ms.

**set protocols babel interface <interface> update-interval <milliseconds>**

This command specifies the time in milliseconds between two scheduled updates. Since Babel makes extensive use of triggered updates, this can be set to fairly high values on links with little packet loss. The default is 20000 ms.

**set protocols babel interface <interface> rxcost <1-65534>**

This command specifies the base receive cost for this interface. For wireless interfaces, it specifies the multiplier used for computing the ETX reception cost (default 256); for wired interfaces, it specifies the cost that will be advertised to neighbours.

**set protocols babel interface <interface> rtt-decay <1-256>**

This command specifies the decay factor for the exponential moving average of RTT samples, in units of 1/256. Higher values discard old samples faster. The default is 42.

**set protocols babel interface <interface> rtt-min <milliseconds>**

This command specifies the minimum RTT, in milliseconds, starting from which we increase the cost to a neighbour. The additional cost is linear in (rtt - rtt-min). The default is 10 ms.

**set protocols babel interface <interface> rtt-max <milliseconds>**

This command specifies the maximum RTT, in milliseconds, above which we don't increase the cost to a neighbour. The default is 120 ms.

**set protocols babel interface <interface> max-rtt-penalty <milliseconds>**

This command specifies the maximum cost added to a neighbour because of RTT, i.e. when the RTT is higher or equal than rtt-max. The default is 150. Setting it to 0 effectively disables the use of a RTT-based cost.

**set protocols babel interface <interface> enable-timestamps**

This command enables sending timestamps with each Hello and IHU message in order to compute RTT values. It is recommended to enable timestamps on tunnel interfaces.

**set protocols babel interface <interface> channel <1-254|interfering|noninterfering>**

This command set the channel number that diversity routing uses for this interface (see diversity option above).

**1-254** – interfaces with a channel number interfere with interfering interfaces and interfaces with the same channel number. **interfering** – interfering interfaces are assumed to interfere with all other channels except noninterfering channels. **noninterfering** – noninterfering interfaces are assumed to only interfere with themselves.

## Redistribution Configuration

**set protocols babel redistribute <ipv4|ipv6> <route source>**

This command redistributes routing information from the given route source to the Babel process.

IPv4 route source: bgp, connected, eigrp, isis, kernel, nhrp, ospf, rip, static.

IPv6 route source: bgp, connected, eigrp, isis, kernel, nhrp, ospfv3, ripng, static.

**set protocols babel distribute-list <ipv4|ipv6> access-list <in|out> <number>**

This command can be used to filter the Babel routes using access lists. in and out this is the direction in which the access lists are applied.

```
set protocols babel distribute-list <ipv4|ipv6> interface <interface> access-list
<in|out> <number>
```

This command allows you apply access lists to a chosen interface to filter the Babel routes.

```
set protocols babel distribute-list <ipv4|ipv6> prefix-list <in|out> <name>
```

This command can be used to filter the Babel routes using prefix lists. in and out this is the direction in which the prefix lists are applied.

```
set protocols babel distribute-list <ipv4|ipv6> interface <interface> prefix-list
<in|out> <name>
```

This command allows you apply prefix lists to a chosen interface to filter the Babel routes.

## Configuration Example

Simple Babel configuration using 2 nodes and redistributing connected interfaces.

### Node 1:

```
set interfaces loopback lo address 10.1.1.1/32
set interfaces loopback lo address fd12:3456:dead:beef::1/128
set protocols babel interface eth0 type wired
set protocols babel redistribute ipv4 connected
set protocols babel redistribute ipv6 connected
```

### Node 2:

```
set interfaces loopback lo address 10.2.2.2/32
set interfaces loopback lo address fd12:3456:beef:dead::2/128
set protocols babel interface eth0 type wired
set protocols babel redistribute ipv4 connected
set protocols babel redistribute ipv6 connected
```

## 8.9.2 BFD

BFD (Bidirectional Forwarding Detection) is described and extended by the following RFCs: [RFC 5880](#), [RFC 5881](#) and [RFC 5883](#).

In the age of very fast networks, a second of unreachability may equal millions of lost packets. The idea behind BFD is to detect very quickly when a peer is down and take action extremely fast.

BFD sends lots of small UDP packets very quickly to ensures that the peer is still alive.

This allows avoiding the timers defined in BGP and OSPF protocol to expires.

## Configure BFD

**set protocols bfd peer <address>**

Set BFD peer IPv4 address or IPv6 address

**set protocols bfd peer <address> echo-mode**

Enables the echo transmission mode

**set protocols bfd peer <address> multihop**

Allow this BFD peer to not be directly connected

**set protocols bfd peer <address> source [address <address> | interface <interface>]**

Bind listener to specific interface/address, mandatory for IPv6

**set protocols bfd peer <address> interval echo-interval <10-60000>**

The minimal echo receive transmission interval that this system is capable of handling

**set protocols bfd peer <address> interval multiplier <2-255>**

Remote transmission interval will be multiplied by this value

**set protocols bfd peer <address> interval [receive | transmit] <10-60000>**

Interval in milliseconds

**set protocols bfd peer <address> shutdown**

Disable a BFD peer

**set protocols bfd peer <address> minimum-ttl <1-254>**

For multi hop sessions only. Configure the minimum expected TTL for an incoming BFD control packet.

This feature serves the purpose of tightening the packet validation requirements to avoid receiving BFD control packets from other sessions.

## Enable BFD in BGP

**set protocols bgp neighbor <neighbor> bfd**

Enable BFD on a single BGP neighbor

**set protocols bgp peer-group <neighbor> bfd**

Enable BFD on a BGP peer group

## Enable BFD in OSPF

**set protocols ospf interface <interface> bfd**

Enable BFD for OSPF on an interface

**set protocols ospfv3 interface <interface> bfd**

Enable BFD for OSPFv3 on an interface

## Enable BFD in ISIS

```
set protocols isis <name> interface <interface> bfd
```

Enable BFD for ISIS on an interface

## Operational Commands

```
show bfd peers
```

Show all BFD peers

```
BFD Peers:
  peer 198.51.100.33 vrf default interface eth4.100
    ID: 4182341893
    Remote ID: 12678929647
    Status: up
    Uptime: 1 month(s), 16 hour(s), 29 minute(s), 38 second(s)
    Diagnostics: ok
    Remote diagnostics: ok
    Local timers:
      Receive interval: 300ms
      Transmission interval: 300ms
      Echo transmission interval: 50ms
    Remote timers:
      Receive interval: 300ms
      Transmission interval: 300ms
      Echo transmission interval: 0ms

  peer 198.51.100.55 vrf default interface eth4.101
    ID: 4618932327
    Remote ID: 3312345688
    Status: up
    Uptime: 20 hour(s), 16 minute(s), 19 second(s)
    Diagnostics: ok
    Remote diagnostics: ok
    Local timers:
      Receive interval: 300ms
      Transmission interval: 300ms
      Echo transmission interval: 50ms
    Remote timers:
      Receive interval: 300ms
      Transmission interval: 300ms
      Echo transmission interval: 0ms
```

## BFD Static Route Monitoring

A monitored static route conditions the installation to the RIB on the BFD session running state: when BFD session is up the route is installed to RIB, but when the BFD session is down it is removed from the RIB.

### Configuration

```
set protocols static route <subnet> next-hop <address> bfd profile <profile>
```

Configure a static route for <subnet> using gateway <address> and use the gateway address as BFD peer destination address.

```
set protocols static route <subnet> next-hop <address> bfd multi-hop source <address> profile <profile>
```

Configure a static route for <subnet> using gateway <address> , use source address to identify the peer when is multi-hop session and the gateway address as BFD peer destination address.

```
set protocols static route6 <subnet> next-hop <address> bfd profile <profile>
```

Configure a static route for <subnet> using gateway <address> and use the gateway address as BFD peer destination address.

```
set protocols static route6 <subnet> next-hop <address> bfd multi-hop source <address> profile <profile>
```

Configure a static route for <subnet> using gateway <address> , use source address to identify the peer when is multi-hop session and the gateway address as BFD peer destination address.

### Operational Commands

```
show bfd static routes
```

Showing BFD monitored static routes

```
Showing BFD monitored static routes:
```

```
Next hops:
```

```
VRF default IPv4 Unicast:
```

```
10.10.13.3/32 peer 192.168.2.3 (status: installed)
```

```
172.16.10.3/32 peer 192.168.10.1 (status: uninstalled)
```

```
VRF default IPv4 Multicast:
```

```
VRF default IPv6 Unicast:
```

### 8.9.3 BGP

BGP (Border Gateway Protocol) is one of the Exterior Gateway Protocols and the de facto standard interdomain routing protocol. The latest BGP version is 4. BGP-4 is described in [RFC 1771](#) and updated by [RFC 4271](#). [RFC 2858](#) adds multiprotocol support to BGP.

VyOS makes use of FRR (Free Range Routing) and we would like to thank them for their effort!

#### Basic Concepts

##### Autonomous Systems

From [RFC 1930](#):

An AS is a connected group of one or more IP prefixes run by one or more network operators which has a SINGLE and CLEARLY DEFINED routing policy.

Each AS (Autonomous System) has an identifying number associated with it called an ASN (Autonomous System Number). This is a two octet value ranging in value from 1 to 65535. The AS numbers 64512 through 65535 are defined as private AS numbers. Private AS numbers must not be advertised on the global Internet. The 2-byte AS number range has been exhausted. 4-byte AS numbers are specified in [RFC 6793](#), and provide a pool of 4294967296 AS numbers.

The ASN is one of the essential elements of BGP. BGP is a distance vector routing protocol, and the AS-Path framework provides distance vector metric and loop detection to BGP.

```
set protocols bgp system-as <asn>
```

Set local ASN that this router represents. This is a a mandatory option!

#### Address Families

Multiprotocol extensions enable BGP to carry routing information for multiple network layer protocols. BGP supports an Address Family Identifier (AFI) for IPv4 and IPv6.

#### Route Selection

The route selection process used by FRR's BGP implementation uses the following decision criterion, starting at the top of the list and going towards the bottom until one of the factors can be used.

1. **Weight check**

Prefer higher local weight routes to lower routes.

2. **Local preference check**

Prefer higher local preference routes to lower.

3. **Local route check**

Prefer local routes (statics, aggregates, redistributed) to received routes.

4. **AS path length check**

Prefer shortest hop-count AS\_PATHs.

5. **Origin check**

Prefer the lowest origin type route. That is, prefer IGP origin routes to EGP, to Incomplete routes.

#### 6. MED check

Where routes with a MED were received from the same AS, prefer the route with the lowest MED.

#### 7. External check

Prefer the route received from an external, eBGP peer over routes received from other types of peers.

#### 8. IGP cost check

Prefer the route with the lower IGP cost.

#### 9. Multi-path check

If multi-pathing is enabled, then check whether the routes not yet distinguished in preference may be considered equal. If `bgp bestpath as-path multipath-relax` is set, all such routes are considered equal, otherwise routes received via iBGP with identical `AS_PATHs` or routes received from eBGP neighbours in the same AS are considered equal.

#### 10. Already-selected external check

Where both routes were received from eBGP peers, then prefer the route which is already selected. Note that this check is not applied if `bgp bestpath compare-routerid` is configured. This check can prevent some cases of oscillation.

#### 11. Router-ID check

Prefer the route with the lowest *router-ID*. If the route has an *ORIGINATOR\_ID* attribute, through iBGP reflection, then that router ID is used, otherwise the *router-ID* of the peer the route was received from is used.

#### 12. Cluster-List length check

The route with the shortest cluster-list length is used. The cluster-list reflects the iBGP reflection path the route has taken.

#### 13. Peer address

Prefer the route received from the peer with the higher transport layer address, as a last-resort tie-breaker.

## Capability Negotiation

When adding IPv6 routing information exchange feature to BGP. There were some proposals. IETF (Internet Engineering Task Force) IDR (Inter Domain Routing) adopted a proposal called Multiprotocol Extension for BGP. The specification is described in [RFC 2283](#). The protocol does not define new protocols. It defines new attributes to existing BGP. When it is used exchanging IPv6 routing information it is called BGP-4+. When it is used for exchanging multicast routing information it is called MBGP.

*bgpd* supports Multiprotocol Extension for BGP. So if a remote peer supports the protocol, *bgpd* can exchange IPv6 and/or multicast routing information.

Traditional BGP did not have the feature to detect a remote peer's capabilities, e.g. whether it can handle prefix types other than IPv4 unicast routes. This was a big problem using Multiprotocol Extension for BGP in an operational network. [RFC 2842](#) adopted a feature called Capability Negotiation. *bgpd* use this Capability Negotiation to detect the remote peer's capabilities. If a peer is only configured as an IPv4 unicast neighbor, *bgpd* does not send these Capability Negotiation packets (at least not unless other optional BGP features require capability negotiation).

By default, FRR will bring up peering with minimal common capability for the both sides. For example, if the local router has unicast and multicast capabilities and the remote router only has unicast capability the local router will establish the connection with unicast only capability. When there are no common capabilities, FRR sends Unsupported Capability error and then resets the connection.

## Configuration

### BGP Router Configuration

First of all you must configure BGP router with the ASN. The AS number is an identifier for the autonomous system. The BGP protocol uses the AS number for detecting whether the BGP connection is internal or external. VyOS does not have a special command to start the BGP process. The BGP process starts when the first neighbor is configured.

**set protocols bgp system-as <asn>**

Set local autonomous system number that this router represents. This is a mandatory option!

### Peers Configuration

#### Defining Peers

**set protocols bgp neighbor <address|interface> remote-as <asn>**

This command creates a new neighbor whose remote-as is <asn>. The neighbor address can be an IPv4 address or an IPv6 address or an interface to use for the connection. The command is applicable for peer and peer group.

**set protocols bgp neighbor <address|interface> remote-as internal**

Create a peer as you would when you specify an ASN, except that if the peers ASN is different than mine as specified under the `protocols bgp <asn>` command the connection will be denied.

**set protocols bgp neighbor <address|interface> remote-as external**

Create a peer as you would when you specify an ASN, except that if the peers ASN is the same as mine as specified under the `protocols bgp <asn>` command the connection will be denied.

**set protocols bgp neighbor <address|interface> local-role <role> [strict]**

BGP roles are defined in RFC [RFC 9234](#) and provide an easy way to add route leak prevention, detection and mitigation. The local Role value is negotiated with the new BGP Role capability which has a built-in check of the corresponding value. In case of a mismatch the new OPEN Roles Mismatch Notification <2, 11> would be sent. The correct Role pairs are:

Provider - Customer

Peer - Peer

RS-Server - RS-Client

If `strict` is set the BGP session won't become established until the BGP neighbor sets local Role on its side. This configuration parameter is defined in RFC [RFC 9234](#) and is used to enforce the corresponding configuration at your counter-parts side.

Routes that are sent from provider, rs-server, or the peer local-role (or if received by customer, rs-client, or the peer local-role) will be marked with a new Only to Customer (OTC) attribute.

Routes with this attribute can only be sent to your neighbor if your local-role is provider or rs-server. Routes with this attribute can be received only if your local-role is customer or rs-client.

In case of peer-peer relationship routes can be received only if OTC value is equal to your neighbor AS number.

All these rules with OTC will help to detect and mitigate route leaks and happen automatically if local-role is set.

**set protocols bgp neighbor <address|interface> shutdown**

This command disable the peer or peer group. To reenable the peer use the delete form of this command.

```
set protocols bgp neighbor <address|interface> description <text>
```

Set description of the peer or peer group.

```
set protocols bgp neighbor <address|interface> update-source <address|interface>
```

Specify the IPv4 source address to use for the BGP session to this neighbor, may be specified as either an IPv4 address directly or as an interface name.

## Capability Negotiation

```
set protocols bgp neighbor <address|interface> capability dynamic
```

This command would allow the dynamic update of capabilities over an established BGP session.

```
set protocols bgp neighbor <address|interface> capability extended-nexthop
```

Allow bgp to negotiate the extended-nexthop capability with it's peer. If you are peering over a IPv6 Link-Local address then this capability is turned on automatically. If you are peering over a IPv6 Global Address then turning on this command will allow BGP to install IPv4 routes with IPv6 nexthops if you do not have IPv4 configured on interfaces.

```
set protocols bgp neighbor <address|interface> disable-capability-negotiation
```

Suppress sending Capability Negotiation as OPEN message optional parameter to the peer. This command only affects the peer is configured other than IPv4 unicast configuration.

When remote peer does not have capability negotiation feature, remote peer will not send any capabilities at all. In that case, bgp configures the peer with configured capabilities.

You may prefer locally configured capabilities more than the negotiated capabilities even though remote peer sends capabilities. If the peer is configured by `override-capability`, VyOS ignores received capabilities then override negotiated capabilities with configured values.

Additionally you should keep in mind that this feature fundamentally disables the ability to use widely deployed BGP features. BGP unnumbered, hostname support, AS4, Addpath, Route Refresh, ORF, Dynamic Capabilities, and graceful restart.

```
set protocols bgp neighbor <address|interface> override-capability
```

This command allow override the result of Capability Negotiation with local configuration. Ignore remote peer's capability value.

```
set protocols bgp neighbor <address|interface> strict-capability-match
```

This command forces strictly compare remote capabilities and local capabilities. If capabilities are different, send Unsupported Capability error then reset connection.

You may want to disable sending Capability Negotiation OPEN message optional parameter to the peer when remote peer does not implement Capability Negotiation. Please use `disable-capability-negotiation` command to disable the feature.

## Peer Parameters

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> allowas-in number <number>**

This command accept incoming routes with AS path containing AS number with the same value as the current system AS. This is used when you want to use the same AS number in your sites, but you can't connect them directly.

The number parameter (1-10) configures the amount of accepted occurrences of the system AS number in AS path.

This command is only allowed for eBGP peers. It is not applicable for peer groups.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> as-override**

This command override AS number of the originating router with the local AS number.

Usually this configuration is used in PEs (Provider Edge) to replace the incoming customer AS number so the connected CE (Customer Edge) can use the same AS number as the other customer sites. This allows customers of the provider network to use the same AS number across their sites.

This command is only allowed for eBGP peers.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> attribute-unchanged <as-path|med|next-hop>**

This command specifies attributes to be left unchanged for advertisements sent to a peer or peer group.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> maximum-prefix <number>**

This command specifies a maximum number of prefixes we can receive from a given peer. If this number is exceeded, the BGP session will be destroyed. The number range is 1 to 4294967295.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> nexthop-self**

This command forces the BGP speaker to report itself as the next hop for an advertised route it advertised to a neighbor.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> remove-private-as**

This command removes the private ASN of routes that are advertised to the configured peer. It removes only private ASNs on routes advertised to EBGp peers.

If the AS-Path for the route has only private ASNs, the private ASNs are removed.

If the AS-Path for the route has a private ASN between public ASNs, it is assumed that this is a design choice, and the private ASN is not removed.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> soft-reconfiguration inbound**

Changes in BGP policies require the BGP session to be cleared. Clearing has a large negative impact on network operations. Soft reconfiguration enables you to generate inbound updates from a neighbor, change and activate BGP policies without clearing the BGP session.

This command specifies that route updates received from this neighbor will be stored unmodified, regardless of the inbound policy. When inbound soft reconfiguration is enabled, the stored updates are processed by the new policy configuration to create new inbound updates.

---

**Note:** Storage of route updates uses memory. If you enable soft reconfiguration inbound for multiple neighbors, the amount of memory used can become significant.

---

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> weight <number>**

This command specifies a default weight value for the neighbor's routes. The number range is 1 to 65535.

**set protocols bgp neighbor <address|interface> advertisement-interval <seconds>**

This command specifies the minimum route advertisement interval for the peer. The interval value is 0 to 600 seconds, with the default advertisement interval being 0.

**set protocols bgp neighbor <address|interface> disable-connected-check**

This command allows peerings between directly connected eBGP peers using loopback addresses without adjusting the default TTL of 1.

**set protocols bgp neighbor <address|interface> disable-send-community <extended|standard>**

This command specifies that the community attribute should not be sent in route updates to a peer. By default community attribute is sent.

**set protocols bgp neighbor <address|interface> ebgp-multihop <number>**

This command allows sessions to be established with eBGP neighbors when they are multiple hops away. When the neighbor is not directly connected and this knob is not enabled, the session will not establish. The number of hops range is 1 to 255. This command is mutually exclusive with `t1-security hops`.

**set protocols bgp neighbor <address|interface> local-as <asn> [no-prepend] [replace-as]**

Specify an alternate AS for this BGP process when interacting with the specified peer or peer group. With no modifiers, the specified local-as is prepended to the received AS\_PATH when receiving routing updates from the peer, and prepended to the outgoing AS\_PATH (after the process local AS) when transmitting local routes to the peer.

If the `no-prepend` attribute is specified, then the supplied local-as is not prepended to the received AS\_PATH.

If the `replace-as` attribute is specified, then only the supplied local-as is prepended to the AS\_PATH when transmitting local-route updates to this peer.

---

**Note:** This command is only allowed for eBGP peers.

---

**set protocols bgp neighbor <address|interface> passive**

Configures the BGP speaker so that it only accepts inbound connections from, but does not initiate outbound connections to the peer or peer group.

**set protocols bgp neighbor <address|interface> password <text>**

This command specifies a MD5 password to be used with the tcp socket that is being used to connect to the remote peer.

**set protocols bgp neighbor <address|interface> ttl-security hops <number>**

This command enforces Generalized TTL Security Mechanism (GTSM), as specified in [RFC 5082](#). With this command, only neighbors that are specified number of hops away will be allowed to become neighbors. The number of hops range is 1 to 254. This command is mutually exclusive with `ebgp-multihop`.

## Peer Groups

Peer groups are used to help improve scaling by generating the same update information to all members of a peer group. Note that this means that the routes generated by a member of a peer group will be sent back to that originating peer with the originator identifier attribute set to indicated the originating peer. All peers not associated with a specific peer group are treated as belonging to a default peer group, and will share updates.

**set protocols bgp peer-group <name>**

This command defines a new peer group. You can specify to the group the same parameters that you can specify for specific neighbors.

---

**Note:** If you apply a parameter to an individual neighbor IP address, you override the action defined for a peer group that includes that IP address.

---

**set protocols bgp neighbor <address|interface> peer-group <name>**

This command bind specific peer to peer group with a given name.

## Network Advertisement Configuration

**set protocols bgp address-family <ipv4-unicast|ipv6-unicast> network <prefix>**

This command is used for advertising IPv4 or IPv6 networks.

---

**Note:** By default, the BGP prefix is advertised even if it's not present in the routing table. This behaviour differs from the implementation of some vendors.

---

**set protocols bgp parameters network-import-check**

This configuration modifies the behavior of the network statement. If you have this configured the underlying network must exist in the routing table.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> default-originate [route-map <name>]**

By default, VyOS does not advertise a default route (0.0.0.0/0) even if it is in routing table. When you want to announce default routes to the peer, use this command. Using optional argument route-map you can inject the default route to given neighbor only if the conditions in the route map are met.

## Route Aggregation Configuration

**set protocols bgp address-family <ipv4-unicast|ipv6-unicast> aggregate-address <prefix>**

This command specifies an aggregate address. The router will also announce longer-prefixes inside of the aggregate address.

**set protocols bgp address-family <ipv4-unicast|ipv6-unicast> aggregate-address <prefix> as-set**

This command specifies an aggregate address with a mathematical set of autonomous systems. This command summarizes the AS\_PATH attributes of all the individual routes.

**set protocols bgp address-family <ipv4-unicast|ipv6-unicast> aggregate-address <prefix> summary-only**

This command specifies an aggregate address and provides that longer-prefixes inside of the aggregate address are suppressed before sending BGP updates out to peers.

```
set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast>
  unsuppress-map <name>
```

This command applies route-map to selectively unsuppress prefixes suppressed by summarisation.

## Redistribution Configuration

```
set protocols bgp address-family <ipv4-unicast|ipv6-unicast> redistribute <route source>
```

This command redistributes routing information from the given route source to the BGP process. There are six modes available for route source: connected, kernel, ospf, rip, static, table.

```
set protocols bgp address-family <ipv4-unicast|ipv6-unicast> redistribute <route source>
  metric <number>
```

This command specifies metric (MED) for redistributed routes. The metric range is 0 to 4294967295. There are six modes available for route source: connected, kernel, ospf, rip, static, table.

```
set protocols bgp address-family <ipv4-unicast|ipv6-unicast> redistribute <route source>
  route-map <name>
```

This command allows to use route map to filter redistributed routes. There are six modes available for route source: connected, kernel, ospf, rip, static, table.

## General Configuration

### Common parameters

```
set protocols bgp parameters allow-martian-nexthop
```

When a peer receives a martian nexthop as part of the NLRI for a route permit the nexthop to be used as such, instead of rejecting and resetting the connection.

```
set protocols bgp parameters router-id <id>
```

This command specifies the router-ID. If router ID is not specified it will use the highest interface IP address.

```
set protocols bgp address-family <ipv4-unicast|ipv6-unicast> maximum-paths <ebgp|ibgp>
  <number>
```

This command defines the maximum number of parallel routes that the BGP can support. In order for BGP to use the second path, the following attributes have to match: Weight, Local Preference, AS Path (both AS number and AS path length), Origin code, MED, IGP metric. Also, the next hop address for each path must be different.

```
set protocols bgp parameters no-hard-administrative-reset
```

Do not send Hard Reset CEASE Notification for “Administrative Reset” events. When set and Graceful Restart Notification capability is exchanged between the peers, Graceful Restart procedures apply, and routes will be retained.

```
set protocols bgp parameters log-neighbor-changes
```

This command enable logging neighbor up/down changes and reset reason.

```
set protocols bgp parameters no-client-to-client-reflection
```

This command disables route reflection between route reflector clients. By default, the clients of a route reflector are not required to be fully meshed and the routes from a client are reflected to other clients. However, if the clients are fully meshed, route reflection is not required. In this case, use the `no-client-to-client-reflection` command to disable client-to-client reflection.

**set protocols bgp parameters no-fast-external-failover**

Disable immediate session reset if peer's connected link goes down.

**set protocols bgp listen range <prefix> peer-group <name>**

This command is useful if one desires to loosen the requirement for BGP to have strictly defined neighbors. Specifically what is allowed is for the local router to listen to a range of IPv4 or IPv6 addresses defined by a prefix and to accept BGP open messages. When a TCP connection (and subsequently a BGP open message) from within this range tries to connect the local router then the local router will respond and connect with the parameters that are defined within the peer group. One must define a peer-group for each range that is listed. If no peer-group is defined then an error will keep you from committing the configuration.

**set protocols bgp listen limit <number>**

This command goes hand in hand with the listen range command to limit the amount of BGP neighbors that are allowed to connect to the local router. The limit range is 1 to 5000.

**set protocols bgp parameters ebgp-requires-policy**

This command changes the eBGP behavior of FRR. By default FRR enables [RFC 8212](#) functionality which affects how eBGP routes are advertised, namely no routes are advertised across eBGP sessions without some sort of egress route-map/policy in place. In VyOS however we have this RFC functionality disabled by default so that we can preserve backwards compatibility with older versions of VyOS. With this option one can enable [RFC 8212](#) functionality to operate.

**set protocols bgp parameters labeled-unicast <explicit-null | ipv4-explicit-null | ipv6-explicit-null>**

By default, locally advertised prefixes use the implicit-null label to encode in the outgoing NLRI.

The following command uses the explicit-null label value for all the BGP instances.

## Administrative Distance

**set protocols bgp parameters distance global <external|internal|local> <distance>**

This command change distance value of BGP. The arguments are the distance values for external routes, internal routes and local routes respectively. The distance range is 1 to 255.

**set protocols bgp parameters distance prefix <subnet> distance <distance>**

This command sets the administrative distance for a particular route. The distance range is 1 to 255.

---

**Note:** Routes with a distance of 255 are effectively disabled and not installed into the kernel.

---

## Timers

### **set protocols bgp timers holdtime <seconds>**

This command specifies hold-time in seconds. The timer range is 4 to 65535. The default value is 180 second. If you set value to 0 VyOS will not hold routes.

### **set protocols bgp timers keepalive <seconds>**

This command specifies keep-alive time in seconds. The timer can range from 4 to 65535. The default value is 60 second.

## Route Dampening

When a route fails, a routing update is sent to withdraw the route from the network's routing tables. When the route is re-enabled, the change in availability is also advertised. A route that continually fails and returns requires a great deal of network traffic to update the network about the route's status.

Route dampening wick described in [RFC 2439](#) enables you to identify routes that repeatedly fail and return. If route dampening is enabled, an unstable route accumulates penalties each time the route fails and returns. If the accumulated penalties exceed a threshold, the route is no longer advertised. This is route suppression. Routes that have been suppressed are re-entered into the routing table only when the amount of their penalty falls below a threshold.

A penalty of 1000 is assessed each time the route fails. When the penalties reach a predefined threshold (suppress-value), the router stops advertising the route.

Once a route is assessed a penalty, the penalty is decreased by half each time a predefined amount of time elapses (half-life-time). When the accumulated penalties fall below a predefined threshold (reuse-value), the route is unsuppressed and added back into the BGP routing table.

No route is suppressed indefinitely. Maximum-suppress-time defines the maximum time a route can be suppressed before it is re-advertised.

### **set protocols bgp parameters dampening half-life <minutes>**

This command defines the amount of time in minutes after which a penalty is reduced by half. The timer range is 10 to 45 minutes.

### **set protocols bgp parameters dampening re-use <seconds>**

This command defines the accumulated penalty amount at which the route is re-advertised. The penalty range is 1 to 20000.

### **set protocols bgp parameters dampening start-suppress-time <seconds>**

This command defines the accumulated penalty amount at which the route is suppressed. The penalty range is 1 to 20000.

### **set protocols bgp parameters dampening max-suppress-time <seconds>**

This command defines the maximum time in minutes that a route is suppressed. The timer range is 1 to 255 minutes.

## Route Selection Configuration

### **set protocols bgp parameters always-compare-med**

This command provides to compare the MED on routes, even when they were received from different neighbouring ASes. Setting this option makes the order of preference of routes more defined, and should eliminate MED induced oscillations.

### **set protocols bgp parameters bestpath as-path confed**

This command specifies that the length of confederation path sets and sequences should be taken into account during the BGP best path decision process.

### **set protocols bgp parameters bestpath as-path multipath-relax**

This command specifies that BGP decision process should consider paths of equal AS\_PATH length candidates for multipath computation. Without the knob, the entire AS\_PATH must match for multipath computation.

### **set protocols bgp parameters bestpath as-path ignore**

Ignore AS\_PATH length when selecting a route

### **set protocols bgp parameters bestpath compare-routerid**

Ensure that when comparing routes where both are equal on most metrics, including local-pref, AS\_PATH length, IGP cost, MED, that the tie is broken based on router-ID.

If this option is enabled, then the already-selected check, where already selected eBGP routes are preferred, is skipped.

If a route has an ORIGINATOR\_ID attribute because it has been reflected, that ORIGINATOR\_ID will be used. Otherwise, the router-ID of the peer the route was received from will be used.

The advantage of this is that the route-selection (at this point) will be more deterministic. The disadvantage is that a few or even one lowest-ID router may attract all traffic to otherwise-equal paths because of this check. It may increase the possibility of MED or IGP oscillation, unless other measures were taken to avoid these. The exact behaviour will be sensitive to the iBGP and reflection topology.

### **set protocols bgp parameters bestpath med confed**

This command specifies that BGP considers the MED when comparing routes originated from different sub-ASs within the confederation to which this BGP speaker belongs. The default state, where the MED attribute is not considered.

### **set protocols bgp parameters bestpath med missing-as-worst**

This command specifies that a route with a MED is always considered to be better than a route without a MED by causing the missing MED attribute to have a value of infinity. The default state, where the missing MED attribute is considered to have a value of zero.

### **set protocols bgp parameters default local-pref <local-pref value>**

This command specifies the default local preference value. The local preference range is 0 to 4294967295.

### **set protocols bgp parameters deterministic-med**

This command provides to compare different MED values that advertised by neighbours in the same AS for routes selection. When this command is enabled, routes from the same autonomous system are grouped together, and the best entries of each group are compared.

### **set protocols bgp address-family ipv4-unicast network <prefix> backdoor**

This command allows the router to prefer route to specified prefix learned via IGP through backdoor link instead of a route to the same prefix learned via EBGp.

## Route Filtering Configuration

In order to control and modify routing information that is exchanged between peers you can use route-map, filter-list, prefix-list, distribute-list.

For inbound updates the order of preference is:

- route-map
- filter-list
- prefix-list, distribute-list

For outbound updates the order of preference is:

- prefix-list, distribute-list
- filter-list
- route-map

---

**Note:** The attributes `prefix-list` and `distribute-list` are mutually exclusive, and only one command (`distribute-list` or `prefix-list`) can be applied to each inbound or outbound direction for a particular neighbor.

---

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> distribute-list <export|import> <number>**

This command applies the access list filters named in <number> to the specified BGP neighbor to restrict the routing information that BGP learns and/or advertises. The arguments `export` and `import` specify the direction in which the access list are applied.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> prefix-list <export|import> <name>**

This command applies the prefix list filters named in <name> to the specified BGP neighbor to restrict the routing information that BGP learns and/or advertises. The arguments `export` and `import` specify the direction in which the prefix list are applied.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> route-map <export|import> <name>**

This command applies the route map named in <name> to the specified BGP neighbor to control and modify routing information that is exchanged between peers. The arguments `export` and `import` specify the direction in which the route map are applied.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> filter-list <export|import> <name>**

This command applies the AS path access list filters named in <name> to the specified BGP neighbor to restrict the routing information that BGP learns and/or advertises. The arguments `export` and `import` specify the direction in which the AS path access list are applied.

**set protocols bgp neighbor <address|interface> address-family <ipv4-unicast|ipv6-unicast> capability orf <receive|send>**

This command enables the ORF capability (described in [RFC 5291](#)) on the local router, and enables ORF capability advertisement to the specified BGP peer. The `receive` keyword configures a router to advertise ORF receive capabilities. The `send` keyword configures a router to advertise ORF send capabilities. To advertise a filter from a sender, you must create an IP prefix list for the specified BGP peer applied in inbound direction.

**set protocols bgp neighbor <address|interface> solo**

This command prevents from sending back prefixes learned from the neighbor.

## BGP Scaling Configuration

BGP routers connected inside the same AS through BGP belong to an internal BGP session, or IBGP. In order to prevent routing table loops, IBGP speaker does not advertise IBGP-learned routes to other IBGP speaker (Split Horizon mechanism). As such, IBGP requires a full mesh of all peers. For large networks, this quickly becomes unscalable.

There are two ways that help us to mitigate the BGP's full-mesh requirement in a network:

- Using BGP route-reflectors
- Using BGP confederation

## Route Reflector Configuration

Introducing route reflectors removes the need for the full-mesh. When you configure a route reflector you have to tell the router whether the other IBGP router is a client or non-client. A client is an IBGP router that the route reflector will “reflect” routes to, the non-client is just a regular IBGP neighbor. Route reflectors mechanism is described in [RFC 4456](#) and updated by [RFC 7606](#).

```
set protocols bgp neighbor <address> address-family <ipv4-unicast|ipv6-unicast>  
route-reflector-client
```

This command specifies the given neighbor as route reflector client.

```
set protocols bgp parameters cluster-id <id>
```

This command specifies cluster ID which identifies a collection of route reflectors and their clients, and is used by route reflectors to avoid looping. By default cluster ID is set to the BGP router id value, but can be set to an arbitrary 32-bit value.

## Confederation Configuration

A BGP confederation divides our AS into sub-ASes to reduce the number of required IBGP peerings. Within a sub-AS we still require full-mesh IBGP but between these sub-ASes we use something that looks like EBGP but behaves like IBGP (called confederation BGP). Confederation mechanism is described in [RFC 5065](#)

```
set protocols bgp parameters confederation identifier <asn>
```

This command specifies a BGP confederation identifier. <asn> is the number of the autonomous system that internally includes multiple sub-autonomous systems (a confederation).

```
set protocols bgp parameters confederation peers <nsubasn>
```

This command sets other confederations <nsubasn> as members of autonomous system specified by confederation identifier <asn>.

## Operational Mode Commands

### Show

#### **show bgp <ipv4|ipv6>**

This command displays all entries in BGP routing table.

```
BGP table version is 10, local router ID is 10.0.35.3, vrf id 0
Default local pref 100, local AS 65000
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

   Network          Next Hop          Metric LocPrf Weight Path
*> 198.51.100.0/24  10.0.34.4          0           0 65004 i
*> 203.0.113.0/24  10.0.35.5          0           0 65005 i

Displayed 2 routes and 2 total paths
```

#### **show bgp <ipv4|ipv6> <address|prefix>**

This command displays information about the particular entry in the BGP routing table.

```
BGP routing table entry for 198.51.100.0/24
Paths: (1 available, best #1, table default)
  Advertised to non peer-group peers:
    10.0.13.1 10.0.23.2 10.0.34.4 10.0.35.5
  65004
    10.0.34.4 from 10.0.34.4 (10.0.34.4)
      Origin IGP, metric 0, valid, external, best (First path received)
      Last update: Wed Jan  6 12:18:53 2021
```

#### **show ip bgp cidr-only**

This command displays routes with classless interdomain routing (CIDR).

#### **show bgp <ipv4|ipv6> community <value>**

This command displays routes that belong to specified BGP communities. Valid value is a community number in the range from 1 to 4294967200, or AA:NN (autonomous system-community number/2-byte number), no-export, local-as, or no-advertise.

#### **show bgp <ipv4|ipv6> community-list <name>**

This command displays routes that are permitted by the BGP community list.

#### **show bgp <ipv4|ipv6> dampening dampened-paths**

This command displays BGP dampened routes.

#### **show bgp <ipv4|ipv6> dampening flap-statistics**

This command displays information about flapping BGP routes.

#### **show bgp <ipv4|ipv6> filter-list <name>**

This command displays BGP routes allowed by the specified AS Path access list.

**show bgp <ipv4|ipv6> neighbors <address> advertised-routes**

This command displays BGP routes advertised to a neighbor.

**show bgp <ipv4|ipv6> neighbors <address> received-routes**

This command displays BGP routes originating from the specified BGP neighbor before inbound policy is applied. To use this command inbound soft reconfiguration must be enabled.

**show bgp <ipv4|ipv6> neighbors <address> routes**

This command displays BGP received-routes that are accepted after filtering.

**show bgp <ipv4|ipv6> neighbors <address> dampened-routes**

This command displays dampened routes received from BGP neighbor.

**show bgp <ipv4|ipv6> regexp <text>**

This command displays information about BGP routes whose AS path matches the specified regular expression.

**show bgp <ipv4|ipv6> summary**

This command displays the status of all BGP connections.

```
IPv4 Unicast Summary:
BGP router identifier 10.0.35.3, local AS number 65000 vrf-id 0
BGP table version 11
RIB entries 5, using 920 bytes of memory
Peers 4, using 82 KiB of memory

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ OutQ  Up/Down State/PfxRcd
10.0.13.1     4      65000   148    159      0    0    0 02:16:01      0
10.0.23.2     4      65000   136    143      0    0    0 02:13:21      0
10.0.34.4     4      65004   161    163      0    0    0 02:16:01      1
10.0.35.5     4      65005   162    166      0    0    0 02:16:01      1

Total number of neighbors 4
```

## Reset

**reset <ip|ipv6> bgp <address> [soft [in|out]]**

This command resets BGP connections to the specified neighbor IP address. With argument `soft` this command initiates a soft reset. If you do not specify the `in` or `out` options, both inbound and outbound soft reconfiguration are triggered.

**reset ip bgp all**

This command resets all BGP connections of given router.

**reset ip bgp dampening**

This command uses to clear BGP route dampening information and to unsuppress suppressed routes.

**reset ip bgp external**

This command resets all external BGP peers of given router.

**reset ip bgp peer-group <name> [soft [in|out]]**

This command resets BGP connections to the specified peer group. With argument `soft` this command initiates a soft reset. If you do not specify the `in` or `out` options, both inbound and outbound soft reconfiguration are triggered.

## Examples

### IPv4 peering

A simple eBGP configuration:

#### Node 1:

```
set protocols bgp system-as 65534
set protocols bgp neighbor 192.168.0.2 ebgp-multihop '2'
set protocols bgp neighbor 192.168.0.2 remote-as '65535'
set protocols bgp neighbor 192.168.0.2 update-source '192.168.0.1'
set protocols bgp address-family ipv4-unicast network '172.16.0.0/16'
set protocols bgp parameters router-id '192.168.0.1'
```

#### Node 2:

```
set protocols bgp system-as 65535
set protocols bgp neighbor 192.168.0.1 ebgp-multihop '2'
set protocols bgp neighbor 192.168.0.1 remote-as '65534'
set protocols bgp neighbor 192.168.0.1 update-source '192.168.0.2'
set protocols bgp address-family ipv4-unicast network '172.17.0.0/16'
set protocols bgp parameters router-id '192.168.0.2'
```

Don't forget, the CIDR declared in the network statement **MUST exist in your routing table (dynamic or static), the best way to make sure that is true is creating a static route:**

#### Node 1:

```
set protocols static route 172.16.0.0/16 blackhole distance '254'
```

#### Node 2:

```
set protocols static route 172.17.0.0/16 blackhole distance '254'
```

### IPv6 peering

A simple BGP configuration via IPv6.

#### Node 1:

```
set protocols bgp system-as 65534
set protocols bgp neighbor 2001:db8::2 ebgp-multihop '2'
set protocols bgp neighbor 2001:db8::2 remote-as '65535'
set protocols bgp neighbor 2001:db8::2 update-source '2001:db8::1'
set protocols bgp neighbor 2001:db8::2 address-family ipv6-unicast
set protocols bgp address-family ipv6-unicast network '2001:db8:1::/48'
set protocols bgp parameters router-id '10.1.1.1'
```

#### Node 2:

```

set protocols bgp system-as 65535
set protocols bgp neighbor 2001:db8::1 ebgp-multihop '2'
set protocols bgp neighbor 2001:db8::1 remote-as '65534'
set protocols bgp neighbor 2001:db8::1 update-source '2001:db8::2'
set protocols bgp neighbor 2001:db8::1 address-family ipv6-unicast
set protocols bgp address-family ipv6-unicast network '2001:db8:2::/48'
set protocols bgp parameters router-id '10.1.1.2'

```

Don't forget, the CIDR declared in the network statement **MUST exist in your routing table (dynamic or static), the best way to make sure that is true is creating a static route:**

**Node 1:**

```
set protocols static route6 2001:db8:1::/48 blackhole distance '254'
```

**Node 2:**

```
set protocols static route6 2001:db8:2::/48 blackhole distance '254'
```

## Route Filtering

Route filter can be applied using a route-map:

**Node1:**

```

set policy prefix-list AS65535-IN rule 10 action 'permit'
set policy prefix-list AS65535-IN rule 10 prefix '172.16.0.0/16'
set policy prefix-list AS65535-OUT rule 10 action 'deny'
set policy prefix-list AS65535-OUT rule 10 prefix '172.16.0.0/16'
set policy prefix-list6 AS65535-IN rule 10 action 'permit'
set policy prefix-list6 AS65535-IN rule 10 prefix '2001:db8:2::/48'
set policy prefix-list6 AS65535-OUT rule 10 action 'deny'
set policy prefix-list6 AS65535-OUT rule 10 prefix '2001:db8:2::/48'

set policy route-map AS65535-IN rule 10 action 'permit'
set policy route-map AS65535-IN rule 10 match ip address prefix-list 'AS65535-IN'
set policy route-map AS65535-IN rule 10 match ipv6 address prefix-list 'AS65535-IN'
set policy route-map AS65535-IN rule 20 action 'deny'
set policy route-map AS65535-OUT rule 10 action 'deny'
set policy route-map AS65535-OUT rule 10 match ip address prefix-list 'AS65535-OUT'
set policy route-map AS65535-OUT rule 10 match ipv6 address prefix-list 'AS65535-OUT'
set policy route-map AS65535-OUT rule 20 action 'permit'

set protocols bgp system-as 65534
set protocols bgp neighbor 2001:db8::2 address-family ipv4-unicast route-map export
↪ 'AS65535-OUT'
set protocols bgp neighbor 2001:db8::2 address-family ipv4-unicast route-map import
↪ 'AS65535-IN'
set protocols bgp neighbor 2001:db8::2 address-family ipv6-unicast route-map export
↪ 'AS65535-OUT'
set protocols bgp neighbor 2001:db8::2 address-family ipv6-unicast route-map import
↪ 'AS65535-IN'

```

**Node2:**

```

set policy prefix-list AS65534-IN rule 10 action 'permit'
set policy prefix-list AS65534-IN rule 10 prefix '172.17.0.0/16'
set policy prefix-list AS65534-OUT rule 10 action 'deny'
set policy prefix-list AS65534-OUT rule 10 prefix '172.17.0.0/16'
set policy prefix-list6 AS65534-IN rule 10 action 'permit'
set policy prefix-list6 AS65534-IN rule 10 prefix '2001:db8:1::/48'
set policy prefix-list6 AS65534-OUT rule 10 action 'deny'
set policy prefix-list6 AS65534-OUT rule 10 prefix '2001:db8:1::/48'

set policy route-map AS65534-IN rule 10 action 'permit'
set policy route-map AS65534-IN rule 10 match ip address prefix-list 'AS65534-IN'
set policy route-map AS65534-IN rule 10 match ipv6 address prefix-list 'AS65534-IN'
set policy route-map AS65534-IN rule 20 action 'deny'
set policy route-map AS65534-OUT rule 10 action 'deny'
set policy route-map AS65534-OUT rule 10 match ip address prefix-list 'AS65534-OUT'
set policy route-map AS65534-OUT rule 10 match ipv6 address prefix-list 'AS65534-OUT'
set policy route-map AS65534-OUT rule 20 action 'permit'

set protocols bgp system-as 65535
set protocols bgp neighbor 2001:db8::1 address-family ipv4-unicast route-map export
↪ 'AS65534-OUT'
set protocols bgp neighbor 2001:db8::1 address-family ipv4-unicast route-map import
↪ 'AS65534-IN'
set protocols bgp neighbor 2001:db8::1 address-family ipv6-unicast route-map export
↪ 'AS65534-OUT'
set protocols bgp neighbor 2001:db8::1 address-family ipv6-unicast route-map import
↪ 'AS65534-IN'

```

We could expand on this and also deny link local and multicast in the rule 20 action deny.

## 8.9.4 Failover

Failover routes are manually configured routes, but they only install to the routing table if the health-check target is alive. If the target is not alive the route is removed from the routing table until the target becomes available.

### Failover Routes

**set protocols failover route <subnet> next-hop <address> check target <target-address>**

Configure next-hop <address> and <target-address> for an IPv4 static route. Specify the target IPv4 address for health checking.

**set protocols failover route <subnet> next-hop <address> check timeout <timeout>**

Timeout in seconds between health target checks.

Range is 1 to 300, default is 10.

**set protocols failover route <subnet> next-hop <address> check type <protocol>**

Defines protocols for checking ARP, ICMP, TCP

Default is icmp.

**set protocols failover route <subnet> next-hop <address> check policy <policy>**

Policy for checking targets

- all-available all checking target addresses must be available to pass this check
- any-available any of the checking target addresses must be available to pass this check

Default is any-available.

```
set protocols failover route <subnet> next-hop <address> interface <interface>
```

Next-hop interface for the route

```
set protocols failover route <subnet> next-hop <address> metric <metric>
```

Route metric

Default 1.

## Example

### One gateway:

```
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 check target '192.0.2.1'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 check timeout '5'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 check type 'icmp'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 interface 'eth0'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 metric '10'
```

Show the route

```
vyos@vyos:~$ show ip route 203.0.113.1
Routing entry for 203.0.113.1/32
Known via "kernel", distance 0, metric 10, best
Last update 00:00:39 ago
* 192.0.2.1, via eth0
```

### Two gateways and different metrics:

```
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 check target '192.0.2.1'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 check timeout '5'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 check type 'icmp'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 interface 'eth0'
set protocols failover route 203.0.113.1/32 next-hop 192.0.2.1 metric '10'

set protocols failover route 203.0.113.1/32 next-hop 198.51.100.1 check target '198.51.
↪100.99'
set protocols failover route 203.0.113.1/32 next-hop 198.51.100.1 check timeout '5'
set protocols failover route 203.0.113.1/32 next-hop 198.51.100.1 check type 'icmp'
set protocols failover route 203.0.113.1/32 next-hop 198.51.100.1 interface 'eth2'
set protocols failover route 203.0.113.1/32 next-hop 198.51.100.1 metric '20'
```

Show the route

```
vyos@vyos:~$ show ip route 203.0.113.1
Routing entry for 203.0.113.1/32
Known via "kernel", distance 0, metric 10, best
Last update 00:08:06 ago
```

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```
* 192.0.2.1, via eth0

Routing entry for 203.0.113.1/32
  Known via "kernel", distance 0, metric 20
  Last update 00:08:14 ago
* 198.51.100.1, via eth2
```

## 8.9.5 IGMP Proxy

IGMP (Internet Group Management Protocol) proxy sends IGMP host messages on behalf of a connected client. The configuration must define one, and only one upstream interface, and one or more downstream interfaces.

### Configuration

**set protocols igmp-proxy interface <interface> role <upstream | downstream>**

- **upstream:** The upstream network interface is the outgoing interface which is responsible for communicating to available multicast data sources. There can only be one upstream interface.
- **downstream:** Downstream network interfaces are the distribution interfaces to the destination networks, where multicast clients can join groups and receive multicast data. One or more downstream interfaces must be configured.

**set protocols igmp-proxy interface <interface> alt-subnet <network>**

Defines alternate sources for multicasting and IGMP data. The network address must be on the following format 'a.b.c.d/n'. By default, the router will accept data from sources on the same network as configured on an interface. If the multicast source lies on a remote network, one must define from where traffic should be accepted.

This is especially useful for the upstream interface, since the source for multicast traffic is often from a remote location.

This option can be supplied multiple times.

**set protocols igmp-proxy disable-quickleave**

Disables quickleave mode. In this mode the daemon will not send a Leave IGMP message upstream as soon as it receives a Leave message for any downstream interface. The daemon will not ask for Membership reports on the downstream interfaces, and if a report is received the group is not joined again the upstream.

If it's vital that the daemon should act exactly like a real multicast client on the upstream interface, this function should be enabled.

Enabling this function increases the risk of bandwidth saturation.

**set protocols igmp-proxy disable**

Disable this service.

## Example

Interface *eth1* LAN is behind NAT. In order to subscribe *10.0.0.0/23* subnet multicast which is in *eth0* WAN we need to configure *igmp-proxy*.

```
set protocols igmp-proxy interface eth0 role upstream
set protocols igmp-proxy interface eth0 alt-subnet 10.0.0.0/23
set protocols igmp-proxy interface eth1 role downstream
```

## Operation

### restart igmp-proxy

Restart the IGMP proxy process.

## 8.9.6 IS-IS

IS-IS (Intermediate System to Intermediate System) is a link-state interior gateway protocol (IGP) which is described in ISO10589, [RFC 1195](#), [RFC 5308](#). IS-IS runs the Dijkstra shortest-path first (SPF) algorithm to create a database of the network's topology, and from that database to determine the best (that is, lowest cost) path to a destination. The intermediate systems (the name for routers) exchange topology information with their directly connected neighbors. IS-IS runs directly on the data link layer (Layer 2). IS-IS addresses are called NETs (Network Entity Titles) and can be 8 to 20 bytes long, but are generally 10 bytes long. The tree database that is created with IS-IS is similar to the one that is created with OSPF in that the paths chosen should be similar. Comparisons to OSPF are inevitable and often are reasonable ones to make in regards to the way a network will respond with either IGP.

## General

## Configuration

### Mandatory Settings

For IS-IS top operate correctly, one must do the equivalent of a Router ID in CLNS. This Router ID is called the NET (Network Entity Title). This must be unique for each and every router that is operating in IS-IS. It also must not be duplicated otherwise the same issues that occur within OSPF will occur within IS-IS when it comes to said duplication.

**set protocols isis net <network-entity-title>**

This command sets network entity title (NET) provided in ISO format.

Here is an example NET value:

```
49.0001.1921.6800.1002.00
```

The CLNS address consists of the following parts:

- AFI (Address family authority identifier) - 49 The AFI value 49 is what IS-IS uses for private addressing.
- Area identifier: 0001 IS-IS area number (numerical area 1)
- System identifier: 1921.6800.1002 - for system identifiers we recommend to use IP address or MAC address of the router itself. The way to construct this is to keep all of the zeroes of the router IP address, and then change the periods from being every three numbers to every four numbers. The address that is listed

here is 192.168.1.2, which if expanded will turn into 192.168.001.002. Then all one has to do is move the dots to have four numbers instead of three. This gives us 1921.6800.1002.

- NET selector: 00 Must always be 00. This setting indicates “this system” or “local system.”

#### **set protocols isis interface <interface>**

This command enables IS-IS on this interface, and allows for adjacency to occur. Note that the name of IS-IS instance must be the same as the one used to configure the IS-IS process.

### IS-IS Global Configuration

#### **set protocols isis dynamic-hostname**

This command enables support for dynamic hostname TLV. Dynamic hostname mapping determined as described in [RFC 2763](#), Dynamic Hostname Exchange Mechanism for IS-IS.

#### **set protocols isis level <level-1|level-1-2|level-2>**

This command defines the IS-IS router behavior:

- **level-1** - Act as a station (Level 1) router only.
- **level-1-2** - Act as a station (Level 1) router and area (Level 2) router.
- **level-2-only** - Act as an area (Level 2) router only.

#### **set protocols isis lsp-mtu <size>**

This command configures the maximum size of generated LSPs (Link State PDUs), in bytes. The size range is 128 to 4352.

#### **set protocols isis metric-style <narrow|transition|wide>**

This command sets old-style (ISO 10589) or new style packet formats:

- **narrow** - Use old style of TLVs with narrow metric.
- **transition** - Send and accept both styles of TLVs during transition.
- **wide** - Use new style of TLVs to carry wider metric.

#### **set protocols isis purge-originator**

This command enables [RFC 6232](#) purge originator identification. Enable purge originator identification (POI) by adding the type, length and value (TLV) with the Intermediate System (IS) identification to the LSPs that do not contain POI information. If an IS generates a purge, VyOS adds this TLV with the system ID of the IS to the purge.

#### **set protocols isis set-attached-bit**

This command sets ATT bit to 1 in Level1 LSPs. It is described in [RFC 3787](#).

#### **set protocols isis set-overload-bit**

This command sets overload bit to avoid any transit traffic through this router. It is described in [RFC 3787](#).

#### **set protocols isis name default-information originate <ipv4|ipv6> level-1**

This command will generate a default-route in L1 database.

#### **set protocols isis name default-information originate <ipv4|ipv6> level-2**

This command will generate a default-route in L2 database.

#### **set protocols isis ldp-sync**

This command will enable IGP-LDP synchronization globally for ISIS. This requires for LDP to be functional. This is described in [RFC 5443](#). By default all interfaces operational in IS-IS are enabled for synchronization. Loopbacks are exempt.

**set protocols isis ldp-sync holddown <seconds>**

This command will change the hold down value globally for IGP-LDP synchronization during convergence/interface flap events.

## Interface Configuration

**set protocols isis interface <interface> circuit-type <level-1|level-1-2|level-2-only>**

This command specifies circuit type for interface:

- **level-1** - Level-1 only adjacencies are formed.
- **level-1-2** - Level-1-2 adjacencies are formed
- **level-2-only** - Level-2 only adjacencies are formed

**set protocols isis interface <interface> hello-interval <seconds>**

This command sets hello interval in seconds on a given interface. The range is 1 to 600.

**set protocols isis interface <interface> hello-multiplier <seconds>**

This command sets multiplier for hello holding time on a given interface. The range is 2 to 100.

**set protocols isis interface <interface> hello-padding**

This command configures padding on hello packets to accommodate asymmetrical maximum transfer units (MTUs) from different hosts as described in [RFC 3719](#). This helps to prevent a premature adjacency Up state when one routing devices MTU does not meet the requirements to establish the adjacency.

**set protocols isis interface <interface> metric <metric>**

This command set default metric for circuit.

The metric range is 1 to 16777215 (Max value depend if metric support narrow or wide value).

**set protocols isis interface <interface> network point-to-point**

This command specifies network type to Point-to-Point. The default network type is broadcast.

**set protocols isis interface <interface> passive**

This command configures the passive mode for this interface.

**set protocols isis interface <interface> password plaintext-password <text>**

This command configures the authentication password for the interface.

**set protocols isis interface <interface> priority <number>**

This command sets priority for the interface for DIS (Designated Intermediate System) election. The priority range is 0 to 127.

**set protocols isis interface <interface> psnp-interval <number>**

This command sets PSNP interval in seconds. The interval range is 0 to 127.

**set protocols isis interface <interface> no-three-way-handshake**

This command disables Three-Way Handshake for P2P adjacencies which described in [RFC 5303](#). Three-Way Handshake is enabled by default.

**set protocols isis interface <interface> ldp-sync disable**

This command disables IGP-LDP sync for this specific interface.

**set protocols isis interface <interface> ldp-sync holddown <seconds>**

This command will change the hold down value for IGP-LDP synchronization during convergence/interface flap events, but for this interface only.

## Route Redistribution

**set protocols isis redistribute ipv4 <route source> level-1**

This command redistributes routing information from the given route source into the ISIS database as Level-1. There are six modes available for route source: bgp, connected, kernel, ospf, rip, static.

**set protocols isis redistribute ipv4 <route source> level-2**

This command redistributes routing information from the given route source into the ISIS database as Level-2. There are six modes available for route source: bgp, connected, kernel, ospf, rip, static.

**set protocols isis redistribute ipv4 <route source> <level-1|level-2> metric <number>**

This command specifies metric for redistributed routes from the given route source. There are six modes available for route source: bgp, connected, kernel, ospf, rip, static. The metric range is 1 to 16777215.

**set protocols isis redistribute ipv4 <route source> <level-1|level-2> route-map <name>**

This command allows to use route map to filter redistributed routes from the given route source. There are six modes available for route source: bgp, connected, kernel, ospf, rip, static.

## Timers

**set protocols isis lsp-gen-interval <seconds>**

This command sets minimum interval in seconds between regenerating same LSP. The interval range is 1 to 120.

**set protocols isis lsp-refresh-interval <seconds>**

This command sets LSP refresh interval in seconds. IS-IS generates LSPs when the state of a link changes. However, to ensure that routing databases on all routers remain converged, LSPs in stable networks are generated on a regular basis even though there has been no change to the state of the links. The interval range is 1 to 65235. The default value is 900 seconds.

**set protocols isis max-lsp-lifetime <seconds>**

This command sets LSP maximum LSP lifetime in seconds. The interval range is 350 to 65535. LSPs remain in a database for 1200 seconds by default. If they are not refreshed by that time, they are deleted. You can change the LSP refresh interval or the LSP lifetime. The LSP refresh interval should be less than the LSP lifetime or else LSPs will time out before they are refreshed.

**set protocols isis spf-interval <seconds>**

This command sets minimum interval between consecutive SPF calculations in seconds. The interval range is 1 to 120.

**set protocols isis spf-delay-ietf holddown <milliseconds>**

**set protocols isis spf-delay-ietf init-delay <milliseconds>**

**set protocols isis spf-delay-ietf long-delay <milliseconds>**

```
set protocols isis spf-delay-ietf short-delay <milliseconds>
```

```
set protocols isis spf-delay-ietf time-to-learn <milliseconds>
```

This commands specifies the Finite State Machine (FSM) intended to control the timing of the execution of SPF calculations in response to IGP events. The process described in [RFC 8405](#).

### Loop Free Alternate (LFA)

```
set protocols isis fast-reroute lfa remote prefix-list <name> <level-1|level-2>
```

This command enables IP fast re-routing that is part of [RFC 5286](#). Specifically this is a prefix list which references a prefix in which will select eligible PQ nodes for remote LFA backups.

```
set protocols isis fast-reroute lfa local load-sharing disable <level-1|level-2>
```

This command disables the load sharing across multiple LFA backups.

```
set protocols isis fast-reroute lfa local tiebreaker <downstream|lowest-backup-metric|node-protecting>
index <number> <level-1|level-2>
```

This command will configure a tie-breaker for multiple local LFA backups. The lower index numbers will be processed first.

```
set protocols isis fast-reroute lfa local priority-limit <medium|high|critical>
<level-1|level-2>
```

This command will limit LFA backup computation up to the specified prefix priority.

### Examples

#### Enable IS-IS

##### Node 1:

```
set interfaces loopback lo address '192.168.255.255/32'
set interfaces ethernet eth1 address '192.0.2.1/24'

set protocols isis interface eth1
set protocols isis interface lo
set protocols isis net '49.0001.1921.6825.5255.00'
```

##### Node 2:

```
set interfaces ethernet eth1 address '192.0.2.2/24'

set interfaces loopback lo address '192.168.255.254/32'
set interfaces ethernet eth1 address '192.0.2.2/24'

set protocols isis interface eth1
set protocols isis interface lo
set protocols isis net '49.0001.1921.6825.5254.00'
```

This gives us the following neighborships, Level 1 and Level 2:

```

Node-1@vyos:~$ show isis neighbor
Area VyOS:
  System Id      Interface  L  State      Holdtime SNPA
vyos            eth1      1  Up         28        0c87.6c09.0001
vyos            eth1      2  Up         28        0c87.6c09.0001

Node-2@vyos:~$ show isis neighbor
Area VyOS:
  System Id      Interface  L  State      Holdtime SNPA
vyos            eth1      1  Up         29        0c33.0280.0001
vyos            eth1      2  Up         28        0c33.0280.0001

```

Here's the IP routes that are populated. Just the loopback:

```

Node-1@vyos:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I  192.0.2.0/24 [115/20] via 192.0.2.2, eth1 inactive, weight 1, 00:02:22
I>* 192.168.255.254/32 [115/20] via 192.0.2.2, eth1, weight 1, 00:02:22

Node-2@vyos:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I  192.0.2.0/24 [115/20] via 192.0.2.1, eth1 inactive, weight 1, 00:02:21
I>* 192.168.255.255/32 [115/20] via 192.0.2.1, eth1, weight 1, 00:02:21

```

## Enable IS-IS and redistribute routes not natively in IS-IS

### Node 1:

```

set interfaces dummy dum0 address '203.0.113.1/24'
set interfaces ethernet eth1 address '192.0.2.1/24'

set policy prefix-list EXPORT-ISIS rule 10 action 'permit'
set policy prefix-list EXPORT-ISIS rule 10 prefix '203.0.113.0/24'
set policy route-map EXPORT-ISIS rule 10 action 'permit'
set policy route-map EXPORT-ISIS rule 10 match ip address prefix-list 'EXPORT-ISIS'

set protocols isis interface eth1
set protocols isis net '49.0001.1921.6800.1002.00'
set protocols isis redistribute ipv4 connected level-2 route-map 'EXPORT-ISIS'

```

**Node 2:**

```
set interfaces ethernet eth1 address '192.0.2.2/24'

set protocols isis interface eth1
set protocols isis net '49.0001.1921.6800.2002.00'
```

Routes on Node 2:

```
Node-2@r2:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued route, r - rejected route

I 203.0.113.0/24 [115/10] via 192.0.2.1, eth1, 00:03:42
```

**Enable IS-IS and IGP-LDP synchronization****Node 1:**

```
set interfaces loopback lo address 192.168.255.255/32
set interfaces ethernet eth0 address 192.0.2.1/24

set protocols isis interface eth0
set protocols isis interface lo passive
set protocols isis ldp-sync
set protocols isis net 49.0001.1921.6825.5255.00

set protocols mpls interface eth0
set protocols mpls ldp discovery transport-ipv4-address 192.168.255.255
set protocols mpls ldp interface lo
set protocols mpls ldp interface eth0
set protocols mpls ldp parameters transport-prefer-ipv4
set protocols mpls ldp router-id 192.168.255.255
```

This gives us IGP-LDP synchronization for all non-loopback interfaces with a holddown timer of zero seconds:

```
Node-1@vyos:~$ show isis mpls ldp-sync
eth0
  LDP-IGP Synchronization enabled: yes
  holddown timer in seconds: 0
  State: Sync achieved
```

## Enable IS-IS with Segment Routing (Experimental)

### Node 1:

```
set interfaces loopback lo address '192.168.255.255/32'
set interfaces ethernet eth1 address '192.0.2.1/24'

set protocols isis interface eth1
set protocols isis interface lo
set protocols isis net '49.0001.1921.6825.5255.00'
set protocols isis segment-routing global-block high-label-value '599'
set protocols isis segment-routing global-block low-label-value '550'
set protocols isis segment-routing prefix 192.168.255.255/32 index value '1'
set protocols isis segment-routing prefix 192.168.255.255/32 index explicit-null
set protocols mpls interface 'eth1'
```

### Node 2:

```
set interfaces loopback lo address '192.168.255.254/32'
set interfaces ethernet eth1 address '192.0.2.2/24'

set protocols isis interface eth1
set protocols isis interface lo
set protocols isis net '49.0001.1921.6825.5254.00'
set protocols isis segment-routing global-block high-label-value '599'
set protocols isis segment-routing global-block low-label-value '550'
set protocols isis segment-routing prefix 192.168.255.254/32 index value '2'
set protocols isis segment-routing prefix 192.168.255.254/32 index explicit-null
set protocols mpls interface 'eth1'
```

This gives us MPLS segment routing enabled and labels for far end loopbacks:

```
Node-1@vyos:~$ show mpls table
Inbound Label  Type          Nexthop          Outbound Label
-----
552            SR (IS-IS)    192.0.2.2        IPv4 Explicit Null <-- Node-2
↳loopback learned on Node-1
15000          SR (IS-IS)    192.0.2.2        implicit-null
15001          SR (IS-IS)    fe80::e87:6cff:fe09:1  implicit-null
15002          SR (IS-IS)    192.0.2.2        implicit-null
15003          SR (IS-IS)    fe80::e87:6cff:fe09:1  implicit-null

Node-2@vyos:~$ show mpls table
Inbound Label  Type          Nexthop          Outbound Label
-----
551            SR (IS-IS)    192.0.2.1        IPv4 Explicit Null <-- Node-1 loopback
↳learned on Node-2
15000          SR (IS-IS)    192.0.2.1        implicit-null
15001          SR (IS-IS)    fe80::e33:2ff:fe80:1  implicit-null
15002          SR (IS-IS)    192.0.2.1        implicit-null
15003          SR (IS-IS)    fe80::e33:2ff:fe80:1  implicit-null
```

Here is the routing tables showing the MPLS segment routing label operations:

```

Node-1@vyos:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I 192.0.2.0/24 [115/20] via 192.0.2.2, eth1 inactive, weight 1, 00:07:48
I>* 192.168.255.254/32 [115/20] via 192.0.2.2, eth1, label IPv4 Explicit Null, weight 1,
↳00:03:39

Node-2@vyos:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I 192.0.2.0/24 [115/20] via 192.0.2.1, eth1 inactive, weight 1, 00:07:46
I>* 192.168.255.254/32 [115/20] via 192.0.2.1, eth1, label IPv4 Explicit Null, weight 1,
↳00:03:43

```

## 8.9.7 MPLS

MPLS (Multi-Protocol Label Switching) is a packet forwarding paradigm which differs from regular IP forwarding. Instead of IP addresses being used to make the decision on finding the exit interface, a router will instead use an exact match on a 32 bit/4 byte header called the MPLS label. This label is inserted between the ethernet (layer 2) header and the IP (layer 3) header. One can statically or dynamically assign label allocations, but we will focus on dynamic allocation of labels using some sort of label distribution protocol (such as the aptly named Label Distribution Protocol / LDP, Resource Reservation Protocol / RSVP, or Segment Routing through OSPF/ISIS). These protocols allow for the creation of a unidirectional/unicast path called a labeled switched path (initialized as LSP) throughout the network that operates very much like a tunnel through the network. An easy way of thinking about how an MPLS LSP actually forwards traffic throughout a network is to think of a GRE tunnel. They are not the same in how they operate, but they are the same in how they handle the tunneled packet. It would be good to think of MPLS as a tunneling technology that can be used to transport many different types of packets, to aid in traffic engineering by allowing one to specify paths throughout the network (using RSVP or SR), and to generally allow for easier intra/inter network transport of data packets.

For more information on how MPLS label switching works, please go visit [Wikipedia \(MPLS\)](#).

---

**Note:** MPLS support in VyOS is not finished yet, and therefore its functionality is limited. Currently there is no support for MPLS enabled VPN services such as L2VPNs and mVPNs. RSVP support is also not present as the underlying routing stack (FRR) does not implement it. Currently VyOS implements LDP as described in RFC 5036; other LDP standard are the following ones: RFC 6720, RFC 6667, RFC 5919, RFC 5561, RFC 7552, RFC 4447. Because MPLS is already available (FRR also supports RFC 3031).

---

## Label Distribution Protocol

The MPLS architecture does not assume a single protocol to create MPLS paths. VyOS supports the Label Distribution Protocol (LDP) as implemented by FRR, based on [RFC 5036](#).

LDP (Label Distribution Protocol) is a TCP based MPLS signaling protocol that distributes labels creating MPLS label switched paths in a dynamic manner. LDP is not a routing protocol, as it relies on other routing protocols for forwarding decisions. LDP cannot bootstrap itself, and therefore relies on said routing protocols for communication with other routers that use LDP.

In order to allow for LDP on the local router to exchange label advertisements with other routers, a TCP session will be established between automatically discovered and statically assigned routers. LDP will try to establish a TCP session to the **transport address** of other routers. Therefore for LDP to function properly please make sure the transport address is shown in the routing table and reachable to traffic at all times.

It is highly recommended to use the same address for both the LDP router-id and the discovery transport address, but for VyOS MPLS LDP to work both parameters must be explicitly set in the configuration.

Another thing to keep in mind with LDP is that much like BGP, it is a protocol that runs on top of TCP. It however does not have an ability to do something like a refresh capability like BGP's route refresh capability. Therefore one might have to reset the neighbor for a capability change or a configuration change to work.

## Configuration Options

```
set protocols mpls interface <interface>
```

Use this command to enable MPLS processing on the interface you define.

```
set protocols mpls ldp interface <interface>
```

Use this command to enable LDP on the interface you define.

```
set protocols mpls ldp router-id <address>
```

Use this command to configure the IP address used as the LDP router-id of the local device.

```
set protocols mpls ldp discovery transport-ipv4-address <address>
```

```
set protocols mpls ldp discovery transport-ipv6-address <address>
```

Use this command to set the IPv4 or IPv6 transport-address used by LDP.

```
set protocols mpls ldp neighbor <address> password <password>
```

Use this command to configure authentication for LDP peers. Set the IP address of the LDP peer and a password that should be shared in order to become neighbors.

```
set protocols mpls ldp neighbor <address> session-holdtime <seconds>
```

Use this command to configure a specific session hold time for LDP peers. Set the IP address of the LDP peer and a session hold time that should be configured for it. You may have to reset the neighbor for this to work.

```
set protocols mpls ldp neighbor <address> ttl-security <disable | hop count>
```

Use this command to enable, disable, or specify hop count for TTL security for LDP peers. By default the value is set to 255 (or max TTL).

```
set protocols mpls ldp discovery hello-ipv4-interval <seconds>
```

```
set protocols mpls ldp discovery hello-ipv4-holdtime <seconds>
```

```
set protocols mpls ldp discovery hello-ipv6-interval <seconds>
```

```
set protocols mpls ldp discovery hello-ipv6-holdtime <seconds>
```

Use these commands if you would like to set the discovery hello and hold time parameters.

```
set protocols mpls ldp discovery session-ipv4-holdtime <seconds>
set protocols mpls ldp discovery session-ipv6-holdtime <seconds>
```

Use this command if you would like to set the TCP session hold time intervals.

```
set protocols mpls ldp import ipv4 import-filter filter-access-list <access list number>
set protocols mpls ldp import ipv6 import-filter filter-access-list6 <access list number>
```

Use these commands to control the importing of forwarding equivalence classes (FECs) for LDP from neighbors. This would be useful for example on only accepting the labeled routes that are needed and not ones that are not needed, such as accepting loopback interfaces and rejecting all others.

```
set protocols mpls ldp export ipv4 export-filter filter-access-list <access list number>
set protocols mpls ldp export ipv6 export-filter filter-access-list6 <access list number>
```

Use these commands to control the exporting of forwarding equivalence classes (FECs) for LDP to neighbors. This would be useful for example on only announcing the labeled routes that are needed and not ones that are not needed, such as announcing loopback interfaces and no others.

```
set protocols mpls ldp export ipv4 explicit-null
set protocols mpls ldp export ipv6 explicit-null
```

Use this command if you would like for the router to advertise FECs with a label of 0 for explicit null operations.

```
set protocols mpls ldp allocation ipv4 access-list <access list number>
set protocols mpls ldp allocation ipv6 access-list6 <access list number>
```

Use this command if you would like to control the local FEC allocations for LDP. A good example would be for your local router to not allocate a label for everything. Just a label for what it's useful. A good example would be just a loopback label.

```
set protocols mpls ldp parameters cisco-interop-tlv
```

Use this command to use a Cisco non-compliant format to send and interpret the Dual-Stack capability TLV for IPv6 LDP communications. This is related to [RFC 7552](#).

```
set protocols mpls ldp parameters ordered-control
```

Use this command to use ordered label distribution control mode. FRR by default uses independent label distribution control mode for label distribution. This is related to [RFC 5036](#).

```
set protocols mpls ldp parameters transport-prefer-ipv4
```

Use this command to prefer IPv4 for TCP peer transport connection for LDP when both an IPv4 and IPv6 LDP address are configured on the same interface.

```
set protocols mpls ldp targeted-neighbor ipv4 enable
set protocols mpls ldp targeted-neighbor ipv6 enable
```

Use this command to enable targeted LDP sessions to the local router. The router will then respond to any sessions that are trying to connect to it that are not a link local type of TCP connection.

```
set protocols mpls ldp targeted-neighbor ipv4 address <address>
set protocols mpls ldp targeted-neighbor ipv6 address <address>
```

Use this command to enable the local router to try and connect with a targeted LDP session to another router.

```
set protocols mpls ldp targeted-neighbor ipv4 hello-holdtime <seconds>
```

```
set protocols mpls ldp targeted-neighbor ipv4 hello-interval <seconds>
set protocols mpls ldp targeted-neighbor ipv6 hello-holdtime <seconds>
set protocols mpls ldp targeted-neighbor ipv6 hello-interval <seconds>
```

Use these commands if you would like to set the discovery hello and hold time parameters for the targeted LDP neighbors.

### Sample configuration to setup LDP on VyOS

```
set protocols ospf area 0 network '192.168.255.252/32' <--- Routing_
↳for loopback
set protocols ospf area 0 network '192.168.0.5/32' <--- Routing_
↳for an interface connecting to the network
set protocols ospf parameters router-id '192.168.255.252' <--- Router_
↳ID setting for OSPF
set protocols mpls interface 'eth1' <--- Enable_
↳MPLS for an interface connecting to network
set protocols mpls ldp discovery transport-ipv4-address '192.168.255.252' <---_
↳Transport address for LDP for TCP sessions to connect to
set protocols mpls ldp interface 'eth1' <--- Enable_
↳LDP for an interface connecting to network
set protocols mpls ldp interface 'lo' <--- Enable_
↳LDP on loopback for future services connectivity
set protocols mpls ldp router-id '192.168.255.252' <--- Router_
↳ID setting for LDP
set interfaces ethernet eth1 address '192.168.0.5/31' <---_
↳Interface IP for connecting to network
set interfaces loopback lo address '192.168.255.252/32' <---_
↳Interface loopback IP for router ID and other uses
```

### Operational Mode Commands

When LDP is working, you will be able to see label information in the outcome of `show ip route`. Besides that information, there are also specific `show` commands for LDP:

#### Show

##### `show mpls ldp binding`

Use this command to see the Label Information Base.

##### `show mpls ldp discovery`

Use this command to see discovery hello information

##### `show mpls ldp interface`

Use this command to see LDP interface information

##### `show mpls ldp neighbor`

Use this command to see LDP neighbor information

##### `show mpls ldp neighbor detail`

Use this command to see detailed LDP neighbor information

## Reset

```
reset mpls ldp neighbor <IPv4 or IPv6 address>
```

Use this command to reset an LDP neighbor/TCP session that is established

## 8.9.8 Segment Routing

Segment Routing (SR) is a network architecture that is similar to source-routing . In this architecture, the ingress router adds a list of segments, known as SIDs, to the packet as it enters the network. These segments represent different portions of the network path that the packet will take.

The SR segments are portions of the network path taken by the packet, and are called SIDs. At each node, the first SID of the list is read, executed as a forwarding function, and may be popped to let the next node read the next SID of the list. The SID list completely determines the path where the packet is forwarded.

Segment Routing can be applied to an existing MPLS-based data plane and defines a control plane network architecture. In MPLS networks, segments are encoded as MPLS labels and are added at the ingress router. These MPLS labels are then exchanged and populated by Interior Gateway Protocols (IGPs) like IS-IS or OSPF which are running on most ISPs.

---

**Note:** Segment routing defines a control plane network architecture and can be applied to an existing MPLS based dataplane. In the MPLS networks, segments are encoded as MPLS labels and are imposed at the ingress router. MPLS labels are exchanged and populated by IGPs like IS-IS. Segment Routing as per RFC8667 for MPLS dataplane. It supports IPv4, IPv6 and ECMP and has been tested against Cisco & Juniper routers. However, this deployment is still EXPERIMENTAL for FRR.

---

## IS-IS SR Configuration

Segment routing (SR) is used by the IGP protocols to interconnect network devices, below configuration shows how to enable SR on IS-IS:

---

**Note:** Known limitations:

No support for level redistribution (L1 to L2 or L2 to L1)

No support for binding SID

No support for SRLB

Only one SRGB and default SPF Algorithm is supported

---

```
set protocols isis segment-routing global-block high-label-value <label-value>
```

Set the Segment Routing Global Block i.e. the label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535.

```
set protocols isis segment-routing global-block low-label-value <label-value>
```

Set the Segment Routing Global Block i.e. the low label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535.

**set protocols isis segment-routing local-block high-label-value <label-value>**

Set the Segment Routing Local Block i.e. the label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535. Segment Routing Local Block, The negative command always unsets both.

**set protocols isis segment-routing local-block <low-label-value <label-value>**

Set the Segment Routing Local Block i.e. the low label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535. Segment Routing Local Block, The negative command always unsets both.

**set protocols isis segment-routing maximum-label-depth <1-16>**

Set the Maximum Stack Depth supported by the router. The value depend of the MPLS dataplane.

**set protocols isis segment-routing prefix <address> index value <0-65535>**

A segment ID that contains an IP address prefix calculated by an IGP in the service provider core network. Prefix SIDs are globally unique, this value identify it

**set protocols isis segment-routing prefix <address> index <no-php-flag | explicit-null| n-flag-clear>**

this option allows to configure prefix-sid on SR. The 'no-php-flag' means NO Penultimate Hop Popping that allows SR node to request to its neighbor to not pop the label. The 'explicit-null' flag allows SR node to request to its neighbor to send IP packet with the EXPLICIT-NULL label. The 'n-flag-clear' option can be used to explicitly clear the Node flag that is set by default for Prefix-SIDs associated to loopback addresses. This option is necessary to configure Anycast-SIDs.

**show isis segment-routing node**

Show detailed information about all learned Segment Routing Nodes

**show isis route prefix-sid**

Show detailed information about prefix-sid and label learned

---

**Note:** more information related IGP - *IS-IS*

---

## OSPF SR Configuration

Segment routing (SR) is used by the IGP protocols to interconnect network devices, below configuration shows how to enable SR on OSPF:

**set protocols ospf parameters opaque-lsa**

Enable the Opaque-LSA capability (rfc2370), necessary to transport label on IGP

**set protocols ospf segment-routing global-block high-label-value <label-value>**

Set the Segment Routing Global Block i.e. the label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535.

**set protocols ospf segment-routing global-block low-label-value <label-value>**

Set the Segment Routing Global Block i.e. the low label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535.

**set protocols ospf segment-routing local-block high-label-value <label-value>**

Set the Segment Routing Local Block i.e. the label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535. Segment Routing Local Block, The negative command always unsets both.

**set protocols ospf segment-routing local-block <low-label-value <label-value>**

Set the Segment Routing Local Block i.e. the low label range used by MPLS to store label in the MPLS FIB for Prefix SID. Note that the block size may not exceed 65535. Segment Routing Local Block, The negative command always unsets both.

**set protocols ospf segment-routing maximum-label-depth <1-16>**

Set the Maximum Stack Depth supported by the router. The value depend of the MPLS dataplane.

**set protocols ospf segment-routing prefix <address> index value <0-65535>**

A segment ID that contains an IP address prefix calculated by an IGP in the service provider core network. Prefix SIDs are globally unique, this value identify it

**set protocols ospf segment-routing prefix <address> index <no-php-flag | explicit-null | n-flag-clear>**

this option allows to configure prefix-sid on SR. The 'no-php-flag' means NO Penultimate Hop Popping that allows SR node to request to its neighbor to not pop the label. The 'explicit-null' flag allows SR node to request to its neighbor to send IP packet with the EXPLICIT-NULL label. The 'n-flag-clear' option can be used to explicitly clear the Node flag that is set by default for Prefix-SIDs associated to loopback addresses. This option is necessary to configure Anycast-SIDs.

---

**Note:** more information related IGP - *OSPF*

---

## Configuration Example

we described the configuration SR ISIS / SR OSPF using 2 connected with them to share label information.

### Enable IS-IS with Segment Routing (Experimental)

#### Node 1:

```
set interfaces loopback lo address '192.168.255.255/32'
set interfaces ethernet eth1 address '192.0.2.1/24'

set protocols isis interface eth1
set protocols isis interface lo
set protocols isis net '49.0001.1921.6825.5255.00'
set protocols isis segment-routing global-block high-label-value '599'
set protocols isis segment-routing global-block low-label-value '550'
set protocols isis segment-routing prefix 192.168.255.255/32 index value '1'
set protocols isis segment-routing prefix 192.168.255.255/32 index explicit-null
set protocols mpls interface 'eth1'
```

#### Node 2:

```
set interfaces loopback lo address '192.168.255.254/32'
set interfaces ethernet eth1 address '192.0.2.2/24'
```

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```

set protocols isis interface eth1
set protocols isis interface lo
set protocols isis net '49.0001.1921.6825.5254.00'
set protocols isis segment-routing global-block high-label-value '599'
set protocols isis segment-routing global-block low-label-value '550'
set protocols isis segment-routing prefix 192.168.255.254/32 index value '2'
set protocols isis segment-routing prefix 192.168.255.254/32 index explicit-null
set protocols mpls interface 'eth1'

```

This gives us MPLS segment routing enabled and labels for far end loopbacks:

```

Node-1@vyos:~$ show mpls table
Inbound Label  Type          Nexthop                Outbound Label
-----
552            SR (IS-IS)    192.0.2.2              IPv4 Explicit Null <-- Node-2
↳loopback learned on Node-1
15000         SR (IS-IS)    192.0.2.2              implicit-null
15001         SR (IS-IS)    fe80::e87:6cff:fe09:1  implicit-null
15002         SR (IS-IS)    192.0.2.2              implicit-null
15003         SR (IS-IS)    fe80::e87:6cff:fe09:1  implicit-null

Node-2@vyos:~$ show mpls table
Inbound Label  Type          Nexthop                Outbound Label
-----
551            SR (IS-IS)    192.0.2.1              IPv4 Explicit Null <-- Node-1 loopback
↳learned on Node-2
15000         SR (IS-IS)    192.0.2.1              implicit-null
15001         SR (IS-IS)    fe80::e33:2ff:fe80:1   implicit-null
15002         SR (IS-IS)    192.0.2.1              implicit-null
15003         SR (IS-IS)    fe80::e33:2ff:fe80:1   implicit-null

```

Here is the routing tables showing the MPLS segment routing label operations:

```

Node-1@vyos:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I 192.0.2.0/24 [115/20] via 192.0.2.2, eth1 inactive, weight 1, 00:07:48
I>* 192.168.255.254/32 [115/20] via 192.0.2.2, eth1, label IPv4 Explicit Null, weight 1,
↳00:03:39

Node-2@vyos:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

```

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```

t - trapped, o - offload failure

I 192.0.2.0/24 [115/20] via 192.0.2.1, eth1 inactive, weight 1, 00:07:46
I>* 192.168.255.255/32 [115/20] via 192.0.2.1, eth1, label IPv4 Explicit Null, weight 1,
↪00:03:43

```

**Enable OSPF with Segment Routing (Experimental):**

**Node 1**

```

set interfaces loopback lo address 10.1.1.1/32
set interfaces ethernet eth0 address 192.168.0.1/24
set protocols ospf area 0 network '192.168.0.0/24'
set protocols ospf area 0 network '10.1.1.1/32'
set protocols ospf parameters opaque-lsa
set protocols ospf parameters router-id '10.1.1.1'
set protocols ospf segment-routing global-block high-label-value '1100'
set protocols ospf segment-routing global-block low-label-value '1000'
set protocols ospf segment-routing prefix 10.1.1.1/32 index explicit-null
set protocols ospf segment-routing prefix 10.1.1.1/32 index value '1'

```

**Node 2**

```

set interfaces loopback lo address 10.1.1.2/32
set interfaces ethernet eth0 address 192.168.0.2/24
set protocols ospf area 0 network '192.168.0.0/24'
set protocols ospf area 0 network '10.1.1.2/32'
set protocols ospf parameters opaque-lsa
set protocols ospf parameters router-id '10.1.1.2'
set protocols ospf segment-routing global-block high-label-value '1100'
set protocols ospf segment-routing global-block low-label-value '1000'
set protocols ospf segment-routing prefix 10.1.1.2/32 index explicit-null
set protocols ospf segment-routing prefix 10.1.1.2/32 index value '2'

```

This gives us MPLS segment routing enabled and labels for far end loopbacks:

```

Node-1@vyos:~$ show mpls table
Inbound Label  Type      Nexthop      Outbound Label
-----
1002           SR (OSPF)    192.168.0.2  IPv4 Explicit Null <-- Node-2 loopback learned
↪on Node-1
15000          SR (OSPF)    192.168.0.2  implicit-null
15001          SR (OSPF)    192.168.0.2  implicit-null

Node-2@vyos:~$ show mpls table
Inbound Label  Type      Nexthop      Outbound Label
-----
1001           SR (OSPF)    192.168.0.1  IPv4 Explicit Null <-- Node-1 loopback learned
↪on Node-2
15000          SR (OSPF)    192.168.0.1  implicit-null
15001          SR (OSPF)    192.168.0.1  implicit-null

```

Here is the routing tables showing the MPLS segment routing label operations:

```
Node-1@vyos:~$ show ip route ospf
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

O   10.1.1.1/32 [110/0] is directly connected, lo, weight 1, 00:03:43
O>* 10.1.1.2/32 [110/1] via 192.168.0.2, eth0, label IPv4 Explicit Null, weight 1,
↳00:03:32
O   192.168.0.0/24 [110/1] is directly connected, eth0, weight 1, 00:03:43

Node-2@vyos:~$ show ip route ospf
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

O>* 10.1.1.1/32 [110/1] via 192.168.0.1, eth0, label IPv4 Explicit Null, weight 1,
↳00:03:36
O   10.1.1.2/32 [110/0] is directly connected, lo, weight 1, 00:03:51
O   192.168.0.0/24 [110/1] is directly connected, eth0, weight 1, 00:03:51
```

## 8.9.9 OSPF

OSPF (Open Shortest Path First) is a routing protocol for Internet Protocol (IP) networks. It uses a link state routing (LSR) algorithm and falls into the group of interior gateway protocols (IGPs), operating within a single autonomous system (AS). It is defined as OSPF Version 2 in [RFC 2328](#) (1998) for IPv4. Updates for IPv6 are specified as OSPF Version 3 in [RFC 5340](#) (2008). OSPF supports the CIDR (Classless Inter-Domain Routing) addressing model.

OSPF is a widely used IGP in large enterprise networks.

### OSPFv2 (IPv4)

#### Configuration

##### General

VyOS does not have a special command to start the OSPF process. The OSPF process starts when the first ospf enabled interface is configured.

**set protocols ospf area <number> network <A.B.C.D/M>**

This command specifies the OSPF enabled interface(s). If the interface has an address from defined range then the command enables OSPF on this interface so router can provide network information to the other ospf routers via this interface.

This command is also used to enable the OSPF process. The area number can be specified in decimal notation in the range from 0 to 4294967295. Or it can be specified in dotted decimal notation similar to ip address.

Prefix length in interface must be equal or bigger (i.e. smaller network) than prefix length in network statement. For example statement above doesn't enable ospf on interface with address 192.168.1.1/23, but it does on interface with address 192.168.1.129/25.

In some cases it may be more convenient to enable OSPF on a per interface/subnet basis set `protocols ospf interface <interface> area <x.x.x.x | x>`

#### **set protocols ospf auto-cost reference-bandwidth <number>**

This command sets the reference bandwidth for cost calculations, where bandwidth can be in range from 1 to 4294967, specified in Mbits/s. The default is 100Mbit/s (i.e. a link of bandwidth 100Mbit/s or higher will have a cost of 1. Cost of lower bandwidth links will be scaled with reference to this cost).

#### **set protocols ospf parameters router-id <rid>**

This command sets the router-ID of the OSPF process. The router-ID may be an IP address of the router, but need not be – it can be any arbitrary 32bit number. However it **MUST** be unique within the entire OSPF domain to the OSPF speaker – bad things will happen if multiple OSPF speakers are configured with the same router-ID!

### Optional

#### **set protocols ospf default-information originate [always] [metric <number>] [metric-type <1|2>] [route-map <name>]**

Originate an AS-External (type-5) LSA describing a default route into all external-routing capable areas, of the specified metric and metric type. If the `always` keyword is given then the default is always advertised, even when there is no default present in the routing table. The argument `route-map` specifies to advertise the default route if the route map is satisfied.

#### **set protocols ospf distance global <distance>**

This command change distance value of OSPF globally. The distance range is 1 to 255.

#### **set protocols ospf distance ospf <external|inter-area|intra-area> <distance>**

This command change distance value of OSPF. The arguments are the distance values for external routes, inter-area routes and intra-area routes respectively. The distance range is 1 to 255.

---

**Note:** Routes with a distance of 255 are effectively disabled and not installed into the kernel.

---

#### **set protocols ospf log-adjacency-changes [detail]**

This command allows to log changes in adjacency. With the optional `detail` argument, all changes in adjacency status are shown. Without `detail`, only changes to full or regressions are shown.

#### **set protocols ospf max-metric router-lsa <administrative|on-shutdown <seconds>|on-startup <seconds>>**

This enables [RFC 3137](#) support, where the OSPF process describes its transit links in its router-LSA as having infinite distance so that other routers will avoid calculating transit paths through the router while still being able to reach networks through the router.

This support may be enabled administratively (and indefinitely) with the `administrative` command. It may also be enabled conditionally. Conditional enabling of max-metric router-lsas can be for a period of seconds after startup with the `on-startup <seconds>` command and/or for a period of seconds prior to shutdown with the `on-shutdown <seconds>` command. The time range is 5 to 86400.

#### **set protocols ospf parameters abr-type <cisco|ibm|shortcut|standard>**

This command selects ABR model. OSPF router supports four ABR models:

**cisco** – a router will be considered as ABR if it has several configured links to the networks in different areas one of which is a backbone area. Moreover, the link to the backbone area should be active (working). **ibm** – identical to “cisco” model but in this case a backbone area link may not be active. **standard** – router has several active links to different areas. **shortcut** – identical to “standard” but in this model a router is allowed to use a connected areas topology without involving a backbone area for inter-area connections.

Detailed information about “cisco” and “ibm” models differences can be found in [RFC 3509](#). A “shortcut” model allows ABR to create routes between areas based on the topology of the areas connected to this router but not using a backbone area in case if non-backbone route will be cheaper. For more information about “shortcut” model, see *ospf-shortcut-abr-02.txt*

#### **set protocols ospf parameters rfc1583-compatibility**

[RFC 2328](#), the successor to [RFC 1583](#), suggests according to section G.2 (changes) in section 16.4.1 a change to the path preference algorithm that prevents possible routing loops that were possible in the old version of OSPFv2. More specifically it demands that inter-area paths and intra-area backbone path are now of equal preference but still both preferred to external paths.

This command should NOT be set normally.

#### **set protocols ospf interface <interface> passive [disable]**

This command specifies interface as passive. Passive interface advertises its address, but does not run the OSPF protocol (adjacencies are not formed and hello packets are not generated).

The optional *disable* option allows to exclude interface from passive state. This command is used if the command `passive-interface default` was configured.

#### **set protocols ospf passive-interface default**

This command specifies all interfaces as passive by default. Because this command changes the configuration logic to a default passive; therefore, interfaces where router adjacencies are expected need to be configured with the `passive-interface-exclude` command.

#### **set protocols ospf maximum-paths <1-64>**

Use this command to control the maximum number of equal cost paths to reach a specific destination. The upper limit may differ if you change the value of `MULTIPATH_NUM` during compilation. The default is `MULTIPATH_NUM` (64).

#### **set protocols ospf refresh timers <seconds>**

The router automatically updates link-state information with its neighbors. Only an obsolete information is updated which age has exceeded a specific threshold. This parameter changes a threshold value, which by default is 1800 seconds (half an hour). The value is applied to the whole OSPF router. The timer range is 10 to 1800.

#### **set protocols ospf timers throttle spf <delay|initial-holdtime|max-holdtime> <seconds>**

This command sets the initial delay, the initial-holdtime and the maximum-holdtime between when SPF is calculated and the event which triggered the calculation. The times are specified in milliseconds and must be in the range of 0 to 600000 milliseconds. `delay` sets the initial SPF schedule delay in milliseconds. The default value is 200 ms. `initial-holdtime` sets the minimum hold time between two consecutive SPF calculations. The default value is 1000 ms. `max-holdtime` sets the maximum wait time between two consecutive SPF calculations. The default value is 10000 ms.

#### **set protocols ospf ldp-sync**

This command will enable IGP-LDP synchronization globally for OSPF. This requires for LDP to be functional. This is described in [RFC 5443](#). By default all interfaces operational in OSPF are enabled for synchronization. Loopbacks are exempt.

**set protocols ospf ldp-sync holddown <seconds>**

This command will change the hold down value globally for IGP-LDP synchronization during convergence/interface flap events.

**set protocols ospf capability opaque**

ospfd supports Opaque LSA [RFC 2370](#) as partial support for MPLS Traffic Engineering LSAs. The opaque-lsa capability must be enabled in the configuration.

An alternate command could be “mpls-te on” (Traffic Engineering)

---

**Note:** FRR offers only partial support for some of the routing protocol extensions that are used with MPLS-TE; it does not support a complete RSVP-TE solution.

---

**Area Configuration****set protocols ospf area <number> area-type stub**

This command specifies the area to be a Stub Area. That is, an area where no router originates routes external to OSPF and hence an area where all external routes are via the ABR(s). Hence, ABRs for such an area do not need to pass AS-External LSAs (type-5) or ASBR-Summary LSAs (type-4) into the area. They need only pass Network-Summary (type-3) LSAs into such an area, along with a default-route summary.

**set protocols ospf area <number> area-type stub no-summary**

This command specifies the area to be a Totally Stub Area. In addition to stub area limitations this area type prevents an ABR from injecting Network-Summary (type-3) LSAs into the specified stub area. Only default summary route is allowed.

**set protocols ospf area <number> area-type stub default-cost <number>**

This command sets the cost of default-summary LSAs announced to stubby areas. The cost range is 0 to 16777215.

**set protocols ospf area <number> area-type nssa**

This command specifies the area to be a Not So Stubby Area. External routing information is imported into an NSSA in Type-7 LSAs. Type-7 LSAs are similar to Type-5 AS-external LSAs, except that they can only be flooded into the NSSA. In order to further propagate the NSSA external information, the Type-7 LSA must be translated to a Type-5 AS-external-LSA by the NSSA ABR.

**set protocols ospf area <number> area-type nssa no-summary**

This command specifies the area to be a NSSA Totally Stub Area. ABRs for such an area do not need to pass Network-Summary (type-3) LSAs (except the default summary route), ASBR-Summary LSAs (type-4) and AS-External LSAs (type-5) into the area. But Type-7 LSAs that convert to Type-5 at the NSSA ABR are allowed.

**set protocols ospf area <number> area-type nssa default-cost <number>**

This command sets the default cost of LSAs announced to NSSA areas. The cost range is 0 to 16777215.

**set protocols ospf area <number> area-type nssa translate <always|candidate|never>**

Specifies whether this NSSA border router will unconditionally translate Type-7 LSAs into Type-5 LSAs. When role is Always, Type-7 LSAs are translated into Type-5 LSAs regardless of the translator state of other NSSA border routers. When role is Candidate, this router participates in the translator election to determine if it will perform the translations duties. When role is Never, this router will never translate Type-7 LSAs into Type-5 LSAs.

**set protocols ospf area <number> authentication plaintext-password**

This command specifies that simple password authentication should be used for the given area. The password must also be configured on a per-interface basis.

**set protocols ospf area <number> authentication md5**

This command specify that OSPF packets must be authenticated with MD5 HMACs within the given area. Keying material must also be configured on a per-interface basis.

**set protocols ospf area <number> range <A.B.C.D/M> [cost <number>]**

This command summarizes intra area paths from specified area into one summary-LSA (Type-3) announced to other areas. This command can be used only in ABR and ONLY router-LSAs (Type-1) and network-LSAs (Type-2) (i.e. LSAs with scope area) can be summarized. AS-external-LSAs (Type-5) can't be summarized - their scope is AS. The optional argument cost specifies the aggregated link metric. The metric range is 0 to 16777215.

**set protocols ospf area <number> range <A.B.C.D/M> not-advertise**

This command instead of summarizing intra area paths filter them - i.e. intra area paths from this range are not advertised into other areas. This command makes sense in ABR only.

**set protocols ospf area <number> export-list <acl\_number>**

Filter Type-3 summary-LSAs announced to other areas originated from intra- area paths from specified area. This command makes sense in ABR only.

**set protocols ospf area <number> import-list <acl\_number>**

Same as export-list, but it applies to paths announced into specified area as Type-3 summary-LSAs. This command makes sense in ABR only.

**set protocols ospf area <number> range <A.B.C.D/M> substitute <E.F.G.H/M>**

One Type-3 summary-LSA with routing info <E.F.G.H/M> is announced into backbone area if defined area contains at least one intra-area network (i.e. described with router-LSA or network-LSA) from range <A.B.C.D/M>. This command makes sense in ABR only.

**set protocols ospf area <number> shortcut <default|disable|enable>**

This parameter allows to “shortcut” routes (non-backbone) for inter-area routes. There are three modes available for routes shortcutting:

**default** – this area will be used for shortcutting only if ABR does not have a link to the backbone area or this link was lost. **enable** – the area will be used for shortcutting every time the route that goes through it is cheaper. **disable** – this area is never used by ABR for routes shortcutting.

**set protocols ospf area <number> virtual-link <A.B.C.D>**

Provides a backbone area coherence by virtual link establishment.

In general, OSPF protocol requires a backbone area (area 0) to be coherent and fully connected. I.e. any backbone area router must have a route to any other backbone area router. Moreover, every ABR must have a link to backbone area. However, it is not always possible to have a physical link to a backbone area. In this case between two ABR (one of them has a link to the backbone area) in the area (not stub area) a virtual link is organized.

<number> – area identifier through which a virtual link goes. <A.B.C.D> – ABR router-id with which a virtual link is established. Virtual link must be configured on both routers.

Formally, a virtual link looks like a point-to-point network connecting two ABR from one area one of which physically connected to a backbone area. This pseudo-network is considered to belong to a backbone area.

## Interface Configuration

**set protocols ospf interface <interface> area <x.x.x.x | x>**

Enable ospf on an interface and set associated area.

If you have a lot of interfaces, and/or a lot of subnets, then enabling OSPF via this command may result in a slight performance improvement.

**set protocols ospf interface <interface> authentication plaintext-password <text>**

This command sets OSPF authentication key to a simple password. After setting, all OSPF packets are authenticated. Key has length up to 8 chars.

Simple text password authentication is insecure and deprecated in favour of MD5 HMAC authentication.

**set protocols ospf interface <interface> authentication md5 key-id <id> md5-key <text>**

This command specifies that MD5 HMAC authentication must be used on this interface. It sets OSPF authentication key to a cryptographic password. Key-id identifies secret key used to create the message digest. This ID is part of the protocol and must be consistent across routers on a link. The key can be long up to 16 chars (larger strings will be truncated), and is associated with the given key-id.

**set protocols ospf interface <interface> bandwidth <number>**

This command sets the interface bandwidth for cost calculations, where bandwidth can be in range from 1 to 100000, specified in Mbits/s.

**set protocols ospf interface <interface> cost <number>**

This command sets link cost for the specified interface. The cost value is set to router-LSA's metric field and used for SPF calculation. The cost range is 1 to 65535.

**set protocols ospf interface <interface> dead-interval <number>**

Set number of seconds for router Dead Interval timer value used for Wait Timer and Inactivity Timer. This value must be the same for all routers attached to a common network. The default value is 40 seconds. The interval range is 1 to 65535.

**set protocols ospf interface <interface> hello-multiplier <number>**

The hello-multiplier specifies how many Hellos to send per second, from 1 (every second) to 10 (every 100ms). Thus one can have 1s convergence time for OSPF. If this form is specified, then the hello-interval advertised in Hello packets is set to 0 and the hello-interval on received Hello packets is not checked, thus the hello-multiplier need NOT be the same across multiple routers on a common link.

**set protocols ospf interface <interface> hello-interval <number>**

Set number of seconds for Hello Interval timer value. Setting this value, Hello packet will be sent every timer value seconds on the specified interface. This value must be the same for all routers attached to a common network. The default value is 10 seconds. The interval range is 1 to 65535.

**set protocols ospf interface <interface> bfd**

This command enables BFD on this OSPF link interface.

**set protocols ospf interface <interface> mtu-ignore**

This command disables check of the MTU value in the OSPF DBD packets. Thus, use of this command allows the OSPF adjacency to reach the FULL state even though there is an interface MTU mismatch between two OSPF routers.

**set protocols ospf interface <interface> network <type>**

This command allows to specify the distribution type for the network connected to this interface:

**broadcast** – broadcast IP addresses distribution. **non-broadcast** – address distribution in NBMA networks topology. **point-to-multipoint** – address distribution in point-to-multipoint networks. **point-to-point** – address distribution in point-to-point networks.

**set protocols ospf interface <interface> priority <number>**

This command sets Router Priority integer value. The router with the highest priority will be more eligible to become Designated Router. Setting the value to 0, makes the router ineligible to become Designated Router. The default value is 1. The interval range is 0 to 255.

**set protocols ospf interface <interface> retransmit-interval <number>**

This command sets number of seconds for RxmtInterval timer value. This value is used when retransmitting Database Description and Link State Request packets if acknowledge was not received. The default value is 5 seconds. The interval range is 3 to 65535.

**set protocols ospf interface <interface> transmit-delay <number>**

This command sets number of seconds for InfTransDelay value. It allows to set and adjust for each interface the delay interval before starting the synchronizing process of the router's database with all neighbors. The default value is 1 seconds. The interval range is 3 to 65535.

**set protocols ospf interface <interface> ldp-sync disable**

This command disables IGP-LDP sync for this specific interface.

**set protocols ospf interface <interface> ldp-sync holddown <seconds>**

This command will change the hold down value for IGP-LDP synchronization during convergence/interface flap events, but for this interface only.

## External Route Summarisation

This feature summarises originated external LSAs (Type-5 and Type-7). Summary Route will be originated on-behalf of all matched external LSAs.

**set protocols ospf aggregation timer <seconds>**

Configure aggregation delay timer interval.

Summarisation starts only after this delay timer expiry.

**set protocols ospf summary-address x.x.x.x/y [tag (1-4294967295)]**

This command enable/disables summarisation for the configured address range.

Tag is the optional parameter. If tag configured Summary route will be originated with the configured tag.

**set protocols ospf summary-address x.x.x.x/y no-advertise**

This command to ensure not advertise the summary lsa for the matched external LSAs.

## Graceful Restart

**set protocols ospf graceful-restart [grace-period (1-1800)]**

Configure Graceful Restart [RFC 3623](#) restarting support. When enabled, the default grace period is 120 seconds.

To perform a graceful shutdown, the FRR `graceful-restart prepare ip ospf EXEC-level` command needs to be issued before restarting the ospfd daemon.

**set protocols ospf graceful-restart helper enable [router-id A.B.C.D]**

Configure Graceful Restart [RFC 3623](#) helper support. By default, helper support is disabled for all neighbours. This config enables/disables helper support on this router for all neighbours.

To enable/disable helper support for a specific neighbour, the router-id (A.B.C.D) has to be specified.

**set protocols ospf graceful-restart helper no-strict-lsa-checking**

By default *strict-lsa-checking* is configured then the helper will abort the Graceful Restart when a LSA change occurs which affects the restarting router.

This command disables it.

**set protocols ospf graceful-restart helper supported-grace-time**

Supports as HELPER for configured grace period.

**set protocols ospf graceful-restart helper planned-only**

It helps to support as HELPER only for planned restarts.

By default, it supports both planned and unplanned outages.

## Manual Neighbor Configuration

OSPF routing devices normally discover their neighbors dynamically by listening to the broadcast or multicast hello packets on the network. Because an NBMA network does not support broadcast (or multicast), the device cannot discover its neighbors dynamically, so you must configure all the neighbors statically.

**set protocols ospf neighbor <A.B.C.D>**

This command specifies the IP address of the neighboring device.

**set protocols ospf neighbor <A.B.C.D> poll-interval <seconds>**

This command specifies the length of time, in seconds, before the routing device sends hello packets out of the interface before it establishes adjacency with a neighbor. The range is 1 to 65535 seconds. The default value is 60 seconds.

**set protocols ospf neighbor <A.B.C.D> priority <number>**

This command specifies the router priority value of the nonbroadcast neighbor associated with the IP address specified. The default is 0. This keyword does not apply to point-to-multipoint interfaces.

## Redistribution Configuration

**set protocols ospf redistribute <route source>**

This command redistributes routing information from the given route source to the OSPF process. There are five modes available for route source: bgp, connected, kernel, rip, static.

**set protocols ospf default-metric <number>**

This command specifies the default metric value of redistributed routes. The metric range is 0 to 16777214.

**set protocols ospf redistribute <route source> metric <number>**

This command specifies metric for redistributed routes from the given route source. There are five modes available for route source: bgp, connected, kernel, rip, static. The metric range is 1 to 16777214.

**set protocols ospf redistribute <route source> metric-type <1|2>**

This command specifies metric type for redistributed routes. Difference between two metric types that metric type 1 is a metric which is “commensurable” with inner OSPF links. When calculating a metric to the external destination, the full path metric is calculated as a metric sum path of a router which had advertised this link plus the link metric. Thus, a route with the least summary metric will be selected. If external link is advertised with metric type 2 the path is selected which lies through the router which advertised this link with the least metric despite of the fact that internal path to this router is longer (with more cost). However, if two routers advertised an external link and with metric type 2 the preference is given to the path which lies through the router with a shorter internal path. If two different routers advertised two links to the same external destination but with different metric type, metric type 1 is preferred. If type of a metric left undefined the router will consider these external links to have a default metric type 2.

**set protocols ospf redistribute <route source> route-map <name>**

This command allows to use route map to filter redistributed routes from the given route source. There are five modes available for route source: bgp, connected, kernel, rip, static.

## Operational Mode Commands

**show ip ospf neighbor**

This command displays the neighbors status.

Neighbor ID	Pri	State	Dead Time	Address	Interface
→					
	RXmtL	RqstL	DBsmL		
10.0.13.1	1	Full/DR	38.365s	10.0.13.1	eth0:10.0.13.3
→	0	0	0		
10.0.23.2	1	Full/Backup	39.175s	10.0.23.2	eth1:10.0.23.3
→	0	0	0		

**show ip ospf neighbor detail**

This command displays the neighbors information in a detailed form, not just a summary table.

```
Neighbor 10.0.13.1, interface address 10.0.13.1
  In the area 0.0.0.0 via interface eth0
  Neighbor priority is 1, State is Full, 5 state changes
  Most recent state change statistics:
    Progressive change 11m55s ago
  DR is 10.0.13.1, BDR is 10.0.13.3
  Options 2 *|-|-|-|-|E|-
```

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```

Dead timer due in 34.854s
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission on
Thread Link State Update Retransmission on

```

```

Neighbor 10.0.23.2, interface address 10.0.23.2
  In the area 0.0.0.1 via interface eth1
  Neighbor priority is 1, State is Full, 4 state changes
  Most recent state change statistics:
    Progressive change 41.193s ago
  DR is 10.0.23.3, BDR is 10.0.23.2
  Options 2 *| - | - | - | - | E | -
  Dead timer due in 35.661s
  Database Summary List 0
  Link State Request List 0
  Link State Retransmission List 0
  Thread Inactivity Timer on
  Thread Database Description Retransmission off
  Thread Link State Request Retransmission on
  Thread Link State Update Retransmission on

```

**show ip ospf neighbor <A.B.C.D>**

This command displays the neighbors information in a detailed form for a neighbor whose IP address is specified.

**show ip ospf neighbor <interface>**

This command displays the neighbors status for a neighbor on the specified interface.

**show ip ospf interface [<interface>]**

This command displays state and configuration of OSPF the specified interface, or all interfaces if no interface is given.

```

eth0 is up
 ifindex 2, MTU 1500 bytes, BW 4294967295 Mbit <UP,BROADCAST,RUNNING,MULTICAST>
 Internet Address 10.0.13.3/24, Broadcast 10.0.13.255, Area 0.0.0.0
 MTU mismatch detection: enabled
 Router ID 10.0.23.3, Network Type BROADCAST, Cost: 1
 Transmit Delay is 1 sec, State Backup, Priority 1
 Backup Designated Router (ID) 10.0.23.3, Interface Address 10.0.13.3
 Multicast group memberships: OSPFAllRouters OSPFDesignatedRouters
 Timer intervals configured, Hello 10s, Dead 40s, Wait 40s, Retransmit 5
   Hello due in 4.470s
 Neighbor Count is 1, Adjacent neighbor count is 1
eth1 is up
 ifindex 3, MTU 1500 bytes, BW 4294967295 Mbit <UP,BROADCAST,RUNNING,MULTICAST>
 Internet Address 10.0.23.3/24, Broadcast 10.0.23.255, Area 0.0.0.1
 MTU mismatch detection: enabled
 Router ID 10.0.23.3, Network Type BROADCAST, Cost: 1
 Transmit Delay is 1 sec, State DR, Priority 1

```

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```
Backup Designated Router (ID) 10.0.23.2, Interface Address 10.0.23.2
Saved Network-LSA sequence number 0x80000002
Multicast group memberships: OSPFAllRouters OSPFDesignatedRouters
Timer intervals configured, Hello 10s, Dead 40s, Wait 40s, Retransmit 5
  Hello due in 4.563s
Neighbor Count is 1, Adjacent neighbor count is 1
```

### show ip ospf route [detail]

This command displays the OSPF routing table, as determined by the most recent SPF calculation. With the optional detail argument, each route item's advertiser router and network attribute will be shown.

```
===== OSPF network routing table =====
N IA 10.0.12.0/24      [3] area: 0.0.0.0
                        via 10.0.13.3, eth0
N   10.0.13.0/24      [1] area: 0.0.0.0
                        directly attached to eth0
N IA 10.0.23.0/24      [2] area: 0.0.0.0
                        via 10.0.13.3, eth0
N   10.0.34.0/24      [2] area: 0.0.0.0
                        via 10.0.13.3, eth0

===== OSPF router routing table =====
R   10.0.23.3          [1] area: 0.0.0.0, ABR
                        via 10.0.13.3, eth0
R   10.0.34.4          [2] area: 0.0.0.0, ASBR
                        via 10.0.13.3, eth0

===== OSPF external routing table =====
N E2 172.16.0.0/24    [2/20] tag: 0
                        via 10.0.13.3, eth0
```

The table consists of following data:

**OSPF network routing table** – includes a list of acquired routes for all accessible networks (or aggregated area ranges) of OSPF system. “IA” flag means that route destination is in the area to which the router is not connected, i.e. it’s an inter-area path. In square brackets a summary metric for all links through which a path lies to this network is specified. “via” prefix defines a router-gateway, i.e. the first router on the way to the destination (next hop). **OSPF router routing table** – includes a list of acquired routes to all accessible ABRs and ASBRs. **OSPF external routing table** – includes a list of acquired routes that are external to the OSPF process. “E” flag points to the external link metric type (E1 – metric type 1, E2 – metric type 2). External link metric is printed in the “<metric of the router which advertised the link>/<link metric>” format.

### show ip ospf border-routers

This command displays a table of paths to area boundary and autonomous system boundary routers.

### show ip ospf database

This command displays a summary table with a database contents (LSA).

```
OSPF Router with ID (10.0.13.1)

Router Link States (Area 0.0.0.0)
```

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```

Link ID      ADV Router    Age  Seq#      CkSum  Link count
10.0.13.1   10.0.13.1     984 0x80000005 0xd915 1
10.0.23.3   10.0.23.3     1186 0x80000008 0xfe62 2
10.0.34.4   10.0.34.4     1063 0x80000004 0x4e3f 1

Net Link States (Area 0.0.0.0)

Link ID      ADV Router    Age  Seq#      CkSum
10.0.13.1   10.0.13.1     994 0x80000003 0x30bb
10.0.34.4   10.0.34.4     1188 0x80000001 0x9411

Summary Link States (Area 0.0.0.0)

Link ID      ADV Router    Age  Seq#      CkSum  Route
10.0.12.0   10.0.23.3     1608 0x80000001 0x6ab6 10.0.12.0/24
10.0.23.0   10.0.23.3     981 0x80000003 0xe232 10.0.23.0/24

AS External Link States

Link ID      ADV Router    Age  Seq#      CkSum  Route
172.16.0.0  10.0.34.4     1063 0x80000001 0xc40d E2 172.16.0.0/24 [0x0]

```

**show ip ospf database <type> [A.B.C.D] [adv-router <A.B.C.D>|self-originate]**

This command displays a database contents for a specific link advertisement type.

The type can be the following: asbr-summary, external, network, nssa-external, opaque-area, opaque-as, opaque-link, router, summary.

[A.B.C.D] – link-state-id. With this specified the command displays portion of the network environment that is being described by the advertisement. The value entered depends on the advertisement’s LS type. It must be entered in the form of an IP address.

adv-router <A.B.C.D> – router id, which link advertisements need to be reviewed.

self-originate displays only self-originated LSAs from the local router.

```

OSPF Router with ID (10.0.13.1)

Router Link States (Area 0.0.0.0)

LS age: 1213
Options: 0x2 : *| - | - | - | - | E | -
LS Flags: 0x3
Flags: 0x0
LS Type: router-LSA
Link State ID: 10.0.13.1
Advertising Router: 10.0.13.1
LS Seq Number: 80000009
Checksum: 0xd119
Length: 36

Number of Links: 1

Link connected to: a Transit Network

```

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```
(Link ID) Designated Router address: 10.0.13.1
(Link Data) Router Interface address: 10.0.13.1
Number of TOS metrics: 0
TOS 0 Metric: 1
```

### show ip ospf database max-age

This command displays LSAs in MaxAge list.

## Examples

### Enable OSPF

#### Node 1

```
set interfaces loopback lo address 10.1.1.1/32
set interfaces ethernet eth0 address 192.168.0.1/24
set protocols ospf area 0 network 192.168.0.0/24
set protocols ospf area 0 network 10.1.1.1/32
set protocols ospf parameters router-id 10.1.1.1
```

#### Node 2

```
set interfaces loopback lo address 10.1.1.2/32
set interfaces ethernet eth0 address 192.168.0.2/24
set protocols ospf area 0 network 192.168.0.0/24
set protocols ospf area 0 network 10.1.1.2/32
set protocols ospf parameters router-id 10.1.1.2
```

Here's the neighbors up:

```
Node-1@vyos:~$ show ip ospf neighbor
```

Neighbor ID	Pri	State	Up Time	Dead Time	Address	Interface
→		RXmtL RqstL DBsmL				
10.1.1.2	1	Full/DR	3m43s	36.094s	192.168.0.2	eth0:192.
→168.0.1			0	0	0	

```
Node-2@vyos:~$ show ip ospf neighbor
```

Neighbor ID	Pri	State	Up Time	Dead Time	Address	Interface
→		RXmtL RqstL DBsmL				
10.1.1.1	1	Full/Backup	3m47s	31.736s	192.168.0.1	eth0:192.
→168.0.2			0	0	0	

Here's the routes:

```
Node-1@vyos:~$ show ip route ospf
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
```

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```

T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
f - OpenFabric,
> - selected route, * - FIB route, q - queued, r - rejected, b - backup
t - trapped, o - offload failure

0 10.1.1.1/32 [110/0] is directly connected, lo, weight 1, 00:00:14
O>* 10.1.1.2/32 [110/1] via 192.168.0.2, eth0, weight 1, 00:00:07
0 192.168.0.0/24 [110/1] is directly connected, eth0, weight 1, 00:03:32

Node-2@vyos:~$ show ip route ospf
Codes: K - kernel route, C - connected, S - static, R - RIP,
O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
f - OpenFabric,
> - selected route, * - FIB route, q - queued, r - rejected, b - backup
t - trapped, o - offload failure

O>* 10.1.1.1/32 [110/1] via 192.168.0.1, eth0, weight 1, 00:00:11
0 10.1.1.2/32 [110/0] is directly connected, lo, weight 1, 00:00:04
0 192.168.0.0/24 [110/1] is directly connected, eth0, weight 1, 00:03:18

```

### Enable OSPF with route redistribution of the loopback and default originate:

#### Node 1

```

set interfaces loopback lo address 10.1.1.1/32
set protocols ospf area 0 network 192.168.0.0/24
set protocols ospf default-information originate always
set protocols ospf default-information originate metric 10
set protocols ospf default-information originate metric-type 2
set protocols ospf log-adjacency-changes
set protocols ospf parameters router-id 10.1.1.1
set protocols ospf redistribute connected metric-type 2
set protocols ospf redistribute connected route-map CONNECT

set policy route-map CONNECT rule 10 action permit
set policy route-map CONNECT rule 10 match interface lo

```

#### Node 2

```

set interfaces loopback lo address 10.2.2.2/32
set protocols ospf area 0 network 192.168.0.0/24
set protocols ospf log-adjacency-changes
set protocols ospf parameters router-id 10.2.2.2
set protocols ospf redistribute connected metric-type 2
set protocols ospf redistribute connected route-map CONNECT

set policy route-map CONNECT rule 10 action permit
set policy route-map CONNECT rule 10 match interface lo

```

**Enable OSPF and IGP-LDP synchronization:****Node 1:**

```

set interfaces loopback lo address 10.1.1.1/32
set interfaces ethernet eth0 address 192.168.0.1/24

set protocols ospf area 0 network '192.168.0.0/24'
set protocols ospf area 0 network '10.1.1.1/32'
set protocols ospf parameters router-id '10.1.1.1'
set protocols ospf ldp-sync

set protocols mpls interface eth0
set protocols mpls ldp discovery transport-ipv4-address 10.1.1.1
set protocols mpls ldp interface lo
set protocols mpls ldp interface eth0
set protocols mpls ldp parameters transport-prefer-ipv4
set protocols mpls ldp router-id 10.1.1.1

```

This gives us IGP-LDP synchronization for all non-loopback interfaces with a holddown timer of zero seconds:

```

Node-1@vyos:~$ show ip ospf mpls ldp-sync
eth0
LDP-IGP Synchronization enabled: yes
Holddown timer in seconds: 0
State: Sync achieved

```

**Enable OSPF with Segment Routing (Experimental):****Node 1**

```

set interfaces loopback lo address 10.1.1.1/32
set interfaces ethernet eth0 address 192.168.0.1/24

set protocols ospf area 0 network '192.168.0.0/24'
set protocols ospf area 0 network '10.1.1.1/32'
set protocols ospf parameters opaque-lsa
set protocols ospf parameters router-id '10.1.1.1'
set protocols ospf segment-routing global-block high-label-value '1100'
set protocols ospf segment-routing global-block low-label-value '1000'
set protocols ospf segment-routing prefix 10.1.1.1/32 index explicit-null
set protocols ospf segment-routing prefix 10.1.1.1/32 index value '1'

```

**Node 2**

```

set interfaces loopback lo address 10.1.1.2/32
set interfaces ethernet eth0 address 192.168.0.2/24

set protocols ospf area 0 network '192.168.0.0/24'
set protocols ospf area 0 network '10.1.1.2/32'
set protocols ospf parameters opaque-lsa
set protocols ospf parameters router-id '10.1.1.2'

```

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```
set protocols ospf segment-routing global-block high-label-value '1100'
set protocols ospf segment-routing global-block low-label-value '1000'
set protocols ospf segment-routing prefix 10.1.1.2/32 index explicit-null
set protocols ospf segment-routing prefix 10.1.1.2/32 index value '2'
```

This gives us MPLS segment routing enabled and labels for far end loopbacks:

```
Node-1@vyos:~$ show mpls table
Inbound Label  Type      Nexthop      Outbound Label
-----
1002           SR (OSPF)  192.168.0.2  IPv4 Explicit Null <-- Node-2 loopback learned
->on Node-1
15000          SR (OSPF)  192.168.0.2  implicit-null
15001          SR (OSPF)  192.168.0.2  implicit-null

Node-2@vyos:~$ show mpls table
Inbound Label  Type      Nexthop      Outbound Label
-----
1001           SR (OSPF)  192.168.0.1  IPv4 Explicit Null <-- Node-1 loopback learned
->on Node-2
15000          SR (OSPF)  192.168.0.1  implicit-null
15001          SR (OSPF)  192.168.0.1  implicit-null
```

Here is the routing tables showing the MPLS segment routing label operations:

```
Node-1@vyos:~$ show ip route ospf
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

O  10.1.1.1/32 [110/0] is directly connected, lo, weight 1, 00:03:43
O>* 10.1.1.2/32 [110/1] via 192.168.0.2, eth0, label IPv4 Explicit Null, weight 1,
->00:03:32
O  192.168.0.0/24 [110/1] is directly connected, eth0, weight 1, 00:03:43

Node-2@vyos:~$ show ip route ospf
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

O>* 10.1.1.1/32 [110/1] via 192.168.0.1, eth0, label IPv4 Explicit Null, weight 1,
->00:03:36
O  10.1.1.2/32 [110/0] is directly connected, lo, weight 1, 00:03:51
O  192.168.0.0/24 [110/1] is directly connected, eth0, weight 1, 00:03:51
```

## OSPFv3 (IPv6)

### Configuration

#### General

VyOS does not have a special command to start the OSPFv3 process. The OSPFv3 process starts when the first ospf enabled interface is configured.

**set protocols ospfv3 interface <interface> area <number>**

This command specifies the OSPFv3 enabled interface. This command is also used to enable the OSPF process. The area number can be specified in decimal notation in the range from 0 to 4294967295. Or it can be specified in dotted decimal notation similar to ip address.

**set protocols ospfv3 parameters router-id <rid>**

This command sets the router-ID of the OSPFv3 process. The router-ID may be an IP address of the router, but need not be – it can be any arbitrary 32bit number. However it **MUST** be unique within the entire OSPFv3 domain to the OSPFv3 speaker – bad things will happen if multiple OSPFv3 speakers are configured with the same router-ID!

#### Optional

**set protocols ospfv3 distance global <distance>**

This command change distance value of OSPFv3 globally. The distance range is 1 to 255.

**set protocols ospfv3 distance ospfv3 <external|inter-area|intra-area> <distance>**

This command change distance value of OSPFv3. The arguments are the distance values for external routes, inter-area routes and intra-area routes respectively. The distance range is 1 to 255.

#### Area Configuration

**set protocols ospfv3 area <number> range <prefix>**

This command summarizes intra area paths from specified area into one Type-3 Inter-Area Prefix LSA announced to other areas. This command can be used only in ABR.

**set protocols ospfv3 area <number> range <prefix> not-advertise**

This command instead of summarizing intra area paths filter them - i.e. intra area paths from this range are not advertised into other areas. This command makes sense in ABR only.

#### Interface Configuration

**set protocols ospfv3 interface <interface> ipv6 cost <number>**

This command sets link cost for the specified interface. The cost value is set to router-LSA's metric field and used for SPF calculation. The cost range is 1 to 65535.

**set protocols ospfv3 interface <interface> dead-interval <number>**

Set number of seconds for router Dead Interval timer value used for Wait Timer and Inactivity Timer. This value must be the same for all routers attached to a common network. The default value is 40 seconds. The interval range is 1 to 65535.

**set protocols ospfv3 interface <interface> hello-interval <number>**

Set number of seconds for Hello Interval timer value. Setting this value, Hello packet will be sent every timer value seconds on the specified interface. This value must be the same for all routers attached to a common network. The default value is 10 seconds. The interval range is 1 to 65535.

**set protocols ospfv3 interface <interface> mtu-ignore**

This command disables check of the MTU value in the OSPF DBD packets. Thus, use of this command allows the OSPF adjacency to reach the FULL state even though there is an interface MTU mismatch between two OSPF routers.

**set protocols ospfv3 interface <interface> network <type>**

This command allows to specify the distribution type for the network connected to this interface:

**broadcast** – broadcast IP addresses distribution. **point-to-point** – address distribution in point-to-point networks.

**set protocols ospfv3 interface <interface> priority <number>**

This command sets Router Priority integer value. The router with the highest priority will be more eligible to become Designated Router. Setting the value to 0, makes the router ineligible to become Designated Router. The default value is 1. The interval range is 0 to 255.

**set protocols ospfv3 interface <interface> passive**

This command specifies interface as passive. Passive interface advertises its address, but does not run the OSPF protocol (adjacencies are not formed and hello packets are not generated).

**set protocols ospfv3 interface <interface> retransmit-interval <number>**

This command sets number of seconds for RxmtInterval timer value. This value is used when retransmitting Database Description and Link State Request packets if acknowledge was not received. The default value is 5 seconds. The interval range is 3 to 65535.

**set protocols ospfv3 interface <interface> transmit-delay <number>**

This command sets number of seconds for InfTransDelay value. It allows to set and adjust for each interface the delay interval before starting the synchronizing process of the router's database with all neighbors. The default value is 1 seconds. The interval range is 3 to 65535.

## Graceful Restart

**set protocols ospfv3 graceful-restart [grace-period (1-1800)]**

Configure Graceful Restart **RFC 3623** restarting support. When enabled, the default grace period is 120 seconds.

To perform a graceful shutdown, the FRR `graceful-restart prepare ip ospf EXEC-level` command needs to be issued before restarting the ospfd daemon.

**set protocols ospfv3 graceful-restart helper enable [router-id A.B.C.D]**

Configure Graceful Restart **RFC 3623** helper support. By default, helper support is disabled for all neighbours. This config enables/disables helper support on this router for all neighbours.

To enable/disable helper support for a specific neighbour, the router-id (A.B.C.D) has to be specified.

**set protocols ospfv3 graceful-restart helper lsa-check-disable**

By default *strict-lsa-checking* is configured then the helper will abort the Graceful Restart when a LSA change occurs which affects the restarting router.

This command disables it.

**set protocols ospfv3 graceful-restart helper supported-grace-time**

Supports as HELPER for configured grace period.

**set protocols ospfv3 graceful-restart helper planned-only**

It helps to support as HELPER only for planned restarts.

By default, it supports both planned and unplanned outages.

## Redistribution Configuration

**set protocols ospfv3 redistribute <route source>**

This command redistributes routing information from the given route source to the OSPFv3 process. There are five modes available for route source: bgp, connected, kernel, ripng, static.

**set protocols ospf redistribute <route source> route-map <name>**

This command allows to use route map to filter redistributed routes from given route source. There are five modes available for route source: bgp, connected, kernel, ripng, static.

## Operational Mode Commands

**show ipv6 ospfv3 neighbor**

This command displays the neighbors status.

**show ipv6 ospfv3 neighbor detail**

This command displays the neighbors information in a detailed form, not just a summary table.

**show ipv6 ospfv3 neighbor drchoice**

This command displays the neighbor DR choice information.

**show ipv6 ospfv3 interface [prefix] | [<interface> [prefix]]**

This command displays state and configuration of OSPF the specified interface, or all interfaces if no interface is given. Whith the argument `prefix` this command shows connected prefixes to advertise.

**show ipv6 ospfv3 route**

This command displays the OSPF routing table, as determined by the most recent SPF calculation.

**show ipv6 ospfv3 border-routers**

This command displays a table of paths to area boundary and autonomous system boundary routers.

**show ipv6 ospfv3 database**

This command displays a summary table with a database contents (LSA).

**show ipv6 ospfv3 database <type> [A.B.C.D] [adv-router <A.B.C.D>|self-originate]**

This command displays a database contents for a specific link advertisement type.

**show ipv6 ospfv3 redistribute**

This command displays external information redistributed into OSPFv3

## Configuration Example

A typical configuration using 2 nodes.

### Node 1:

```
set protocols ospfv3 interface eth1 area 0.0.0.0
set protocols ospfv3 area 0.0.0.0 range 2001:db8:1::/64
set protocols ospfv3 parameters router-id 192.168.1.1
set protocols ospfv3 redistribute connected
```

### Node 2:

```
set protocols ospfv3 interface eth1 area 0.0.0.0
set protocols ospfv3 area 0.0.0.0 range 2001:db8:2::/64
set protocols ospfv3 parameters router-id 192.168.2.1
set protocols ospfv3 redistribute connected
```

### To see the redistributed routes:

```
show ipv6 ospfv3 redistribute
```

**Note:** You cannot easily redistribute IPv6 routes via OSPFv3 on a WireGuard interface link. This requires you to configure link-local addresses manually on the WireGuard interfaces, see [T1483](#).

Example configuration for WireGuard interfaces:

### Node 1

```
set interfaces wireguard wg01 address 'fe80::216:3eff:fe51:fd8c/64'
set interfaces wireguard wg01 address '192.168.0.1/24'
set interfaces wireguard wg01 peer ospf02 allowed-ips '::/0'
set interfaces wireguard wg01 peer ospf02 allowed-ips '0.0.0.0/0'
set interfaces wireguard wg01 peer ospf02 endpoint '10.1.1.101:12345'
set interfaces wireguard wg01 peer ospf02 pubkey 'ie3...='
set interfaces wireguard wg01 port '12345'
set protocols ospfv3 parameters router-id 192.168.1.1
set protocols ospfv3 interface 'wg01' area 0.0.0.0
set protocols ospfv3 interface 'lo' area 0.0.0.0
```

### Node 2

```
set interfaces wireguard wg01 address 'fe80::216:3eff:fe0a:7ada/64'
set interfaces wireguard wg01 address '192.168.0.2/24'
set interfaces wireguard wg01 peer ospf01 allowed-ips '::/0'
set interfaces wireguard wg01 peer ospf01 allowed-ips '0.0.0.0/0'
set interfaces wireguard wg01 peer ospf01 endpoint '10.1.1.100:12345'
set interfaces wireguard wg01 peer ospf01 pubkey 'NHI...='
set interfaces wireguard wg01 port '12345'
set protocols ospfv3 parameters router-id 192.168.1.2
set protocols ospfv3 interface 'wg01' area 0.0.0.0
set protocols ospfv3 interface 'lo' area 0.0.0.0
```

### Status

```
vyos@ospf01:~$ sh ipv6 ospfv3 neighbor
Neighbor ID      Pri    DeadTime      State/IfState      Duration I/F[State]
192.168.0.2      1      00:00:37      Full/PointToPoint  00:18:03 wg01[PointToPoint]

vyos@ospf02# run sh ipv6 ospfv3 neighbor
Neighbor ID      Pri    DeadTime      State/IfState      Duration I/F[State]
192.168.0.1      1      00:00:39      Full/PointToPoint  00:19:44 wg01[PointToPoint]
```

### 8.9.10 PIM – Protocol Independent Multicast

VyOS supports PIM-SM (PIM Sparse Mode) as well as IGMP v2 and v3

PIM (Protocol Independent Multicast) must be configured in every interface of every participating router. Every router must also have the location of the Rendezvous Point manually configured. Then, unidirectional shared trees rooted at the Rendezvous Point will automatically be built for multicast distribution.

Traffic from multicast sources will go to the Rendezvous Point, and receivers will pull it from a shared tree using IGMP.

Multicast receivers will talk IGMP to their local router, so, besides having PIM configured in every router, IGMP must also be configured in any router where there could be a multicast receiver locally connected.

VyOS supports both IGMP version 2 and version 3 (which allows source-specific multicast).

#### PIM-SM - PIM Sparse Mode

##### **set protocols pim ecmp**

If PIM has the a choice of ECMP nexthops for a particular RPF (Reverse Path Forwarding), PIM will cause S,G flows to be spread out amongst the nexthops. If this command is not specified then the first nexthop found will be used.

##### **set protocols pim ecmp rebalance**

If PIM is using ECMP and an interface goes down, cause PIM to rebalance all S,G flows across the remaining nexthops. If this command is not configured PIM only modifies those S,G flows that were using the interface that went down.

##### **set protocols pim join-prune-interval <n>**

Modify the join/prune interval that PIM uses to the new value. Time is specified in seconds.

The default time is 60 seconds.

If you enter a value smaller than 60 seconds be aware that this can and will affect convergence at scale.

##### **set protocols pim keep-alive-timer <n>**

Modify the time out value for a S,G flow from 1-65535 seconds. If choosing a value below 31 seconds be aware that some hardware platforms cannot see data flowing in better than 30 second chunks.

##### **set protocols pim packets <n>**

When processing packets from a neighbor process the number of packets incoming at one time before moving on to the next task.

The default value is 3 packets.

This command is only useful at scale when you can possibly have a large number of PIM control packets flowing.

##### **set protocols pim register-accept-list <prefix-list>**

When PIM receives a register packet the source of the packet will be compared to the prefix-list specified, and if a permit is received normal processing continues. If a deny is returned for the source address of the register packet a register stop message is sent to the source.

**set protocols pim register-suppress-time <n>**

Modify the time that pim will register suppress a FHR will send register notifications to the kernel.

**set protocols pim rp <address> group <group>**

In order to use PIM, it is necessary to configure a RP (Rendezvous Point) for join messages to be sent to. Currently the only methodology to do this is via static rendezvous point commands.

All routers in the PIM network must agree on these values.

The first ip address is the RP's address and the second value is the matching prefix of group ranges covered.

**set protocols pim rp keep-alive-timer <n>**

Modify the time out value for a S,G flow from 1-65535 seconds at RP. The normal keepalive period for the KAT(S,G) defaults to 210 seconds. However, at the RP, the keepalive period must be at least the Register\_Suppression\_Time, or the RP may time out the (S,G) state before the next Null-Register arrives. Thus, the KAT(S,G) is set to max(Keepalive\_Period, RP\_Keepalive\_Period) when a Register-Stop is sent.

If choosing a value below 31 seconds be aware that some hardware platforms cannot see data flowing in better than 30 second chunks.

See [RFC 7761#section-4.1](#) for details.

**set protocols pim no-v6-secondary**

When sending PIM hello packets tell PIM to not send any v6 secondary addresses on the interface. This information is used to allow PIM to use v6 nexthops in it's decision for RPF lookup if this option is not set (default).

**set protocols pim spt-switchover infinity-and-beyond [prefix-list <list>]**

On the last hop router if it is desired to not switch over to the SPT tree configure this command.

Optional parameter prefix-list can be use to control which groups to switch or not switch. If a group is PERMIT as per the prefix-list, then the SPT switchover does not happen for it and if it is DENY, then the SPT switchover happens.

**set protocols pim ssm prefix-list <list>**

Specify a range of group addresses via a prefix-list that forces PIM to never do SSM over.

## Interface specific commands

**set protocols pim interface <interface> bfd [profile <name>]**

Automatically create BFD session for each RIP peer discovered in this interface. When the BFD session monitor signalize that the link is down the RIP peer is removed and all the learned routes associated with that peer are removed.

If optional profile parameter is used, select a BFD profile for the BFD sessions created via this interface.

**set protocols pim interface <interface> dr-priority <n>**

Set the DR (Designated Router) Priority for the interface. This command is useful to allow the user to influence what node becomes the DR for a LAN segment.

**set protocols pim interface <interface> hello <n>**

Set the PIM hello and hold interval for a interface.

```
set protocols pim interface <interface> no-bsm
```

Tell PIM that we would not like to use this interface to process bootstrap messages.

```
set protocols pim interface <interface> no-unicast-bsm
```

Tell PIM that we would not like to use this interface to process unicast bootstrap messages.

```
set protocols pim interface <interface> passive
```

Disable sending and receiving PIM control packets on the interface.

```
set protocols pim interface <interface> source-address <ip-address>
```

If you have multiple addresses configured on a particular interface and would like PIM to use a specific source address associated with that interface.

## IGMP - Internet Group Management Protocol)

```
set protocols pim igmp watermark-warning <n>
```

Configure watermark warning generation for an IGMP group limit. Generates warning once the configured group limit is reached while adding new groups.

### Interface specific commands

```
set protocols pim interface <interface> igmp join <multicast-address> source-address <IP-address>
```

Use this command to allow the selected interface to join a multicast group defining the multicast address you want to join and the source IP address too.

```
set protocols pim interface <interface> igmp query-interval <seconds>
```

Use this command to configure in the selected interface the IGMP host query interval (1-1800) in seconds that PIM will use.

```
set protocols pim interface <interface> igmp query-max-response-time <n>
```

Use this command to configure in the selected interface the IGMP query response timeout value (10-250) in deciseconds. If a report is not returned in the specified time, it will be assumed the (S,G) or (\*,G) state **RFC 7761#section-4.1** has timed out.

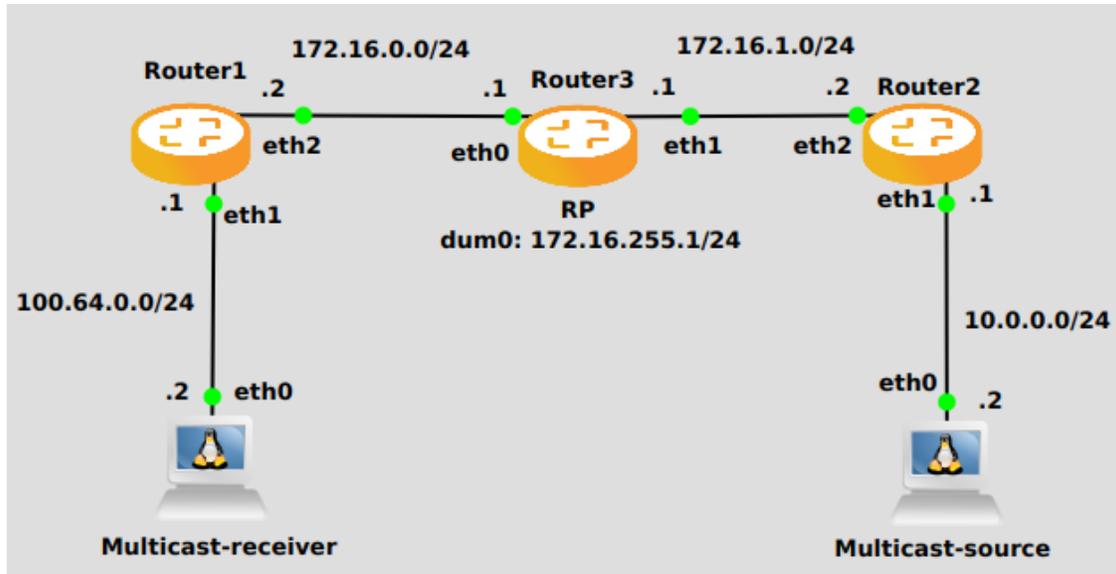
```
set protocols pim interface <interface> igmp version <version-number>
```

Use this command to define in the selected interface whether you choose IGMP version 2 or 3.

The default value is 3.

### Example

In the following example we can see a basic multicast setup:



### Router 1

```
set interfaces ethernet eth2 address '172.16.0.2/24'
set interfaces ethernet eth1 address '100.64.0.1/24'
set protocols ospf area 0 network '172.16.0.0/24'
set protocols ospf area 0 network '100.64.0.0/24'
set protocols igmp interface eth1
set protocols pim interface eth1
set protocols pim interface eth2
set protocols pim rp address 172.16.255.1 group '224.0.0.0/4'
```

### Router 3

```
set interfaces dummy dum0 address '172.16.255.1/24'
set interfaces ethernet eth0 address '172.16.0.1/24'
set interfaces ethernet eth1 address '172.16.1.1/24'
set protocols ospf area 0 network '172.16.0.0/24'
set protocols ospf area 0 network '172.16.255.0/24'
set protocols ospf area 0 network '172.16.1.0/24'
set protocols pim interface dum0
set protocols pim interface eth0
set protocols pim interface eth1
set protocols pim rp address 172.16.255.1 group '224.0.0.0/4'
```

### Router 2

```
set interfaces ethernet eth1 address '10.0.0.1/24'
set interfaces ethernet eth2 address '172.16.1.2/24'
set protocols ospf area 0 network '10.0.0.0/24'
set protocols ospf area 0 network '172.16.1.0/24'
set protocols pim interface eth1
set protocols pim interface eth2
set protocols pim rp address 172.16.255.1 group '224.0.0.0/4'
```

### 8.9.11 PIM6 - Protocol Independent Multicast for IPv6

VyOS facilitates IPv6 Multicast by supporting **PIMv6** and **MLD**.

PIMv6 (Protocol Independent Multicast for IPv6) must be configured in every interface of every participating router. Every router must also have the location of the Rendezvous Point manually configured. Then, unidirectional shared trees rooted at the Rendezvous Point will automatically be built for multicast distribution.

Traffic from multicast sources will go to the Rendezvous Point, and receivers will pull it from a shared tree using MLD (Multicast Listener Discovery).

Multicast receivers will talk MLD to their local router, so, besides having PIMv6 configured in every router, MLD must also be configured in any router where there could be a multicast receiver locally connected.

VyOS supports both MLD version 1 and version 2 (which allows source-specific multicast).

#### Basic commands

These are the commands for a basic setup.

```
set protocols pim6 interface <interface-name>
```

Use this command to enable PIMv6 in the selected interface so that it can communicate with PIMv6 neighbors.

This command also enables MLD reports and query on the interface unless `mld disable` is configured.

```
set protocols pim6 interface <interface-name> mld disable
```

Disable MLD reports and query on the interface.

#### Tuning commands

You can also tune multicast with the following commands.

```
set protocols pim6 interface <interface-name> mld interval <seconds>
```

Use this command to configure in the selected interface the MLD host query interval (1-65535) in seconds that PIM will use. The default value is 125 seconds.

```
set protocols pim6 interface <interface-name> mld join <multicast-address>
```

Use this command to allow the selected interface to join a multicast group.

```
set protocols pim6 interface <interface-name> mld join <multicast-address> source  
<source-address>
```

Use this command to allow the selected interface to join a source-specific multicast group.

```
set protocols pim6 interface <interface-name> mld last-member-query-count <count>
```

Set the MLD last member query count. The default value is 2.

```
set protocols pim6 interface <interface-name> mld last-member-query-interval  
<milliseconds>
```

Set the MLD last member query interval in milliseconds (100-6553500). The default value is 1000 milliseconds.

```
set protocols pim6 interface <interface-name> mld max-response-time <milliseconds>
```

Set the MLD query response timeout in milliseconds (100-6553500). The default value is 10000 milliseconds.

```
set protocols pim6 interface <interface-name> mld version <version-number>
```

Set the MLD version used on this interface. The default value is 2.

## Configuration Example

To enable MLD reports and query on interfaces *eth0* and *eth1*:

```
set protocols pim6 interface eth0
set protocols pim6 interface eth1
```

The following configuration explicitly joins multicast group *ff15::1234* on interface *eth1* and source-specific multicast group *ff15::5678* with source address *2001:db8::1* on interface *eth1*:

```
set protocols pim6 interface eth0 mld join ff15::1234
set protocols pim6 interface eth1 mld join ff15::5678 source 2001:db8::1
```

### 8.9.12 RIP

RIP (Routing Information Protocol) is a widely deployed interior gateway protocol. RIP was developed in the 1970s at Xerox Labs as part of the XNS routing protocol. RIP is a distance-vector protocol and is based on the Bellman-Ford algorithms. As a distance-vector protocol, RIP router send updates to its neighbors periodically, thus allowing the convergence to a known topology. In each update, the distance to any given network will be broadcast to its neighboring router.

Supported versions of RIP are:

- RIPv1 as described in [RFC 1058](#)
- RIPv2 as described in [RFC 2453](#)

#### General Configuration

**set protocols rip network <A.B.C.D/M>**

This command enables RIP and sets the RIP enable interface by NETWORK. The interfaces which have addresses matching with NETWORK are enabled.

**set protocols rip interface <interface>**

This command specifies a RIP enabled interface by interface name. Both the sending and receiving of RIP packets will be enabled on the port specified in this command.

**set protocols rip neighbor <A.B.C.D>**

This command specifies a RIP neighbor. When a neighbor doesn't understand multicast, this command is used to specify neighbors. In some cases, not all routers will be able to understand multicasting, where packets are sent to a network or a group of addresses. In a situation where a neighbor cannot process multicast packets, it is necessary to establish a direct link between routers.

**set protocols rip passive-interface interface <interface>**

This command sets the specified interface to passive mode. On passive mode interface, all receiving packets are processed as normal and VyOS does not send either multicast or unicast RIP packets except to RIP neighbors specified with neighbor command.

**set protocols rip passive-interface interface default**

This command specifies all interfaces to passive mode.

## Optional Configuration

### **set protocols rip default-distance <distance>**

This command change the distance value of RIP. The distance range is 1 to 255.

---

**Note:** Routes with a distance of 255 are effectively disabled and not installed into the kernel.

---

### **set protocols rip network-distance <A.B.C.D/M> distance <distance>**

This command sets default RIP distance to a specified value when the routes source IP address matches the specified prefix.

### **set protocols rip network-distance <A.B.C.D/M> access-list <name>**

This command can be used with previous command to sets default RIP distance to specified value when the route source IP address matches the specified prefix and the specified access-list.

### **set protocols rip default-information originate**

This command generate a default route into the RIP.

### **set protocols rip distribute-list access-list <in|out> <number>**

This command can be used to filter the RIP path using access lists. `in` and `out` this is the direction in which the access lists are applied.

### **set protocols rip distribute-list interface <interface> access-list <in|out> <number>**

This command allows you apply access lists to a chosen interface to filter the RIP path.

### **set protocols rip distribute-list prefix-list <in|out> <name>**

This command can be used to filter the RIP path using prefix lists. `in` and `out` this is the direction in which the prefix lists are applied.

### **set protocols rip distribute-list interface <interface> prefix-list <in|out> <name>**

This command allows you apply prefix lists to a chosen interface to filter the RIP path.

### **set protocols rip route <A.B.C.D/M>**

This command is specific to FRR and VyOS. The route command makes a static route only inside RIP. This command should be used only by advanced users who are particularly knowledgeable about the RIP protocol. In most cases, we recommend creating a static route in VyOS and redistributing it in RIP using `redistribute static`.

### **set protocols rip timers update <seconds>**

This command specifies the update timer. Every update timer seconds, the RIP process is awakened to send an unsolicited response message containing the complete routing table to all neighboring RIP routers. The time range is 5 to 2147483647. The default value is 30 seconds.

### **set protocols rip timers timeout <seconds>**

This command specifies the timeout timer. Upon expiration of the timeout, the route is no longer valid; however, it is retained in the routing table for a short time so that neighbors can be notified that the route has been dropped. The time range is 5 to 2147483647. The default value is 180 seconds.

### **set protocols rip timers garbage-collection <seconds>**

This command specifies the garbage-collection timer. Upon expiration of the garbage-collection timer, the route is finally removed from the routing table. The time range is 5 to 2147483647. The default value is 120 seconds.

## Redistribution Configuration

### **set protocols rip redistribute <route source>**

This command redistributes routing information from the given route source into the RIP tables. There are five modes available for route source: bgp, connected, kernel, ospf, static.

### **set protocols rip redistribute <route source> metric <metric>**

This command specifies metric for redistributed routes from the given route source. There are five modes available for route source: bgp, connected, kernel, ospf, static. The metric range is 1 to 16.

### **set protocols rip redistribute <route source> route-map <name>**

This command allows to use route map to filter redistributed routes from the given route source. There are five modes available for route source: bgp, connected, kernel, ospf, static.

### **set protocols rip default-metric <metric>**

This command modifies the default metric (hop count) value for redistributed routes. The metric range is 1 to 16. The default value is 1. This command does not affect connected route even if it is redistributed by `redistribute connected`. To modify connected routes metric value, please use `redistribute connected metric`.

## Interfaces Configuration

### **set interfaces <inttype> <intname> ip rip authentication plaintext-password <text>**

This command sets the interface with RIP simple password authentication. This command also sets authentication string. The string must be shorter than 16 characters.

### **set interfaces <inttype> <intname> ip rip authentication md5 <id> password <text>**

This command sets the interface with RIP MD5 authentication. This command also sets MD5 Key. The key must be shorter than 16 characters.

### **set interfaces <inttype> <intname> ip rip split-horizon disable**

This command disables split-horizon on the interface. By default, VyOS does not advertise RIP routes out the interface over which they were learned (split horizon).<sup>3</sup>

### **set interfaces <inttype> <intname> ip rip split-horizon poison-reverse**

This command enables poison-reverse on the interface. If both poison reverse and split horizon are enabled, then VyOS advertises the learned routes as unreachable over the interface on which the route was learned.

## Operational Mode Commands

### **show ip rip**

This command displays RIP routes.

Codes: R - RIP, C - connected, S - Static, O - OSPF, B - BGP

Sub-codes:

(n) - normal, (s) - static, (d) - default, (r) - redistribute,

(i) - interface

	Network	Next Hop	Metric From	Tag Time
C(i)	10.0.12.0/24	0.0.0.0	1 self	0

(continues on next page)

(continued from previous page)

```
C(i) 10.0.13.0/24      0.0.0.0      1 self      0
R(n) 10.0.23.0/24    10.0.12.2    2 10.0.12.2  0 02:53
```

### show ip rip status

The command displays current RIP status. It includes RIP timer, filtering, version, RIP enabled interface and RIP peer information.

```
Routing Protocol is "rip"
  Sending updates every 30 seconds with +/-50%, next due in 11 seconds
  Timeout after 180 seconds, garbage collect after 120 seconds
  Outgoing update filter list for all interface is not set
  Incoming update filter list for all interface is not set
  Default redistribution metric is 1
  Redistributing:
  Default version control: send version 2, receive any version
    Interface      Send  Recv  Key-chain
    eth0           2    1 2
    eth2           2    1 2
  Routing for Networks:
    10.0.12.0/24
    eth0
  Routing Information Sources:
    Gateway          BadPackets  BadRoutes  Distance  Last Update
    10.0.12.2        0           0          120      00:00:11
  Distance: (default is 120)
```

### Configuration Example

Simple RIP configuration using 2 nodes and redistributing connected interfaces.

#### Node 1:

```
set interfaces loopback address 10.1.1.1/32
set protocols rip network 192.168.0.0/24
set protocols rip redistribute connected
```

#### Node 2:

```
set interfaces loopback address 10.2.2.2/32
set protocols rip network 192.168.0.0/24
set protocols rip redistribute connected
```

### 8.9.13 RPKI

There are two types of Network Admins who deal with BGP, those who have created an international incident and/or outage, and those who are lying

—tweet by EvilMog, 2020-02-21

RPKI (Resource Public Key Infrastructure) is a framework designed to secure the Internet routing infrastructure. It associates BGP route announcements with the correct originating ASN which BGP routers can then use to check each route against the corresponding ROA (Route Origin Authorisation) for validity. RPKI is described in [RFC 6480](#).

A BGP-speaking router like VyOS can retrieve ROA information from RPKI “Relying Party software” (often just called an “RPKI server” or “RPKI validator”) by using RTR (RPKI to Router) protocol. There are several open source implementations to choose from, such as NLNetLabs’ [Routinator](#) (written in Rust), OpenBSD’s [rpki-client](#) (written in C), and [StayRTR](#) (written in Go). The RTR protocol is described in [RFC 8210](#).

---

**Tip:** If you are new to these routing security technologies then there is an [excellent guide to RPKI](#) by NLnet Labs which will get you up to speed very quickly. Their documentation explains everything from what RPKI is to deploying it in production. It also has some [help and operational guidance](#) including “What can I do about my route having an Invalid state?”

---

#### Getting started

First you will need to deploy an RPKI validator for your routers to use. NLnet Labs provides a collection of [software](#) you can compare and settle on one. Once your server is running you can start validating announcements.

Imported prefixes during the validation may have values:

**valid**

The prefix and ASN that originated it match a signed ROA. These are probably trustworthy route announcements.

**invalid**

The prefix or prefix length and ASN that originated it doesn’t match any existing ROA. This could be the result of a prefix hijack, or merely a misconfiguration, but should probably be treated as un-trustworthy route announcements.

**notfound**

No ROA exists which covers that prefix. Unfortunately this is the case for about 40%-50% of the prefixes which were announced to the DFZ (default-free zone) at the start of 2024.

---

**Note:** If you are responsible for the global addresses assigned to your network, please make sure that your prefixes have ROAs associated with them to avoid being *notfound* by RPKI. For most ASNs this will involve publishing ROAs via your RIR (Regional Internet Registry) (RIPE NCC, APNIC, ARIN, LACNIC, or AFRINIC), and is something you are encouraged to do whenever you plan to announce addresses into the DFZ.

Particularly large networks may wish to run their own RPKI certificate authority and publication server instead of publishing ROAs via their RIR. This is a subject far beyond the scope of VyOS’ documentation. Consider reading about [Krill](#) if this is a rabbit hole you need or especially want to dive down.

---

## Features of the Current Implementation

In a nutshell, the current implementation provides the following features:

- The BGP router can connect to one or more RPKI cache servers to receive validated prefix to origin AS mappings. Advanced failover can be implemented by server sockets with different preference values.
- If no connection to an RPKI cache server can be established after a pre-defined timeout, the router will process routes without prefix origin validation. It still will try to establish a connection to an RPKI cache server in the background.
- By default, enabling RPKI does not change best path selection. In particular, invalid prefixes will still be considered during best path selection. However, the router can be configured to ignore all invalid prefixes.
- Route maps can be configured to match a specific RPKI validation state. This allows the creation of local policies, which handle BGP routes based on the outcome of the Prefix Origin Validation.
- Updates from the RPKI cache servers are directly applied and path selection is updated accordingly. (Soft re-configuration must be enabled for this to work).

## Configuration

```
set protocols rpki polling-period <1-86400>
```

Define the time interval to update the local cache

The default value is 300 seconds.

```
set protocols rpki expire-interval <600-172800>
```

Set the number of seconds the router waits until the router expires the cache.

The default value is 7200 seconds.

```
set protocols rpki retry-interval <1-7200>
```

Set the number of seconds the router waits until retrying to connect to the cache server.

The default value is 600 seconds.

```
set protocols rpki cache <address> port <port>
```

Defined the IPv4, IPv6 or FQDN and port number of the caching RPKI caching instance which is used.

This is a mandatory setting.

```
set protocols rpki cache <address> preference <preference>
```

Multiple RPKI caching instances can be supplied and they need a preference in which their result sets are used.

This is a mandatory setting.

## SSH

Connections to the RPKI caching server can not only be established by TCP using the RTR protocol but you can also rely on a secure SSH session to the server. This provides transport integrity and confidentiality and it is a good idea if your validation software supports it. To enable SSH, first you need to create an SSH client keypair using `generate ssh client-key /config/auth/id_rsa_rpki`. Once your key is created you can setup the connection.

```
set protocols rpki cache <address> ssh username <user>
```

SSH username to establish an SSH connection to the cache server.

```
set protocols rpki cache <address> ssh private-key-file <filepath>
```

Local path that includes the private key file of the router.

```
set protocols rpki cache <address> ssh public-key-file <filepath>
```

Local path that includes the public key file of the router.

---

**Note:** When using SSH, `private-key-file` and `public-key-file` are mandatory options.

---

## Example

We can build route-maps for import based on these states. Here is a simple RPKI configuration, where *routinator* is the RPKI-validating “cache” server with ip *192.0.2.1*:

```
set protocols rpki cache 192.0.2.1 port '3323'
set protocols rpki cache 192.0.2.1 preference '1'
```

Here is an example route-map to apply to routes learned at import. In this filter we reject prefixes with the state *invalid*, and set a higher *local-preference* if the prefix is RPKI *valid* rather than merely *notfound*.

```
set policy route-map ROUTES-IN rule 10 action 'permit'
set policy route-map ROUTES-IN rule 10 match rpki 'valid'
set policy route-map ROUTES-IN rule 10 set local-preference '300'
set policy route-map ROUTES-IN rule 20 action 'permit'
set policy route-map ROUTES-IN rule 20 match rpki 'notfound'
set policy route-map ROUTES-IN rule 20 set local-preference '125'
set policy route-map ROUTES-IN rule 30 action 'deny'
set policy route-map ROUTES-IN rule 30 match rpki 'invalid'
```

Once your routers are configured to reject RPKI-invalid prefixes, you can test whether the configuration is working correctly using Cloudflare’s [test](#) website. Keep in mind that in order for this to work, you need to have no default routes or anything else that would still send traffic to RPKI-invalid destinations.

## 8.9.14 Static

Static routes are manually configured routes, which, in general, cannot be updated dynamically from information VyOS learns about the network topology from other routing protocols. However, if a link fails, the router will remove routes, including static routes, from the RIPB (Routing Information Base) that used this interface to reach the next hop. In general, static routes should only be used for very simple network topologies, or to override the behavior of a dynamic routing protocol for a small number of routes. The collection of all routes the router has learned from its configuration or from its dynamic routing protocols is stored in the RIB. Unicast routes are directly used to determine the forwarding table used for unicast packet forwarding.

### Static Routes

**set protocols static route <subnet> next-hop <address>**

Configure next-hop <address> for an IPv4 static route. Multiple static routes can be created.

**set protocols static route <subnet> next-hop <address> disable**

Disable this IPv4 static route entry.

**set protocols static route <subnet> next-hop <address> distance <distance>**

Defines next-hop distance for this route, routes with smaller administrative distance are elected prior to those with a higher distance.

Range is 1 to 255, default is 1.

---

**Note:** Routes with a distance of 255 are effectively disabled and not installed into the kernel.

---

**set protocols static route6 <subnet> next-hop <address>**

Configure next-hop <address> for an IPv6 static route. Multiple static routes can be created.

**set protocols static route6 <subnet> next-hop <address> disable**

Disable this IPv6 static route entry.

**set protocols static route6 <subnet> next-hop <address> distance <distance>**

Defines next-hop distance for this route, routes with smaller administrative distance are elected prior to those with a higher distance.

Range is 1 to 255, default is 1.

---

**Note:** Routes with a distance of 255 are effectively disabled and not installed into the kernel.

---

**set protocols static route6 <subnet> next-hop <address> segments <segments>**

It is possible to specify a static route for ipv6 prefixes using an SRv6 segments instruction. The / separator can be used to specify multiple segment instructions.

Example:

```
set protocols static route6 2001:db8:1000::/36 next-hop 2001:db8:201::ffff segments
↳ '2001:db8:aaa::7/2002::4/2002::3/2002::2'
```

```
vyos@vyos:~$ show ipv6 route
Codes: K - kernel route, C - connected, S - static, R - RIPng,
       O - OSPFv3, I - IS-IS, B - BGP, N - NHRP, T - Table,
       v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure
C>* 2001:db8:201::/64 is directly connected, eth0.201, 00:00:46
S>* 2001:db8:1000::/36 [1/0] via 2001:db8:201::ffff, eth0.201, seg6
↳2001:db8:aaaa::7,2002::4,2002::3,2002::2, weight 1, 00:00:08
```

## Interface Routes

### **set protocols static route <subnet> interface <interface>**

Allows you to configure the next-hop interface for an interface-based IPv4 static route. *<interface>* will be the next-hop interface where traffic is routed for the given *<subnet>*.

### **set protocols static route <subnet> interface <interface> disable**

Disables interface-based IPv4 static route.

### **set protocols static route <subnet> interface <interface> distance <distance>**

Defines next-hop distance for this route, routes with smaller administrative distance are elected prior to those with a higher distance.

Range is 1 to 255, default is 1.

### **set protocols static route6 <subnet> interface <interface>**

Allows you to configure the next-hop interface for an interface-based IPv6 static route. *<interface>* will be the next-hop interface where traffic is routed for the given *<subnet>*.

### **set protocols static route6 <subnet> interface <interface> disable**

Disables interface-based IPv6 static route.

### **set protocols static route6 <subnet> interface <interface> distance <distance>**

Defines next-hop distance for this route, routes with smaller administrative distance are elected prior to those with a higher distance.

Range is 1 to 255, default is 1.

### **set protocols static route6 <subnet> interface <interface> segments <segments>**

It is possible to specify a static route for ipv6 prefixes using an SRv6 segments instruction. The / separator can be used to specify multiple segment instructions.

Example:

```
set protocols static route6 2001:db8:1000::/36 interface eth0 segments
↳'2001:db8:aaaa::7/2002::4/2002::3/2002::2'
```

## Blackhole

```
set protocols static route <subnet> blackhole
```

Use this command to configure a “black-hole” route on the router. A black-hole route is a route for which the system silently discard packets that are matched. This prevents networks leaking out public interfaces, but it does not prevent them from being used as a more specific route inside your network.

```
set protocols static route <subnet> blackhole distance <distance>
```

Defines blackhole distance for this route, routes with smaller administrative distance are elected prior to those with a higher distance.

```
set protocols static route6 <subnet> blackhole
```

Use this command to configure a “black-hole” route on the router. A black-hole route is a route for which the system silently discard packets that are matched. This prevents networks leaking out public interfaces, but it does not prevent them from being used as a more specific route inside your network.

```
set protocols static route6 <subnet> blackhole distance <distance>
```

Defines blackhole distance for this route, routes with smaller administrative distance are elected prior to those with a higher distance.

## Alternate Routing Tables

TBD

Alternate routing tables are used with policy based routing by utilizing *VRF*.

### 8.9.15 ARP

ARP (Address Resolution Protocol) is a communication protocol used for discovering the link layer address, such as a MAC address, associated with a given internet layer address, typically an IPv4 address. This mapping is a critical function in the Internet protocol suite. ARP was defined in 1982 by [RFC 826](#) which is Internet Standard STD 37.

In Internet Protocol Version 6 (IPv6) networks, the functionality of ARP is provided by the Neighbor Discovery Protocol (NDP).

To manipulate or display [ARP](#) table entries, the following commands are implemented.

#### Configure

```
set protocols static arp interface <interface> address <host> mac <mac>
```

This will configure a static ARP entry always resolving *<address>* to *<mac>* for interface *<interface>*.

Example:

```
set protocols static arp interface eth0 address 192.0.2.1 mac 01:23:45:67:89:01
```

## Operation

### show protocols static arp

Display all known ARP table entries spanning across all interfaces

```
vyos@vyos:~$ show protocols static arp
Address           HWtype  HWaddress           Flags Mask    Iface
10.1.1.1          ether   00:53:00:de:23:2e   C             eth1
10.1.1.100        ether   00:53:00:de:23:aa   CM            eth1
```

### show protocols static arp interface eth1

Display all known ARP table entries on a given interface only (*eth1*):

```
vyos@vyos:~$ show protocols static arp interface eth1
Address           HWtype  HWaddress           Flags Mask    Iface
10.1.1.1          ether   00:53:00:de:23:2e   C             eth1
10.1.1.100        ether   00:53:00:de:23:aa   CM            eth1
```

## 8.10 Service

### 8.10.1 UDP Broadcast Relay

Certain vendors use broadcasts to identify their equipment within one ethernet segment. Unfortunately if you split your network with multiple VLANs you loose the ability of identifying your equipment.

This is where “UDP broadcast relay” comes into play! It will forward received broadcasts to other configured networks.

Every UDP port which will be forward requires one unique ID. Currently we support 99 IDs!

#### Configuration

**set service broadcast-relay id <n> description <description>**

A description can be added for each and every unique relay ID. This is useful to distinguish between multiple different ports/appliactions.

**set service broadcast-relay id <n> interface <interface>**

The interface used to receive and relay individual broadcast packets. If you want to receive/relay packets on both *eth1* and *eth2* both interfaces need to be added.

**set service broadcast-relay id <n> address <ipv4-address>**

Set the source IP of forwarded packets, otherwise original senders address is used.

**set service broadcast-relay id <n> port <port>**

The UDP port number used by your application. It is mandatory for this kind of operation.

**set service broadcast-relay id <n> disable**

Each broadcast relay instance can be individually disabled without deleting the configured node by using the following command:

**set service broadcast-relay disable**

In addition you can also disable the whole service without the need to remove it from the current configuration.

---

**Note:** You can run the UDP broadcast relay service on multiple routers connected to a subnet. There is **NO** UDP broadcast relay packet storm!

---

### Example

To forward all broadcast packets received on *UDP port 1900* on *eth3*, *eth4* or *eth5* to all other interfaces in this configuration.

```
set service broadcast-relay id 1 description 'SONOS'
set service broadcast-relay id 1 interface 'eth3'
set service broadcast-relay id 1 interface 'eth4'
set service broadcast-relay id 1 interface 'eth5'
set service broadcast-relay id 1 port '1900'
```

## 8.10.2 Conntrack Sync

One of the important features built on top of the Netfilter framework is connection tracking. Connection tracking allows the kernel to keep track of all logical network connections or sessions, and thereby relate all of the packets which may make up that connection. NAT relies on this information to translate all related packets in the same way, and iptables can use this information to act as a stateful firewall.

The connection state however is completely independent of any upper-level state, such as TCP's or SCTP's state. Part of the reason for this is that when merely forwarding packets, i.e. no local delivery, the TCP engine may not necessarily be invoked at all. Even connectionless-mode transmissions such as UDP, IPsec (AH/ESP), GRE and other tunneling protocols have, at least, a pseudo connection state. The heuristic for such protocols is often based upon a preset timeout value for inactivity, after whose expiration a Netfilter connection is dropped.

Each Netfilter connection is uniquely identified by a (layer-3 protocol, source address, destination address, layer-4 protocol, layer-4 key) tuple. The layer-4 key depends on the transport protocol; for TCP/UDP it is the port numbers, for tunnels it can be their tunnel ID, but otherwise is just zero, as if it were not part of the tuple. To be able to inspect the TCP port in all cases, packets will be mandatorily defragmented.

It is possible to use either Multicast or Unicast to sync conntrack traffic. Most examples below show Multicast, but unicast can be specified by using the "peer" keyword after the specified interface, as in the following example:

```
set service conntrack-sync interface eth0 peer 192.168.0.250
```

### Configuration

#### **set service conntrack-sync accept-protocol**

Accept only certain protocols: You may want to replicate the state of flows depending on their layer 4 protocol.

Protocols are: tcp, sctp, dccp, udp, icmp and ipv6-icmp.

#### **set service conntrack-sync event-listen-queue-size <size>**

The daemon doubles the size of the netlink event socket buffer size if it detects netlink event message dropping. This clause sets the maximum buffer size growth that can be reached.

Queue size for listening to local conntrack events in MB.

#### **set service conntrack-sync expect-sync <all|ftp|h323|nfs|sip|sqlnet>**

Protocol for which expect entries need to be synchronized.

**set service contrack-sync failover-mechanism vrrp sync-group <group>**

Failover mechanism to use for contrack-sync.

Only VRRP is supported. Required option.

**set service contrack-sync ignore-address <x.x.x.x>**

IP addresses or networks for which local contrack entries will not be synced

**set service contrack-sync interface <name>**

Interface to use for syncing contrack entries.

**set service contrack-sync interface <name> port <port>**

Port number used by connection.

**set service contrack-sync listen-address <ipv4address>**

Local IPv4 addresses for service to listen on.

**set service contrack-sync mcast-group <x.x.x.x>**

Multicast group to use for syncing contrack entries.

Defaults to 225.0.0.50.

**set service contrack-sync interface <name> peer <address>**

Peer to send unicast UDP contrack sync entries to, if not using Multicast configuration from above above.

**set service contrack-sync sync-queue-size <size>**

Queue size for syncing contrack entries in MB.

**set service contrack-sync disable-external-cache**

This disable the external cache and directly injects the flow-states into the in-kernel Connection Tracking System of the backup firewall.

**set service contrack-sync disable-syslog**

Disable connection logging via Syslog.

**set service contrack-sync startup-resync**

Order contrackd to request a complete contrack table resync against the other node at startup.

## Operation

**show contrack table ipv4**

Make sure contrack is enabled by running and show connection tracking table.

```
vyos@vyos:~$ show contrack table ipv4
TCP state codes: SS - SYN SENT, SR - SYN RECEIVED, ES - ESTABLISHED,
                  FW - FIN WAIT, CW - CLOSE WAIT, LA - LAST ACK,
                  TW - TIME WAIT, CL - CLOSE, LI - LISTEN

CONN ID   Source           Destination      Protocol        TIMEOUT
1015736576 10.35.100.87:58172 172.31.20.12:22  tcp [6] ES     430279
1006235648 10.35.101.221:57483 172.31.120.21:22 tcp [6] ES     413310
1006237088 10.100.68.100      172.31.120.21   icmp [1]        29
1015734848 10.35.100.87:56282 172.31.20.12:22  tcp [6] ES     300
```

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1015734272	172.31.20.12:60286	239.10.10.14:694	udp [17]	29
1006239392	10.35.101.221	172.31.120.21	icmp [1]	29

**Note:** If the table is empty and you have a warning message, it means conntrack is not enabled. To enable conntrack, just create a NAT or a firewall rule. `set firewall state-policy established action accept`

### show conntrack-sync cache external

Show connection syncing external cache entries

### show conntrack-sync cache internal

Show connection syncing internal cache entries

### show conntrack-sync statistics

Retrieve current statistics of connection tracking subsystem.

```
vyos@vyos:~$ show conntrack-sync statistics
Main Table Statistics:

cache internal:
current active connections:      19606
connections created:            6298470   failed:      0
connections updated:           3786793   failed:      0
connections destroyed:         6278864   failed:      0

cache external:
current active connections:      15771
connections created:            1660193   failed:      0
connections updated:           77204    failed:      0
connections destroyed:         1644422   failed:      0

traffic processed:
                                0 Bytes          0 Pkts

multicast traffic (active device=eth0.5):
    976826240 Bytes sent          212898000 Bytes rcv
    8302333 Pkts sent             2009929 Pkts rcv
    0 Error send                   0 Error rcv

message tracking:
                                0 Malformed msgs      263 Lost msgs
```

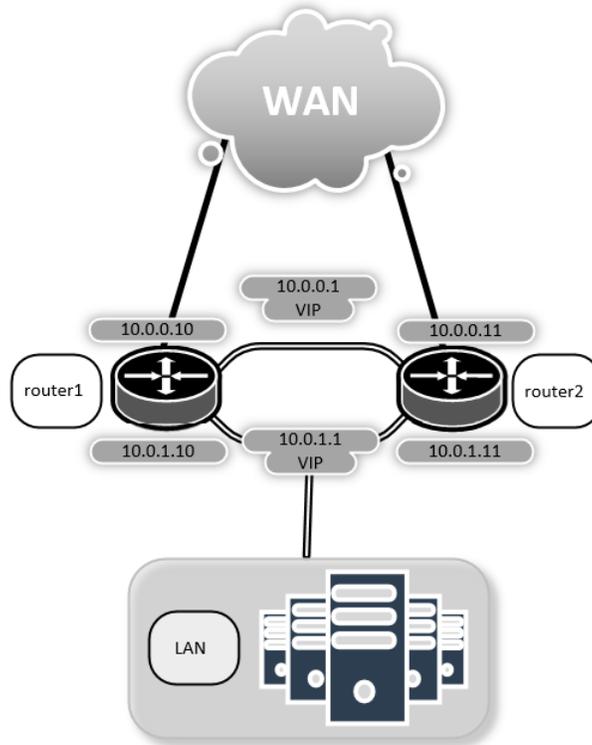
### show conntrack-sync status

Retrieve current status of connection tracking subsystem.

```
vyos@vyos:~$ show conntrack-sync status
sync-interface      : eth0.5
failover-mechanism : vrrp [sync-group GEFOEKOM]
last state transition : no transition yet!
ExpectationSync    : disabled
```

## Example

The next example is a simple configuration of `contrack-sync`.



Now configure `contrack-sync` service on **router1** and **router2**

```
set high-availability vrrp group internal virtual-address ... etc ...
set high-availability vrrp sync-group syncgrp member 'internal'
set service contrack-sync accept-protocol 'tcp'
set service contrack-sync accept-protocol 'udp'
set service contrack-sync accept-protocol 'icmp'
set service contrack-sync failover-mechanism vrrp sync-group 'syncgrp'
set service contrack-sync interface 'eth0'
set service contrack-sync mcast-group '225.0.0.50'
```

On the active router, you should have information in the internal-cache of `contrack-sync`. The same current active connections number should be shown in the external-cache of the standby router

On active router run:

```
$ show contrack-sync statistics
```

Main Table Statistics:

cache internal:

current active connections:	10		
connections created:	8517	failed:	0
connections updated:	127	failed:	0

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```

connections destroyed:           8507   failed:           0

cache external:
current active connections:      0
connections created:             0   failed:           0
connections updated:             0   failed:           0
connections destroyed:           0   failed:           0

traffic processed:
           0 Bytes                0 Pkts

multicast traffic (active device=eth0):
      868780 Bytes sent          224136 Bytes recv
      20595 Pkts sent           14034 Pkts recv
           0 Error send           0 Error recv

message tracking:
           0 Malformed msgs       0 Lost msgs
    
```

On standby router run:

```

$ show conntrack-sync statistics

Main Table Statistics:

cache internal:
current active connections:      0
connections created:             0   failed:           0
connections updated:             0   failed:           0
connections destroyed:           0   failed:           0

cache external:
current active connections:      10
connections created:             888   failed:           0
connections updated:             134   failed:           0
connections destroyed:           878   failed:           0

traffic processed:
           0 Bytes                0 Pkts

multicast traffic (active device=eth0):
      234184 Bytes sent          907504 Bytes recv
      14663 Pkts sent           21495 Pkts recv
           0 Error send           0 Error recv

message tracking:
           0 Malformed msgs       0 Lost msgs
    
```

### 8.10.3 Console Server

Starting of with VyOS 1.3 (equuleus) we added support for running VyOS as an Out-of-Band Management device which provides remote access by means of SSH to directly attached serial interfaces.

Serial interfaces can be any interface which is directly connected to the CPU or chipset (mostly known as a ttyS interface in Linux) or any other USB to serial converter (Prolific PL2303 or FTDI FT232/FT4232 based chips).

If you happened to use a Cisco NM-16A - Sixteen Port Async Network Module or NM-32A - Thirty-two Port Async Network Module - this is your VyOS replacement.

For USB port information please refer to: *USB*.

#### Configuration

Between computers, the most common configuration used was “8N1”: eight bit characters, with one start bit, one stop bit, and no parity bit. Thus 10 Baud times are used to send a single character, and so dividing the signalling bit-rate by ten results in the overall transmission speed in characters per second. This is also the default setting if none of those options are defined.

```
set service console-server device <device> data-bits [7 | 8]
```

Configure either seven or eight data bits. This defaults to eight data bits if left unconfigured.

```
set service console-server device <device> description <string>
```

A user friendly description identifying the connected peripheral.

```
set service console-server device <device> alias <string>
```

A user friendly alias for this connection. Can be used instead of the device name when connecting.

```
set service console-server device <device> parity [even | odd | none]
```

Set the parity option for the console. If unset this will default to none.

```
set service console-server device <device> stop-bits [1 | 2]
```

Configure either one or two stop bits. This defaults to one stop bits if left unconfigured.

```
set service console-server device <device> speed [ 300 | 1200 | 2400 | 4800 | 9600 |
19200 | 38400 | 57600 | 115200 ]
```

---

**Note:** USB to serial converters will handle most of their work in software so you should be careful with the selected baudrate as some times they can't cope with the expected speed.

---

#### Remote Access

Each individual configured console-server device can be directly exposed to the outside world. A user can directly connect via SSH to the configured port.

```
set service console-server device <device> ssh port <port>
```

Accept SSH connections for the given *<device>* on TCP port *<port>*. After successful authentication the user will be directly dropped to the connected serial device.

---

**Hint:** Multiple users can connect to the same serial device but only one is allowed to write to the console port.

---

## Operation

### show console-server ports

Show configured serial ports and their respective interface configuration.

```
vyos@vyos:~$ show console-server ports
usb0b2.4p1.0          on /dev/serial/by-bus/usb0b2.4p1.0@ at 9600n
```

### show console-server user

Show currently connected users.

```
vyos@vyos:~$ show console-server user
usb0b2.4p1.0          up   vyos@localhost
```

### connect console <device>

Locally connect to serial port identified by <device>.

```
vyos@vyos-r1:~$ connect console usb0b2.4p1.0
[Enter ^Ec? for help]
[-- MOTD -- VyOS Console Server]

vyos-r2 login:
```

---

**Hint:** Multiple users can connect to the same serial device but only one is allowed to write to the console port.

---



---

**Hint:** The sequence `^Ec?` translates to: `Ctrl+E c ?`. To quit the session use: `Ctrl+E c .`

---



---

**Hint:** If `alias` is set, it can be used instead of the device when connecting.

---

### show log console-server

Show the console server log.

## 8.10.4 DHCP Relay

If you want your router to forward DHCP requests to an external DHCP server you can configure the system to act as a DHCP relay agent. The DHCP relay agent works with IPv4 and IPv6 addresses.

All interfaces used for the DHCP relay must be configured. This includes the uplink to the DHCP server.

## IPv4 relay

### Configuration

**set service dhcp-relay interface <interface>**

Interfaces that participate in the DHCP relay process. If this command is used, at least two entries of it are required: one for the interface that captures the dhcp-requests, and one for the interface to forward such requests. A warning message will be shown if this command is used, since new implementations should use `listen-interface` and `upstream-interface`.

**set service dhcp-relay listen-interface <interface>**

Interface for DHCP Relay Agent to listen for requests.

**set service dhcp-relay upstream-interface <interface>**

Interface for DHCP Relay Agent to forward requests out.

**set service dhcp-relay server <server>**

Configure IP address of the DHCP *<server>* which will handle the relayed packets.

**set service dhcp-relay relay-options relay-agents-packets discard**

The router should discard DHCP packages already containing relay agent information to ensure that only requests from DHCP clients are forwarded.

**set service dhcp-relay disable**

Disable dhcp-relay service.

### Options

**set service dhcp-relay relay-options hop-count <count>**

Set the maximum hop *<count>* before packets are discarded. Range 0...255, default 10.

**set service dhcp-relay relay-options max-size <size>**

Set maximum *<size>* of DHCP packets including relay agent information. If a DHCP packet size surpasses this value it will be forwarded without appending relay agent information. Range 64...1400, default 576.

**set service dhcp-relay relay-options relay-agents-packets <append | discard | forward | replace>**

Four policies for reforwarding DHCP packets exist:

- **append:** The relay agent is allowed to append its own relay information to a received DHCP packet, disregarding relay information already present in the packet.
- **discard:** Received packets which already contain relay information will be discarded.
- **forward:** All packets are forwarded, relay information already present will be ignored.
- **replace:** Relay information already present in a packet is stripped and replaced with the router's own relay information set.

## Example

- Listen for DHCP requests on interface eth1.
- DHCP server is located at IPv4 address 10.0.1.4 on eth2.
- Router receives DHCP client requests on eth1 and relays them to the server at 10.0.1.4 on eth2.

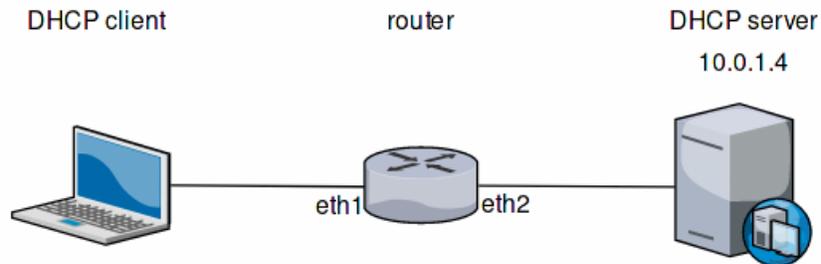


Fig. 3: DHCP relay example

The generated configuration will look like:

```
show service dhcp-relay
  listen-interface eth1
  upstream-interface eth2
  server 10.0.1.4
  relay-options {
    relay-agents-packets discard
  }
```

Also, for backwards compatibility this configuration, which uses generic interface definition, is still valid:

```
show service dhcp-relay
  interface eth1
  interface eth2
  server 10.0.1.4
  relay-options {
    relay-agents-packets discard
  }
```

## Operation

### restart dhcp relay-agent

Restart DHCP relay service

## IPv6 relay

### Configuration

**set service dhcpv6-relay listen-interface <interface>**

Set eth1 to be the listening interface for the DHCPv6 relay.

Multiple interfaces may be specified.

**set service dhcpv6-relay upstream-interface <interface> address <server>**

Specifies an upstream network <interface> from which replies from <server> and other relay agents will be accepted.

**set service dhcpv6-relay disable**

Disable dhcpv6-relay service.

### Options

**set service dhcpv6-relay max-hop-count <count>**

Set maximum hop count before packets are discarded, default: 10

**set service dhcpv6-relay use-interface-id-option**

If this is set the relay agent will insert the interface ID. This option is set automatically if more than one listening interfaces are in use.

### Example

- DHCPv6 requests are received by the router on *listening interface eth1*
- Requests are forwarded through eth2 as the *upstream interface*
- External DHCPv6 server is at 2001:db8::4

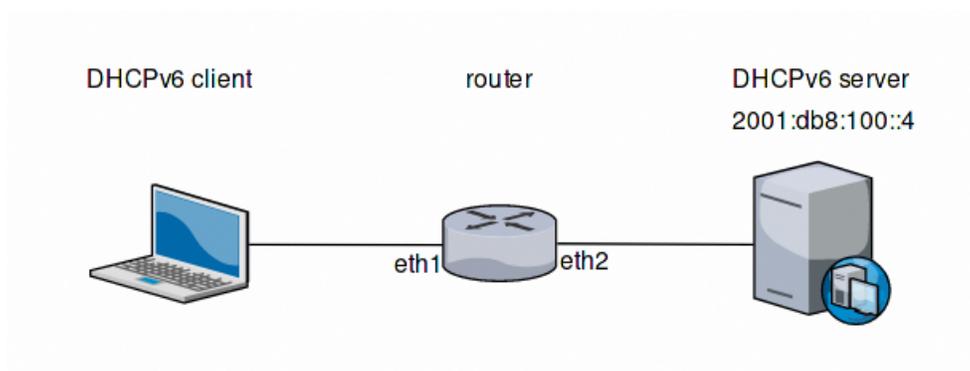


Fig. 4: DHCPv6 relay example

The generated configuration will look like:

```

commit
show service dhcpv6-relay
  listen-interface eth1 {
  }
  upstream-interface eth2 {
    address 2001:db8::4
  }

```

## Operation

### restart dhcpv6 relay-agent

Restart DHCPv6 relay agent immediately.

## 8.10.5 DHCP Server

VyOS uses Kea DHCP server for both IPv4 and IPv6 address assignment.

### IPv4 server

The network topology is declared by shared-network-name and the subnet declarations. The DHCP service can serve multiple shared networks, with each shared network having 1 or more subnets. Each subnet must be present on an interface. A range can be declared inside a subnet to define a pool of dynamic addresses. Multiple ranges can be defined and can contain holes. Static mappings can be set to assign “static” addresses to clients based on their MAC address.

## Configuration

### set service dhcp-server hostfile-update

Create DNS record per client lease, by adding clients to /etc/hosts file. Entry will have format: *<shared-network-name>\_<hostname>.<domain-name>*

### set service dhcp-server shared-network-name <name> option domain-name <domain-name>

The domain-name parameter should be the domain name that will be appended to the client’s hostname to form a fully-qualified domain-name (FQDN) (DHCP Option 015).

This is the configuration parameter for the entire shared network definition. All subnets will inherit this configuration item if not specified locally.

### set service dhcp-server shared-network-name <name> option domain-search <domain-name>

The domain-name parameter should be the domain name used when completing DNS request where no full FQDN is passed. This option can be given multiple times if you need multiple search domains (DHCP Option 119).

This is the configuration parameter for the entire shared network definition. All subnets will inherit this configuration item if not specified locally.

### set service dhcp-server shared-network-name <name> option name-server <address>

Inform client that the DNS server can be found at *<address>*.

This is the configuration parameter for the entire shared network definition. All subnets will inherit this configuration item if not specified locally. Multiple DNS servers can be defined.

**set service dhcp-server shared-network-name <name> option vendor-option <option-name>**

This configuration parameter lets you specify a vendor-option for the entire shared network definition. All subnets will inherit this configuration item if not specified locally. An example for Ubiquiti is shown below:

**Example:**

Pass address of Unifi controller at 172.16.100.1 to all clients of NET1

```
set service dhcp-server shared-network-name 'NET1' option vendor-option
ubiquiti '172.16.100.1'
```

**set service dhcp-server listen-address <address>**

This configuration parameter lets the DHCP server to listen for DHCP requests sent to the specified address, it is only realistically useful for a server whose only clients are reached via unicasts, such as via DHCP relay agents.

## Individual Client Subnet

**set service dhcp-server shared-network-name <name> authoritative**

This says that this device is the only DHCP server for this network. If other devices are trying to offer DHCP leases, this machine will send 'DHCPNAK' to any device trying to request an IP address that is not valid for this network.

**set service dhcp-server shared-network-name <name> subnet <subnet> subnet-id <id>**

This configuration parameter is required and must be unique to each subnet. It is required to map subnets to lease file entries.

**set service dhcp-server shared-network-name <name> subnet <subnet> option default-router <address>**

This is a configuration parameter for the *<subnet>*, saying that as part of the response, tell the client that the default gateway can be reached at *<address>*.

**set service dhcp-server shared-network-name <name> subnet <subnet> option name-server <address>**

This is a configuration parameter for the subnet, saying that as part of the response, tell the client that the DNS server can be found at *<address>*.

Multiple DNS servers can be defined.

**set service dhcp-server shared-network-name <name> subnet <subnet> lease <time>**

Assign the IP address to this machine for *<time>* seconds.

The default value is 86400 seconds which corresponds to one day.

**set service dhcp-server shared-network-name <name> subnet <subnet> range <n> start <address>**

Create DHCP address range with a range id of *<n>*. DHCP leases are taken from this pool. The pool starts at address *<address>*.

```
set service dhcp-server shared-network-name <name> subnet <subnet> range <n> stop
<address>
```

Create DHCP address range with a range id of <n>. DHCP leases are taken from this pool. The pool stops with address <address>.

```
set service dhcp-server shared-network-name <name> subnet <subnet> exclude <address>
```

Always exclude this address from any defined range. This address will never be assigned by the DHCP server.

This option can be specified multiple times.

```
set service dhcp-server shared-network-name <name> subnet <subnet> option domain-name
<domain-name>
```

The domain-name parameter should be the domain name that will be appended to the client's hostname to form a fully-qualified domain-name (FQDN) (DHCP Option 015).

```
set service dhcp-server shared-network-name <name> subnet <subnet> option domain-search
<domain-name>
```

The domain-name parameter should be the domain name used when completing DNS request where no full FQDN is passed. This option can be given multiple times if you need multiple search domains (DHCP Option 119).

```
set service dhcp-server shared-network-name <name> subnet <subnet> option vendor-option
<option-name>
```

This configuration parameter lets you specify a vendor-option for the subnet specified within the shared network definition. An example for Ubiquiti is shown below:

#### Example:

Create 172.18.201.0/24 as a subnet within NET1 and pass address of Unifi controller at 172.16.100.1 to clients of that subnet.

```
set service dhcp-server shared-network-name 'NET1' subnet
'172.18.201.0/24' option vendor-option ubiquiti '172.16.100.1'
```

## High Availability

VyOS provides High Availability support for DHCP server. DHCP High Availability can act in two different modes:

- **Active-active:** both DHCP servers will respond to DHCP requests. If mode is not defined, this is the default behavior.
- **Active-passive:** only primary server will respond to DHCP requests. If this server goes offline, then secondary server will take place.

DHCP High Availability must be configured explicitly by the following statements on both servers:

```
set service dhcp-server high-availability mode [active-active | active-passive]
```

Define operation mode of High Availability feature. Default value if command is not specified is *active-active*

```
set service dhcp-server high-availability source-address <address>
```

Local IP <address> used when communicating to the HA peer.

```
set service dhcp-server high-availability remote <address>
```

Remote peer IP <address> of the second DHCP server in this HA cluster.

```
set service dhcp-server high-availability name <name>
```

A generic *<name>* referencing this sync service.

---

**Note:** *<name>* must be identical on both sides!

---

**set service dhcp-server high-availability status** *<primary | secondary>*

The primary and secondary statements determines whether the server is primary or secondary.

---

**Note:** In order for the primary and the secondary DHCP server to keep their lease tables in sync, they must be able to reach each other on TCP port 647. If you have firewall rules in effect, adjust them accordingly.

---



---

**Hint:** The dialogue between HA partners is neither encrypted nor authenticated. Since most DHCP servers exist within an organisation's own secure Intranet, this would be an unnecessary overhead. However, if you have DHCP HA peers whose communications traverse insecure networks, then we recommend that you consider the use of VPN tunneling between them to ensure that the HA partnership is immune to disruption (accidental or otherwise) via third parties.

---

## Static mappings

You can specify a static DHCP assignment on a per host basis. You will need the MAC address of the station and your desired IP address. The address must be inside the subnet definition but can be outside of the range statement.

**set service dhcp-server shared-network-name** *<name>* **subnet** *<subnet>* **static-mapping** *<description>* **mac** *<address>*

Create a new DHCP static mapping named *<description>* which is valid for the host identified by its MAC *<address>*.

**set service dhcp-server shared-network-name** *<name>* **subnet** *<subnet>* **static-mapping** *<description>* **duid** *<identifier>*

Create a new DHCP static mapping named *<description>* which is valid for the host identified by its DHCP unique identifier (DUID) *<identifier>*.

**set service dhcp-server shared-network-name** *<name>* **subnet** *<subnet>* **static-mapping** *<description>* **ip-address** *<address>*

Static DHCP IP address assign to host identified by *<description>*. IP address must be inside the *<subnet>* which is defined but can be outside the dynamic range created with **set service dhcp-server shared-network-name** *<name>* **subnet** *<subnet>* **range** *<n>*. If no ip-address is specified, an IP from the dynamic pool is used.

This is useful, for example, in combination with hostfile update.

---

**Hint:** This is the equivalent of the host block in dhcpd.conf of isc-dhcpd.

---

### Example:

- IP address 192.168.1.100 shall be statically mapped to client named `client1`

```
set service dhcp-server shared-network-name 'NET1' subnet 192.168.1.0/24 subnet-id 1
set service dhcp-server shared-network-name 'NET1' subnet 192.168.1.0/24 static-mapping_
↪client1 ip-address 192.168.1.100
set service dhcp-server shared-network-name 'NET1' subnet 192.168.1.0/24 static-mapping_
↪client1 mac aa:bb:11:22:33:00
```

The configuration will look as follows:

```
show service dhcp-server shared-network-name NET1
 subnet 192.168.1.0/24 {
   static-mapping client1 {
     ip-address 192.168.1.100
     mac aa:bb:11:22:33:00
   }
   subnet-id 1
 }
```

## Options

Setting name	Option number	ISC-DHCP name	Option	Option description	Multi
client-prefix-length	1	subnet-mask		Specifies the clients subnet mask as per RFC 950. If unset, subnet declaration is used.	N
time-offset	2	time-offset		Offset of the client's subnet in seconds from Coordinated Universal Time (UTC)	N
default-router	3	routers		IPv4 address of router on the client's subnet	N
time-server	4	time-servers		RFC 868 time server IPv4 address	Y
name-server	6	domain-name-servers		DNS server IPv4 address	Y
domain-name	15	domain-name		Client domain name	Y
ip-forwarding	19	ip-forwarding		Enable IP forwarding on client	N
ntp-server	42	ntp-servers		IP address of NTP server	Y
wins-server	44	netbios-name-servers		NetBIOS over TCP/IP name server	Y
server-identifier	54	dhcp-server-identifier		IP address for DHCP server identifier	N
bootfile-server	siaddr	next-server		IPv4 address of next bootstrap server	N
tftp-server-name	66	tftp-server-name		Name or IPv4 address of TFTP server	N
bootfile-name	67	bootfile-name,	file-	Bootstrap file name	N
bootfile-size	13	boot-size		Boot image length in 512-octet blocks	N
smtp-server	69	smtp-server		IP address of SMTP server	Y
pop-server	70	pop-server		IP address of POP3 server	Y
domain-search	119	domain-search		Client domain search	Y
static-route	121, 249	rfc3442-static-route, windows-static-route		Classless static route	N
wpad-url	252	wpad-url,	wpad-url	Web Proxy Autodiscovery (WPAD) URL	N
lease		default-lease-time,		Lease timeout in seconds (default: 86400)	N
range		max-lease-time			
exclude		range		DHCP lease range	Y
				IP address to exclude from DHCP lease range	Y
failover				DHCP failover parameters	
static-mapping				Name of static mapping	Y

Multi: can be specified multiple times.

## Example

Please see the *DHCP/DNS quick-start* configuration.

## High Availability

Configuration of a DHCP HA pair:

- Setup DHCP HA for network 192.0.2.0/24
- Use active-active HA mode.
- Default gateway and DNS server is at 192.0.2.254
- The primary DHCP server uses address 192.168.189.252
- The secondary DHCP server uses address 192.168.189.253
- DHCP range spans from 192.168.189.10 - 192.168.189.250

Common configuration, valid for both primary and secondary node.

```
set service dhcp-server shared-network-name NET-VYOS subnet 192.0.2.0/24 option default-
↪router '192.0.2.254'
set service dhcp-server shared-network-name NET-VYOS subnet 192.0.2.0/24 option name-
↪server '192.0.2.254'
set service dhcp-server shared-network-name NET-VYOS subnet 192.0.2.0/24 option domain-
↪name 'vyos.net'
set service dhcp-server shared-network-name NET-VYOS subnet 192.0.2.0/24 range 0 start
↪'192.0.2.10'
set service dhcp-server shared-network-name NET-VYOS subnet 192.0.2.0/24 range 0 stop
↪'192.0.2.250'
set service dhcp-server shared-network-name NET-VYOS subnet 192.0.2.0/24 subnet-id '1'
```

### Primary

```
set service dhcp-server high-availability mode 'active-active'
set service dhcp-server high-availability source-address '192.168.189.252'
set service dhcp-server high-availability name 'NET-VYOS'
set service dhcp-server high-availability remote '192.168.189.253'
set service dhcp-server high-availability status 'primary'
```

### Secondary

```
set service dhcp-server high-availability mode 'active-active'
set service dhcp-server high-availability source-address '192.168.189.253'
set service dhcp-server high-availability name 'NET-VYOS'
set service dhcp-server high-availability remote '192.168.189.252'
set service dhcp-server high-availability status 'secondary'
```

## Operation Mode

### show log dhcp server

Show DHCP server daemon log file

### show log dhcp client

Show logs from all DHCP client processes.

### show log dhcp client interface <interface>

Show logs from specific *interface* DHCP client process.

### restart dhcp server

Restart the DHCP server

### show dhcp server statistics

Show the DHCP server statistics:

```
vyos@vyos:~$ show dhcp server statistics
Pool          Size    Leases    Available  Usage
-----
dhcpeexample    99      2         97        2%
```

### show dhcp server statistics pool <pool>

Show the DHCP server statistics for the specified pool.

### show dhcp server leases

Show statuses of all active leases:

```
vyos@vyos:~$ show dhcp server leases
IP Address      MAC address      State  Lease start      Lease expiration  ↵
↳ Remaining    Pool            Hostname  Origin
-----
↳
192.168.11.134  00:50:79:66:68:09  active  2023/11/29 09:51:05  2023/11/29 10:21:05  ↵
↳0:24:10      LAN             VPCS1    local
192.168.11.133  50:00:00:06:00:00  active  2023/11/29 09:51:38  2023/11/29 10:21:38  ↵
↳0:24:43      LAN             VYOS-6   local
10.11.11.108    50:00:00:05:00:00  active  2023/11/29 09:51:43  2023/11/29 10:21:43  ↵
↳0:24:48      VIF-1001       VYOS5    local
192.168.11.135  00:50:79:66:68:07  active  2023/11/29 09:55:16  2023/11/29 09:59:16  ↵
↳0:02:21                                remote
vyos@vyos:~$
```

**Hint:** Static mappings aren't shown. To show all states, use `show dhcp server leases state all`.

### show dhcp server leases origin [local | remote]

Show statuses of all active leases granted by local (this server) or remote (failover server):

```
vyos@vyos:~$ show dhcp server leases origin remote
IP Address      MAC address      State  Lease start      Lease expiration  ↵
```

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```

↪Remaining   Pool      Hostname   Origin
-----
↪
192.168.11.135  00:50:79:66:68:07  active   2023/11/29 09:55:16  2023/11/29 09:59:16 ↵
↪0:02:21
vyos@vyos:~$

```

**show dhcp server leases pool <pool>**

Show only leases in the specified pool.

```

vyos@vyos:~$ show dhcp server leases pool LAN
IP Address      MAC address      State   Lease start      Lease expiration  ↵
↪Remaining     Pool      Hostname   Origin
-----
↪
192.168.11.134  00:50:79:66:68:09  active   2023/11/29 09:51:05  2023/11/29 10:21:05 ↵
↪0:23:55      LAN      VPCS1     local
192.168.11.133  50:00:00:06:00:00  active   2023/11/29 09:51:38  2023/11/29 10:21:38 ↵
↪0:24:28      LAN      VYOS-6    local
vyos@vyos:~$

```

**show dhcp server leases sort <key>**

Sort the output by the specified key. Possible keys: ip, hardware\_address, state, start, end, remaining, pool, hostname (default = ip)

**show dhcp server leases state <state>**

Show only leases with the specified state. Possible states: all, active, free, expired, released, abandoned, reset, backup (default = active)

**IPv6 server**

VyOS also provides DHCPv6 server functionality which is described in this section.

**Configuration**

**set service dhcpv6-server preference <preference value>**

Clients receiving advertise messages from multiple servers choose the server with the highest preference value. The range for this value is 0 . . . 255.

**set service dhcpv6-server shared-network-name <name> subnet <subnet> subnet-id <id>**

This configuration parameter is required and must be unique to each subnet. It is required to map subnets to lease file entries.

**set service dhcpv6-server shared-network-name <name> subnet <prefix> lease-time {default | maximum | minimum}**

The default lease time for DHCPv6 leases is 24 hours. This can be changed by supplying a default-time, maximum-time and minimum-time. All values need to be supplied in seconds.

**set service dhcpv6-server shared-network-name <name> subnet <prefix> option nis-domain <domain-name>**

A NIS (Network Information Service) domain can be set to be used for DHCPv6 clients.

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> option
nisplus-domain <domain-name>
```

The procedure to specify a NIS+ (Network Information Service Plus) domain is similar to the NIS domain one:

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> option nis-server
<address>
```

Specify a NIS server address for DHCPv6 clients.

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> option
nisplus-server <address>
```

Specify a NIS+ server address for DHCPv6 clients.

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> option sip-server
<address | fqdn>
```

Specify a SIP (Session Initiation Protocol) server by IPv6 address of Fully Qualified Domain Name for all DHCPv6 clients.

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> option
snmp-server-address <address>
```

A SNMP server address can be specified for DHCPv6 clients.

## Prefix Delegation

To hand out individual prefixes to your clients the following configuration is used:

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> prefix-delegation
start <address> prefix-length <length>
```

Hand out prefixes of size *<length>* to clients in subnet *<prefix>* when they request for prefix delegation.

```
set service dhcpv6-server shared-network-name <name> subnet <prefix> prefix-delegation
start <address> stop <address>
```

Delegate prefixes from the range indicated by the start and stop qualifier.

## Address pools

DHCPv6 address pools must be configured for the system to act as a DHCPv6 server. The following example describes a common scenario.

### Example:

- A shared network named NET1 serves subnet 2001:db8::/64
- It is connected to eth1
- DNS server is located at 2001:db8::ffff
- Address pool shall be 2001:db8::100 through 2001:db8::199.
- Lease time will be left at the default value which is 24 hours

```

set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 range 1 start_
↪2001:db8::100 stop 2001:db8::199
set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 range 1 stop_
↪2001:db8::199
set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 option name-
↪server 2001:db8::ffff
set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 subnet-id 1

```

The configuration will look as follows:

```

show service dhcpv6-server
  shared-network-name NET1 {
    subnet 2001:db8::/64 {
      range 1 {
        start 2001:db8::100
        stop 2001:db8::199
      }
      option {
        name-server 2001:db8::ffff
      }
      subnet-id 1
    }
  }

```

## Static mappings

In order to map specific IPv6 addresses to specific hosts static mappings can be created. The following example explains the process.

### Example:

- IPv6 address 2001:db8::101 shall be statically mapped
- IPv6 prefix 2001:db8:0:101::/64 shall be statically mapped
- Host specific mapping shall be named `client1`

**Hint:** The identifier is the device's DUID: colon-separated hex list (as used by `isc-dhcp` option `dhcpv6.client-id`). If the device already has a dynamic lease from the DHCPv6 server, its DUID can be found with `show service dhcpv6 server leases`. The DUID begins at the 5th octet (after the 4th colon) of `IAID_DUID`.

```

set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 static-mapping_
↪client1 ipv6-address 2001:db8::101
set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 static-mapping_
↪client1 ipv6-prefix 2001:db8:0:101::/64
set service dhcpv6-server shared-network-name 'NET1' subnet 2001:db8::/64 static-mapping_
↪client1 duid 00:01:00:01:12:34:56:78:aa:bb:cc:dd:ee:ff

```

The configuration will look as follows:

```

show service dhcpv6-server shared-network-name NET1
  subnet 2001:db8::/64 {

```

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```
static-mapping client1 {
    duid 00:01:00:01:12:34:56:78:aa:bb:cc:dd:ee:ff
    ipv6-address 2001:db8::101
    ipv6-prefix 2001:db8:0:101::/64
}
}
```

## Operation Mode

### show log dhcpv6 server

Show DHCPv6 server daemon log file

### show log dhcpv6 client

Show logs from all DHCPv6 client processes.

### show log dhcpv6 client interface <interface>

Show logs from specific *interface* DHCPv6 client process.

### restart dhcpv6 server

To restart the DHCPv6 server

### show dhcpv6 server leases

Shows status of all assigned leases:

```
vyos@vyos:~$ show dhcpv6 server leases
IPv6 address  State  Last communication  Lease expiration  Remaining  Type
↪ Pool  IAID_DUID
-----
↪-----
2001:db8::101 active  2019/12/05 19:40:10  2019/12/06 07:40:10  11:45:21  non-
↪temporary NET1  98:76:54:32:00:01:00:01:12:34:56:78:aa:bb:cc:dd:ee:ff
2001:db8::102 active  2019/12/05 14:01:23  2019/12/06 02:01:23  6:06:34  non-
↪temporary NET1  87:65:43:21:00:01:00:01:11:22:33:44:fa:fb:fc:fd:fe:ff
```

**Hint:** Static mappings aren't shown. To show all states, use `show dhcp server leases state all`.

### show dhcpv6 server leases pool <pool>

Show only leases in the specified pool.

### show dhcpv6 server leases sort <key>

Sort the output by the specified key. Possible keys: expires, iaid\_duid, ip, last\_comm, pool, remaining, state, type (default = ip)

### show dhcpv6 server leases state <state>

Show only leases with the specified state. Possible states: abandoned, active, all, backup, expired, free, released, reset (default = active)

## 8.10.6 DNS Forwarding

### Configuration

VyOS provides DNS infrastructure for small networks. It is designed to be lightweight and have a small footprint, suitable for resource constrained routers and firewalls. For this we utilize PowerDNS recursor.

The VyOS DNS forwarder does not require an upstream DNS server. It can serve as a full recursive DNS server - but it can also forward queries to configurable upstream DNS servers. By not configuring any upstream DNS servers you also avoid being tracked by the provider of your upstream DNS server.

#### **set service dns forwarding system**

Forward incoming DNS queries to the DNS servers configured under the `system name-server` nodes.

#### **set service dns forwarding dhcp <interface>**

Interfaces whose DHCP client nameservers to forward requests to.

#### **set service dns forwarding name-server <address> port <port>**

Send all DNS queries to the IPv4/IPv6 DNS server specified under `<address>` on optional port specified under `<port>`. The port defaults to 53. You can configure multiple nameservers here.

#### **set service dns forwarding domain <domain-name> name-server <address>**

Forward received queries for a particular domain (specified via `domain-name`) to a given nameserver. Multiple nameservers can be specified. You can use this feature for a DNS split-horizon configuration.

---

**Note:** This also works for reverse-lookup zones (`18.172.in-addr.arpa`).

---

#### **set service dns forwarding domain <domain-name> addnta**

Add NTA (negative trust anchor) for this domain. This must be set if the domain does not support DNSSEC.

#### **set service dns forwarding domain <domain-name> recursion-desired**

Set the “recursion desired” bit in requests to the upstream nameserver.

#### **set service dns forwarding allow-from <network>**

Given the fact that open DNS recursors could be used on DDoS amplification attacks, you must configure the networks which are allowed to use this recursor. A network of `0.0.0.0/0` or `::/0` would allow all IPv4 and IPv6 networks to query this server. This is generally a bad idea.

#### **set service dns forwarding dnssec <off | process-no-validate | process | log-fail | validate>**

The PowerDNS recursor has 5 different levels of DNSSEC processing, which can be set with the `dnssec` setting. In order from least to most processing, these are:

- **off** In this mode, no DNSSEC processing takes place. The recursor will not set the DNSSEC OK (DO) bit in the outgoing queries and will ignore the DO and AD bits in queries.
- **process-no-validate** In this mode the recursor acts as a “security aware, non-validating” nameserver, meaning it will set the DO-bit on outgoing queries and will provide DNSSEC related RRsets (NSEC, RRSIG) to clients that ask for them (by means of a DO-bit in the query), except for zones provided through the `auth-zones` setting. It will not do any validation in this mode, not even when requested by the client.
- **process** When `dnssec` is set to process the behavior is similar to `process-no-validate`. However, the recursor will try to validate the data if at least one of the DO or AD bits is set in the query; in that case, it will set

the AD-bit in the response when the data is validated successfully, or send SERVFAIL when the validation comes up bogus.

- **log-fail** In this mode, the recursor will attempt to validate all data it retrieves from authoritative servers, regardless of the client's DNSSEC desires, and will log the validation result. This mode can be used to determine the extra load and amount of possibly bogus answers before turning on full-blown validation. Responses to client queries are the same as with process.
- **validate** The highest mode of DNSSEC processing. In this mode, all queries will be validated and will be answered with a SERVFAIL in case of bogus data, regardless of the client's request.

---

**Note:** The popular Unix/Linux `dig` tool sets the AD-bit in the query. This might lead to unexpected query results when testing. Set `+noad` on the `dig` command line when this is the case.

---

---

**Note:** The CD-bit is honored correctly for process and validate. For log-fail, failures will be logged too.

---

#### **set service dns forwarding ignore-hosts-file**

Do not use the local `/etc/hosts` file in name resolution. VyOS DHCP server will use this file to add resolvers to assigned addresses.

#### **set service dns forwarding cache-size <0-2147483647>**

Maximum number of DNS cache entries. 1 million per CPU core will generally suffice for most installations.

This defaults to 10000.

#### **set service dns forwarding negative-ttl <0-7200>**

A query for which there is authoritatively no answer is cached to quickly deny a record's existence later on, without putting a heavy load on the remote server. In practice, caches can become saturated with hundreds of thousands of hosts which are tried only once.

This setting, which defaults to 3600 seconds, puts a maximum on the amount of time negative entries are cached.

#### **set service dns forwarding timeout <10-60000>**

The number of milliseconds to wait for a remote authoritative server to respond before timing out and responding with SERVFAIL.

This setting defaults to 1500 and is valid between 10 and 60000.

#### **set service dns forwarding listen-address <address>**

The local IPv4 or IPv6 addresses to bind the DNS forwarder to. The forwarder will listen on this address for incoming connections.

#### **set service dns forwarding source-address <address>**

The local IPv4 or IPv6 addresses to use as a source address for sending queries. The forwarder will send forwarded outbound DNS requests from this address.

#### **set service dns forwarding no-serve-rfc1918**

This makes the server authoritatively not aware of: `10.in-addr.arpa`, `168.192.in-addr.arpa`, `16-31.172.in-addr.arpa`, which enabling upstream DNS server(s) to be used for reverse lookups of these zones.

## Authoritative zones

The VyOS DNS forwarder can also be configured to host authoritative records for a domain.

```
set service dns forwarding authoritative-domain <domain-name> disable
```

Disable hosting authoritative zone for *<domain-name>* without deleting from configuration.

```
set service dns forwarding authoritative-domain <domain-name> records <type> <name> disable
```

Disable specific record without deleting it from configuration.

```
set service dns forwarding authoritative-domain <domain-name> records <type> <name> ttl <seconds>
```

Set the TTL (Time-to-live) for the record in seconds. Default is 300 seconds.

## Record types

Below are a list of record types available to be configured within VyOS. Some records support special *<name>* keywords:

- **@** Use **@** as record name to set the record for the root domain.
- **any** Use **any** as record name to configure the record as a wildcard.

```
set service dns forwarding authoritative-domain <domain-name> records a <name> address <x.x.x.x>
```

Set an A (Address) record. Supports **@** and **any** keywords.

```
set service dns forwarding authoritative-domain <domain-name> records aaaa <name> address <h:h:h:h:h:h:h:h>
```

Set an AAAA (IPv6 Address) record. Supports **@** and **any** keywords.

```
set service dns forwarding authoritative-domain <domain-name> records cname <name> target <target-domain-name>
```

Set an CNAME (Canonical name) record. Supports **@** keyword.

```
set service dns forwarding authoritative-domain <domain-name> records naptr <name> rule <rule-number> <option> <value>
```

Set an NAPTR (Naming authority pointer) record. Supports **@** keyword. NAPTR records support the following options:

- **lookup-a** A Flag.
- **lookup-srv** S flag.
- **order** Rule order. Requires *<value>*.
- **preference** Rule preference. Requires *<value>*. Defaults to 0 if not set.
- **protocol-specific** P flag.
- **regexp** Regular expression. Requires *<value>*.
- **replacement** Replacement DNS name.
- **resolve-uri** U flag.
- **service** Service type. Requires *<value>*.

```
set service dns forwarding authoritative-domain <domain-name> records ns <name> target
<target-name>
```

Set an NS (Nameserver) record.

```
set service dns forwarding authoritative-domain <domain-name> records ptr <name> target
<target-name>
```

Set an PTR (Pointer record) record. Supports @ keyword.

```
set service dns forwarding authoritative-domain <domain-name> records spf <name> value
<value>
```

Set an SPF (Sender policy framework) record. Supports @ keyword.

```
set service dns forwarding authoritative-domain <domain-name> records srv <name> entry
<entry-number> [hostname | port | priority | weight] <value>
```

Set an SRV (Service) record. Supports @ keyword.

```
set service dns forwarding authoritative-domain <domain-name> records txt <name> value
<value>
```

Set an TXT (Text) record. Supports @ keyword.

## Example

A VyOS router with two interfaces - eth0 (WAN) and eth1 (LAN) - is required to implement a split-horizon DNS configuration for example.com.

In this scenario:

- All DNS requests for example.com must be forwarded to a DNS server at 192.0.2.254 and 2001:db8:cafe::1
- All other DNS requests will be forwarded to a different set of DNS servers at 192.0.2.1, 192.0.2.2, 2001:db8::1:ffff and 2001:db8::2:ffff
- The VyOS DNS forwarder will only listen for requests on the eth1 (LAN) interface addresses - 192.168.1.254 for IPv4 and 2001:db8::ffff for IPv6
- The VyOS DNS forwarder will only accept lookup requests from the LAN subnets - 192.168.1.0/24 and 2001:db8::/64
- The VyOS DNS forwarder will pass reverse lookups for 10.in-addr.arpa, 168.192.in-addr.arpa, 16-31.172.in-addr.arpa zones to upstream server.

```
set service dns forwarding domain example.com name-server 192.0.2.254
set service dns forwarding domain example.com name-server 2001:db8:cafe::1
set service dns forwarding name-server 192.0.2.1
set service dns forwarding name-server 192.0.2.2
set service dns forwarding name-server 192.0.2.3 port 853
set service dns forwarding name-server 2001:db8::1:ffff
set service dns forwarding name-server 2001:db8::2:ffff
set service dns forwarding name-server 2001:db8::3:ffff port 8053
set service dns forwarding listen-address 192.168.1.254
set service dns forwarding listen-address 2001:db8::ffff
set service dns forwarding allow-from 192.168.1.0/24
set service dns forwarding allow-from 2001:db8::/64
set service dns forwarding no-serve-rfc1918
```

## Operation

### **reset dns forwarding <all | domain>**

Resets the local DNS forwarding cache database. You can reset the cache for all entries or only for entries to a specific domain.

### **restart dns forwarding**

Restarts the DNS recursor process. This also invalidates the local DNS forwarding cache.

## 8.10.7 Dynamic DNS

VyOS is able to update a remote DNS record when an interface gets a new IP address. In order to do so, VyOS includes `ddclient`, a Perl script written for this only one purpose.

`ddclient` uses two methods to update a DNS record. The first one will send updates directly to the DNS daemon, in compliance with [RFC 2136](#). The second one involves a third party service, like DynDNS.com or any other such service provider. This method uses HTTP requests to transmit the new IP address. You can configure both in VyOS.

## Configuration

### RFC 2136 Based

#### **set service dns dynamic name <service-name> address interface <interface>**

Create new dynamic DNS update configuration which will update the IP address assigned to *<interface>* on the service you configured under *<service-name>*.

#### **set service dns dynamic name <service-name> description <text>**

Set description *<text>* for dynamic DNS service being configured.

#### **set service dns dynamic name <service-name> key <filename>**

File identified by *<filename>* containing the TSIG authentication key for RFC2136 nsupdate on remote DNS server.

#### **set service dns dynamic name <service-name> server <server>**

Configure the DNS *<server>* IP/FQDN used when updating this dynamic assignment.

#### **set service dns dynamic name <service-name> zone <zone>**

Configure DNS *<zone>* to be updated.

#### **set service dns dynamic name <service-name> host-name <record>**

Configure DNS *<record>* which should be updated. This can be set multiple times.

#### **set service dns dynamic name <service-name> ttl <ttl>**

Configure optional TTL value on the given resource record. This defaults to 600 seconds.

#### **set service dns dynamic interval <60-3600>**

Specify interval in seconds to wait between Dynamic DNS updates. The default is 300 seconds.

## Example

- Register DNS record `example.vyos.io` on DNS server `ns1.vyos.io`
- Use auth key file at `/config/auth/my.key`
- Set TTL to 300 seconds

```
# Configuration commands entered:
#
set service dns dynamic name 'VyOS-DNS' address interface 'eth0'
set service dns dynamic name 'VyOS-DNS' description 'RFC 2136 dynamic dns service'
set service dns dynamic name 'VyOS-DNS' key '/config/auth/my.key'
set service dns dynamic name 'VyOS-DNS' server 'ns1.vyos.io'
set service dns dynamic name 'VyOS-DNS' zone 'vyos.io'
set service dns dynamic name 'VyOS-DNS' host-name 'example.vyos.io'
set service dns dynamic name 'VyOS-DNS' protocol 'nsupdate'
set service dns dynamic name 'VyOS-DNS' ttl '300'

# Resulting config:
#
vyos@vyos# show service dns dynamic
name VyOS-DNS {
  address {
    interface eth0
  }
  description "RFC 2136 dynamic dns service"
  host-name example.vyos.io
  key /config/auth/my.key
  protocol nsupdate
  server ns1.vyos.io
  ttl 300
  zone vyos.io
}
```

This will render the following `ddclient` configuration entry:

```
# ddclient configuration for interface "eth0":
#
# Web service dynamic DNS configuration for VyOS-DNS: [nsupdate, example.vyos.io]
use=if, \
if=eth0, \
protocol=nsupdate, \
server=ns1.vyos.io, \
zone=vyos.io, \
password='/config/auth/my.key', \
ttl=300 \
example.vyos.io
```

---

**Note:** You can also keep different DNS zone updated. Just create a new config node: `set service dns dynamic interface <interface> rfc2136 <other-service-name>`

---

## HTTP based services

VyOS is also able to use any service relying on protocols supported by ddclient.

To use such a service, one must define a login, password, one or multiple hostnames, protocol and server.

**set service dns dynamic name <service-name> address interface <interface>**

Create new dynamic DNS update configuration which will update the IP address assigned to <interface> on the service you configured under <service-name>.

**set service dns dynamic name <service-name> description <text>**

Set description <text> for dynamic DNS service being configured.

**set service dns dynamic name <service-name> host-name <hostname>**

Setup the dynamic DNS hostname <hostname> associated with the DynDNS provider identified by <service-name>.

**set service dns dynamic name <service-name> username <username>**

Configure <username> used when authenticating the update request for DynDNS service identified by <service-name>.

**set service dns dynamic name <service-name> password <password>**

Configure <password> used when authenticating the update request for DynDNS service identified by <service-name>.

**set service dns dynamic name <service-name> protocol <protocol>**

When a custom DynDNS provider is used, the protocol used for communicating to the provider must be specified under <protocol>. See the embedded completion helper when entering above command for available protocols.

**set service dns dynamic name <service-name> server <server>**

When a custom DynDNS provider is used the <server> where update requests are being sent to must be specified.

**set service dns dynamic name <service-name> ip-version 'ipv6'**

Allow explicit IPv6 address for the interface.

### Example:

Use deSEC (dedyn.io) as your preferred provider:

```
set service dns dynamic name dedyn description 'deSEC dynamic dns service'
set service dns dynamic name dedyn username 'myusername'
set service dns dynamic name dedyn password 'mypassword'
set service dns dynamic name dedyn host-name 'myhostname.dedyn.io'
set service dns dynamic name dedyn protocol 'dyndns2'
set service dns dynamic name dedyn server 'update.dedyn.io'
set service dns dynamic name dedyn address interface 'eth0'
```

**Note:** Multiple services can be used per interface. Just specify as many services per interface as you like!

### Example IPv6 only:

```
set service dns dynamic name dedyn description 'deSEC ipv6 dynamic dns service'
set service dns dynamic name dedyn username 'myusername'
set service dns dynamic name dedyn password 'mypassword'
set service dns dynamic name dedyn host-name 'myhostname.dedyn.io'
set service dns dynamic name dedyn protocol 'dyndns2'
set service dns dynamic name dedyn ip-version 'ipv6'
set service dns dynamic name dedyn server 'update6.dedyn.io'
set service dns dynamic name dedyn address interface 'eth0'
```

## Running Behind NAT

By default, `ddclient` will update a dynamic dns record using the IP address directly attached to the interface. If your VyOS instance is behind NAT, your record will be updated to point to your internal IP.

`ddclient` has another way to determine the WAN IP address. This is controlled by:

```
set service dns dynamic name <service-name> address web <url>
```

Use configured `<url>` to determine your IP address. `ddclient` will load `<url>` and tries to extract your IP address from the response.

```
set service dns dynamic name <service-name> address web skip <pattern>
```

`ddclient` will skip any address located before the string set in `<pattern>`.

## 8.10.8 Event Handler

### Event Handler Technology Overview

Event handler allows you to execute scripts when a string that matches a regex or a regex with a service name appears in journald logs. You can pass variables, arguments, and a full matching string to the script.

### How to configure Event Handler

1. *Create an event handler*
2. *Add regex to the script*
3. *Add a full path to the script*
4. *Add optional parameters*

## Event Handler Configuration Steps

### 1. Create an event handler

```
set service event-handler event <event-handler name>
```

This is an optional command because the event handler will be automatically created after any of the next commands.

### 2. Add regex to the script

```
set service event-handler event <event-handler name> filter pattern <regex>
```

This is a mandatory command. Sets regular expression to match against log string message.

---

**Note:** The regular expression matches if and only if the entire string matches the pattern.

---

### 3. Add a full path to the script

```
set service event-handler event <event-handler name> script path <path to script>
```

This is a mandatory command. Sets the full path to the script. The script file must be executable.

### 4. Add optional parameters

```
set service event-handler event <event-handler name> filter syslog-identifier <syslogid name>
```

This is an optional command. Filters log messages by syslog-identifier.

```
set service event-handler event <event-handler name> script environment <env name> value <env value>
```

This is an optional command. Adds environment and its value to the script. Use separate commands for each environment.

One implicit environment exists.

- message: Full message that has triggered the script.

```
set service event-handler event <event-handler name> script arguments <arguments>
```

This is an optional command. Adds arguments to the script. Arguments must be separated by spaces.

---

**Note:** We don't recommend to use arguments. Using environments is more preferable.

---

## Example

Event handler that monitors the state of interface eth0.

```

set service event-handler event INTERFACE_STATE_DOWN filter pattern '.*eth0.*',
↳RUNNING,.*->.*'
set service event-handler event INTERFACE_STATE_DOWN filter syslog-identifier
↳'netplugd'
set service event-handler event INTERFACE_STATE_DOWN script environment_
↳interface_action value 'down'
set service event-handler event INTERFACE_STATE_DOWN script environment_
↳interface_name value 'eth2'
set service event-handler event INTERFACE_STATE_DOWN script path '/config/
↳scripts/eventhandler.py'

```

Event handler script

```

#!/usr/bin/env python3
#
# VyOS event-handler script example
from os import environ
import subprocess
from sys import exit

# Perform actions according to requirements
def process_event() -> None:
    # Get variables
    message_text = environ.get('message')
    interface_name = environ.get('interface_name')
    interface_action = environ.get('interface_action')
    # Print the message that triggered this script
    print(f'Logged message: {message_text}')
    # Prepare a command to run
    command = f'sudo ip link set {interface_name} {interface_action}'.split()
    # Execute a command
    subprocess.run(command)

if __name__ == '__main__':
    try:
        # Run script actions and exit
        process_event()
        exit(0)
    except Exception as err:
        # Exit properly in case if something in the script goes wrong
        print(f'Error running script: {err}')
        exit(1)

```

## 8.10.9 HTTP API

VyOS provide an HTTP API. You can use it to execute op-mode commands, update VyOS, set or delete config. Please take a look at the [VyOS API](#) page for an detailed how-to.

### Configuration

**set service https allow-client address <address>**

Only allow certain IP addresses or prefixes to access the https webserver.

**set service https certificates ca-certificate <name>**

Use CA certificate from PKI subsystem

**set service https certificates certificate <name>**

Use certificate from PKI subsystem

**set service https certificates dh-params <name>**

Use DH parameters from PKI subsystem. Must be at least 2048 bits in length.

**set service https listen-address <address>**

Webserver should only listen on specified IP address

**set service https port <number>**

Webserver should listen on specified port.

Default: 443

**set service https enable-http-redirect**

Enable automatic redirect from http to https.

**set service https tls-version <1.2 | 1.3>**

Select TLS version used.

This defaults to both 1.2 and 1.3.

**set service https vrf <name>**

Start Webserver in given VRF.

**set service https request-body-size-limit <size>**

Set the maximum request body size in megabytes. Default is 1MB.

### API

**set service https api keys id <name> key <apikey>**

Set a named api key. Every key has the same, full permissions on the system.

**set service https api debug**

To enable debug messages. Available via `show log` or `monitor log`

**set service https api strict**

Enforce strict path checking.

```
set service https api cors allow-origin <origin>
```

Allow cross-origin requests from *<origin>*.

## GraphQL

```
set service https api graphql introspection
```

Enable GraphQL Schema introspection.

---

**Note:** Do not leave introspection enabled in production, it is a security risk.

---

```
set service https api graphql authentication type <key | token>
```

Set the authentication type for GraphQL, default option is key. Available options are:

- key use API keys configured in `service https api keys`
- token use JWT tokens.

```
set service https api graphql authentication expiration
```

Set the lifetime for JWT tokens in seconds. Default is 3600 seconds.

```
set service https api graphql authentication secret-length
```

Set the byte length of the JWT secret. Default is 32.

## Example Configuration

Set an API-KEY is the minimal configuration to get a working API Endpoint.

```
set service https api keys id MY-HTTPS-API-ID key MY-HTTPS-API-PLAINTEXT-KEY
```

## 8.10.10 DDoS Protection

### FastNetMon

FastNetMon is a high-performance DDoS detector/sensor built on top of multiple packet capture engines: NetFlow, IPFIX, sFlow, AF\_PACKET (port mirror). It can detect hosts in the deployed network sending or receiving large volumes of traffic, packets/bytes/flows per second and perform a configurable action to handle that event, such as calling a custom script.

VyOS includes the FastNetMon Community Edition.

## Configuration

```
set service ids ddos-protection alert-script <text>
```

Configure alert script that will be executed when an attack is detected.

```
set service ids ddos-protection ban-time <1-4294967294>
```

Configure how long an IP (attacker) should be kept in blocked state. Default value is 1900.

```
set service ids ddos-protection direction [in | out]
```

Configure direction for processing traffic.

```
set service ids ddos-protection exclude-network <x.x.x.x/x>
```

```
set service ids ddos-protection exlude-network <h:h:h:h:h:h:h/h/x>
```

Specify IPv4 and/or IPv6 networks which are going to be excluded.

```
set service ids ddos-protection listen-interface <text>
```

Configure listen interface for mirroring traffic.

```
set service ids ddos-protection mode [mirror | sflow]
```

Configure traffic capture mode.

```
set service ids ddos-protection network <x.x.x.x/x>
```

```
set service ids ddos-protection network <h:h:h:h:h:h:h/h/x>
```

Specify IPv4 and/or IPv6 networks that should be protected/monitored.

```
set service ids ddos-protection sflow listen-address <x.x.x.x>
```

Configure local IPv4 address to listen for sflow.

```
set service ids ddos-protection sflow port <1-65535>
```

Configure port number to be used for sflow conection. Default port is 6343.

```
set service ids ddos-protection threshold general [fps | mbps | pps] <0-4294967294>
```

Configure general threshold parameters.

```
set service ids ddos-protection threshold icmp [fps | mbps | pps] <0-4294967294>
```

Configure ICMP threshold parameters.

```
set service ids ddos-protection threshold tcp [fps | mbps | pps] <0-4294967294>
```

Configure TCP threshold parameters

```
set service ids ddos-protection threshold udp [fps | mbps | pps] <0-4294967294>
```

Configure UDP threshold parameters

## Example

A configuration example can be found in this section. In this simplified scenario, main things to be considered are:

- Network to be protected: 192.0.2.0/24 (public IPs use by customers)
- **ban-time** and **threshold**: these values are kept very low in order to easily identify and generate and attack.
- Direction: **in** and **out**. Protect public network from external attacks, and identify internal attacks towards internet.
- Interface **eth0** used to connect to upstream.

Since we are analyzing attacks to and from our internal network, two types of attacks can be identified, and different actions are needed:

- External attack: an attack from the internet towards an internal IP is identify. In this case, all connections towards such IP will be blocked
- Internal attack: an attack from the internal network (generated by a customer) towards the internet is identify. In this case, all connections from this particular IP/Customer will be blocked.

So, firewall configuration needed for this setup:

```
set firewall group address-group FNMS-DST-Block
set firewall group address-group FNMS-SRC-Block

set firewall ipv4 forward filter rule 10 action 'drop'
set firewall ipv4 forward filter rule 10 description 'FNMS - block destination'
set firewall ipv4 forward filter rule 10 destination group address-group 'FNMS-DST-Block'

set firewall ipv4 forward filter rule 20 action 'drop'
set firewall ipv4 forward filter rule 20 description 'FNMS - Block source'
set firewall ipv4 forward filter rule 20 source group address-group 'FNMS-SRC-Block'
```

Then, FastNetMon configuration:

```
set service ids ddos-protection alert-script '/config/scripts/fnm-alert.sh'
set service ids ddos-protection ban-time '10'
set service ids ddos-protection direction 'in'
set service ids ddos-protection direction 'out'
set service ids ddos-protection listen-interface 'eth0'
set service ids ddos-protection mode 'mirror'
set service ids ddos-protection network '192.0.2.0/24'
set service ids ddos-protection threshold general pps '100'
```

And content of the script:

```
#!/bin/bash

# alert-script is called twice.
# When an attack occurs, the program calls a bash script twice:
# 1st time when threshold exceed
# 2nd when we collect 100 packets for detailed audit of what happened.

# Do nothing if "attack_details" is passed as an argument
if [ "${4}" == "attack_details" ]; then
    # Do nothing
```

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(continued from previous page)

```

    exit
fi
# Arguments:
ip=$1
direction=$2
pps_rate=$3
action=$4

logger -t FNMS "*** Start - Running alert script ***"

if [ "${direction}" == "incoming" ] ; then
    group="FNMS-DST-Block"
    origin="external"
else
    group="FNMS-SRC-Block"
    origin="internal"
fi

if [ "${action}" == "ban" ] ; then
    logger -t FNMS "Attack detected for IP ${ip} and ${direction} direction from $
↳{origin} network. Need to block IP address."
    logger -t FNMS "Adding IP address ${ip} to firewall group ${group}."
    sudo nft add element ip vyos_filter A_${group} { ${ip} }
else
    logger -t FNMS "Timeout for IP ${ip}, removing it from group ${group}."
    sudo nft delete element ip vyos_filter A_${group} { ${ip} }
fi
logger -t FNMS "*** End - Running alert script ***"
exit

```

### 8.10.11 IPoE Server

VyOS utilizes [accel-ppp](#) to provide IPoE (Internet Protocol over Ethernet) server functionality. It can be used with local authentication (mac-address) or a connected RADIUS server.

IPoE is a method of delivering an IP payload over an Ethernet-based access network or an access network using bridged Ethernet over Asynchronous Transfer Mode (ATM) without using PPPoE. It directly encapsulates the IP datagrams in Ethernet frames, using the standard [RFC 894](#) encapsulation.

The use of IPoE addresses the disadvantage that PPP is unsuited for multicast delivery to multiple users. Typically, IPoE uses Dynamic Host Configuration Protocol and Extensible Authentication Protocol to provide the same functionality as PPPoE, but in a less robust manner.

---

**Note:** Please be aware, due to an upstream bug, config changes/commits will restart the ppp daemon and will reset existing IPoE sessions, in order to become effective.

---

## Configuring IPoE Server

IPoE can be configure on different interfaces, it will depend on each specific situation which interface will provide IPoE to clients. The clients mac address and the incoming interface is being used as control parameter, to authenticate a client.

The example configuration below will assign an IP to the client on the incoming interface eth2 with the client mac address 08:00:27:2f:d8:06. Other DHCP discovery requests will be ignored, unless the client mac has been enabled in the configuration.

```
set interfaces ethernet eth1 address '192.168.0.1/24'
set service ipoe-server authentication interface eth1.100 mac 00:50:79:66:68:00
set service ipoe-server authentication interface eth1.101 mac 00:50:79:66:68:01
set service ipoe-server authentication mode 'local'
set service ipoe-server client-ip-pool IPOE-POOL range '192.168.0.2-192.168.0.254'
set service ipoe-server default-pool 'IPOE-POOL'
set service ipoe-server gateway-address '192.168.0.1/24'
set service ipoe-server interface eth1 mode 'l2'
set service ipoe-server interface eth1 network 'vlan'
set service ipoe-server interface eth1 vlan '100-200'
```

**set service ipoe-server authentication interface <interface> mac <MAC>**

Creates local IPoE user with username=\*\*<interface>\*\* and password=\*\*<MAC>\*\* (mac-address)

**set service ipoe-server authentication mode <local | radius>**

Set authentication backend. The configured authentication backend is used for all queries.

- **radius:** All authentication queries are handled by a configured RADIUS server.
- **local:** All authentication queries are handled locally.
- **noauth:** Authentication disabled

**set service ipoe-server client-ip-pool <POOL-NAME> range <x.x.x.x-x.x.x.x | x.x.x.x/x>**

Use this command to define the first IP address of a pool of addresses to be given to IPoE clients. If notation x.x.x.x-x.x.x.x, it must be within a /24 subnet. If notation x.x.x.x/x is used there is possibility to set host/netmask.

**set service ipoe-server default-pool <POOL-NAME>**

Use this command to define default address pool name.

**set service ipoe-server gateway-address <x.x.x.x/x>**

Specifies address to be used as server ip address if radius can assign only client address. In such case if client address is matched network and mask then specified address and mask will be used. You can specify multiple such options.

**set service ipoe-server interface <interface> mode <l2 | l3>**

Set authentication backend. The configured authentication backend is used for all queries.

- **l2:** It means that clients are on same network where interface is.\*\*(default)\*\*
- **local:** It means that client are behind some router.

**set service ipoe-server interface <interface> network <shared | vlan>**

Specify where interface is shared by multiple users or it is vlan-per-user.

- **shared:** Multiple clients share the same network. **(default)**

- **vlan**: One VLAN per client.

```
vyos@vyos:~$ show ipoe-server sessions

 ifname | username |   calling-sid   |   ip   | rate-limit | type | comp | state  _
↔| uptime
-----+-----+-----+-----+-----+-----+-----+-----
↔+-----+
 ipoe0  | eth1.100 | 00:50:79:66:68:00 | 192.168.0.2 |           | ipoe |      | active_
↔| 00:04:55
 ipoe1  | eth1.101 | 00:50:79:66:68:01 | 192.168.0.3 |           | ipoe |      | active_
↔| 00:04:44
```

## Configuring RADIUS authentication

To enable RADIUS based authentication, the authentication mode needs to be changed within the configuration. Previous settings like the local users, still exists within the configuration, however they are not used if the mode has been changed from local to radius. Once changed back to local, it will use all local accounts again.

```
set service ipoe-server authentication mode radius
```

```
set service ipoe-server authentication radius server <server> key <secret>
```

Configure RADIUS <server> and its required shared <secret> for communicating with the RADIUS server.

Since the RADIUS server would be a single point of failure, multiple RADIUS servers can be setup and will be used subsequently. For example:

```
set service ipoe-server authentication radius server 10.0.0.1 key 'foo'
set service ipoe-server authentication radius server 10.0.0.2 key 'foo'
```

**Note:** Some RADIUS servers use an access control list which allows or denies queries, make sure to add your VyOS router to the allowed client list.

## RADIUS source address

If you are using OSPF as IGP, always the closest interface connected to the RADIUS server is used. With VyOS 1.2 you can bind all outgoing RADIUS requests to a single source IP e.g. the loopback interface.

```
set service ipoe-server authentication radius source-address <address>
```

Source IPv4 address used in all RADIUS server queries.

**Note:** The source-address must be configured on one of VyOS interface. Best practice would be a loopback or dummy interface.

## RADIUS advanced options

**set service ipoe-server authentication radius server <server> port <port>**

Configure RADIUS <server> and its required port for authentication requests.

**set service ipoe-server authentication radius server <server> fail-time <time>**

Mark RADIUS server as offline for this given <time> in seconds.

**set service ipoe-server authentication radius server <server> disable**

Temporary disable this RADIUS server.

**set service ipoe-server authentication radius acct-timeout <timeout>**

Timeout to wait reply for Interim-Update packets. (default 3 seconds)

**set service ipoe-server authentication radius dynamic-author server <address>**

Specifies IP address for Dynamic Authorization Extension server (DM/CoA)

**set service ipoe-server authentication radius dynamic-author port <port>**

Port for Dynamic Authorization Extension server (DM/CoA)

**set service ipoe-server authentication radius dynamic-author key <secret>**

Secret for Dynamic Authorization Extension server (DM/CoA)

**set service ipoe-server authentication radius max-try <number>**

Maximum number of tries to send Access-Request/Accounting-Request queries

**set service ipoe-server authentication radius timeout <timeout>**

Timeout to wait response from server (seconds)

**set service ipoe-server authentication radius nas-identifier <identifier>**

Value to send to RADIUS server in NAS-Identifier attribute and to be matched in DM/CoA requests.

**set service ipoe-server authentication radius nas-ip-address <address>**

Value to send to RADIUS server in NAS-IP-Address attribute and to be matched in DM/CoA requests. Also DM/CoA server will bind to that address.

**set service ipoe-server authentication radius source-address <address>**

Source IPv4 address used in all RADIUS server queries.

**set service ipoe-server authentication radius rate-limit attribute <attribute>**

Specifies which RADIUS server attribute contains the rate limit information. The default attribute is *Filter-Id*.

---

**Note:** If you set a custom RADIUS attribute you must define it on both dictionaries at RADIUS server and client.

---

**set service ipoe-server authentication radius rate-limit enable**

Enables bandwidth shaping via RADIUS.

**set service ipoe-server authentication radius rate-limit vendor**

Specifies the vendor dictionary, dictionary needs to be in /usr/share/accel-ppp/radius.

Received RADIUS attributes have a higher priority than parameters defined within the CLI configuration, refer to the explanation below.

## Allocation clients ip addresses by RADIUS

If the RADIUS server sends the attribute `Framed-IP-Address` then this IP address will be allocated to the client and the option `default-pool` within the CLI config is being ignored.

If the RADIUS server sends the attribute `Framed-Pool`, IP address will be allocated from a predefined IP pool whose name equals the attribute value.

If the RADIUS server sends the attribute `Stateful-IPv6-Address-Pool`, IPv6 address will be allocated from a predefined IPv6 pool `prefix` whose name equals the attribute value.

If the RADIUS server sends the attribute `Delegated-IPv6-Prefix-Pool`, IPv6 delegation prefix will be allocated from a predefined IPv6 pool `delegate` whose name equals the attribute value.

---

**Note:** `Stateful-IPv6-Address-Pool` and `Delegated-IPv6-Prefix-Pool` are defined in RFC6911. If they are not defined in your RADIUS server, add new [dictionary](#).

---

User interface can be put to VRF context via RADIUS Access-Accept packet, or change it via RADIUS CoA. `Acce1-VRF-Name` is used from these purposes. It is custom `ACCEL-PPP` attribute. Define it in your RADIUS server.

## IPv6

```
set service ipoe-server client-ipv6-pool <IPv6-POOL-NAME> prefix <address> mask <number-of-bits>
```

Use this comand to set the IPv6 address pool from which an IPoE client will get an IPv6 prefix of your defined length (mask) to terminate the IPoE endpoint at their side. The mask length can be set from 48 to 128 bit long, the default value is 64.

```
set service ipoe-server client-ipv6-pool <IPv6-POOL-NAME> delegate <address> delegation-prefix <number-of-bits>
```

Use this command to configure DHCPv6 Prefix Delegation (RFC3633) on IPoE. You will have to set your IPv6 pool and the length of the delegation prefix. From the defined IPv6 pool you will be handing out networks of the defined length (delegation-prefix). The length of the delegation prefix can be set from 32 to 64 bit long.

```
set service ipoe-server default-ipv6-pool <IPv6-POOL-NAME>
```

Use this command to define default IPv6 address pool name.

```
set service ipoe-server client-ipv6-pool IPv6-POOL delegate '2001:db8:8003::/48'
↪delegation-prefix '56'
set service ipoe-server client-ipv6-pool IPv6-POOL prefix '2001:db8:8002::/48' mask '64'
set service ipoe-server default-ipv6-pool IPv6-POOL
```

## Scripting

```
set service ipoe-server extended-scripts on-change <path_to_script>
```

Script to run when session interface changed by RADIUS CoA handling

```
set service ipoe-server extended-scripts on-down <path_to_script>
```

Script to run when session interface going to terminate

```
set service ipoe-server extended-scripts on-pre-up <path_to_script>
```

Script to run before session interface comes up

```
set service ipoe-server extended-scripts on-up <path_to_script>
```

Script to run when session interface is completely configured and started

## Advanced Options

### Authentication Advanced Options

```
set service ipoe-server authentication interface <interface> mac <MAC> vlan <vlan-id>
```

VLAN monitor for automatic creation of VLAN interfaces for specific user on specific <interface>

```
set service ipoe-server authentication interface <interface> mac <MAC> rate-limit
download <bandwidth>
```

Download bandwidth limit in kbit/s for user on interface <interface>.

```
set service ipoe-server authentication interface <interface> mac <MAC> rate-limit upload
<bandwidth>
```

Upload bandwidth limit in kbit/s for for user on interface <interface>.

### Client IP Pool Advanced Options

```
set service ipoe-server client-ip-pool <POOL-NAME> next-pool <NEXT-POOL-NAME>
```

Use this command to define the next address pool name.

### Advanced Interface Options

```
set service ipoe-server interface <interface> client-subnet <x.x.x.x/x>
```

Specify local range of ip address to give to dhcp clients. First IP in range is router IP. If you need more customization use *client-ip-pool*

```
set service ipoe-server interface <interface> external-dhcp dhcp-relay <x.x.x.x>
```

Specify DHCPv4 relay IP address to pass requests to. If specified giaddr is also needed.

```
set service ipoe-server interface <interface> external-dhcp giaddr <x.x.x.x>
```

Specifies relay agent IP addre

### Global Advanced options

```
set service ipoe-server description <description>
```

Set description.

```
set service ipoe-server limits burst <value>
```

Burst count

```
set service ipoe-server limits connection-limit <value>
```

Acceptable rate of connections (e.g. 1/min, 60/sec)

**set service ipoe-server limits timeout <value>**

Timeout in seconds

**set service ipoe-server max-concurrent-sessions**

Maximum number of concurrent session start attempts

**set service ipoe-server name-server <address>**

Connected client should use <address> as their DNS server. This command accepts both IPv4 and IPv6 addresses. Up to two nameservers can be configured for IPv4, up to three for IPv6.

**set service ipoe-server shaper fwmark <1-2147483647>**

Match firewall mark value

**set service ipoe-server snmp master-agent**

Enable SNMP

## Monitoring

**show ipoe-server sessions**

Use this command to locally check the active sessions in the IPoE server.

```
vyos@vyos:~$ show ipoe-server sessions
ifname | username |   calling-sid   |   ip   | rate-limit | type | comp | state |
↪ | uptime
-----+-----+-----+-----+-----+-----+-----+-----
↪ --+-----
eth1.100 | eth1.100 | 0c:98:bd:b8:00:01 | 192.168.0.3 |           | ipoe |      |      |
↪ active | 03:03:58
```

```
vyos@vyos:~$ show ipoe-server statistics
```

```
uptime: 0.03:31:36
cpu: 0%
mem(rss/virt): 6044/101360 kB
core:
  mempool_allocated: 148628
  mempool_available: 144748
  thread_count: 1
  thread_active: 1
  context_count: 10
  context_sleeping: 0
  context_pending: 0
  md_handler_count: 6
  md_handler_pending: 0
  timer_count: 1
  timer_pending: 0
sessions:
  starting: 0
  active: 1
  finishing: 0
ipoe:
  starting: 0
```

(continues on next page)

(continued from previous page)

```
active: 1
delayed: 0
```

## Toubleshooting

```
vyos@vyos:~$sudo journalctl -u accel-ppp@ipoe -b 0
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:: recv [DHCPv4 Discover xid=55df9228
↳ chaddr=0c:98:bd:b8:00:01 <Message-Type Discover> <Request-IP 192.168.0.3> <Host-Name
↳ vyos> <Request-List Subnet,Broadcast,Router,DNS,Classless-Route,Domain-Name,MTU>]
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: eth1.100: authentication
↳ succeeded
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: send [DHCPv4 Offer
↳ xid=55df9228 yiaddr=192.168.0.4 chaddr=0c:98:bd:b8:00:01 <Message-Type Offer> <Server-
↳ ID 192.168.0.1> <Lease-Time 600> <T1 300> <T2 525> <Router 192.168.0.1> <Subnet 255.
↳ 255.255.0>]
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: recv [DHCPv4 Request
↳ xid=55df9228 chaddr=0c:98:bd:b8:00:01 <Message-Type Request> <Server-ID 192.168.0.1>
↳ <Request-IP 192.168.0.4> <Host-Name vyos> <Request-List Subnet,Broadcast,Router,DNS,
↳ Classless-Route,Domain-Name,MTU>]
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: ipoe: activate session
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: ipoe: no free IPv6 address
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: ipoe: session started
Feb 27 14:29:27 vyos accel-ipoe[2262]: eth1.100:eth1.100: send [DHCPv4 Ack xid=55df9228
↳ yiaddr=192.168.0.4 chaddr=0c:98:bd:b8:00:01 <Message-Type Ack> <Server-ID 192.168.0.1>
↳ <Lease-Time 600> <T1 300> <T2 525> <Router 192.168.0.1> <Subnet 255.255.255.0>]
```

### 8.10.12 LLDP

LLDP (Link Layer Discovery Protocol) is a vendor-neutral link layer protocol in the Internet Protocol Suite used by network devices for advertising their identity, capabilities, and neighbors on an IEEE 802 local area network, principally wired Ethernet. The protocol is formally referred to by the IEEE as Station and Media Access Control Connectivity Discovery specified in IEEE 802.1AB and IEEE 802.3-2012 section 6 clause 79.

LLDP performs functions similar to several proprietary protocols, such as CDP (Cisco Discovery Protocol), FDP (Foundry Discovery Protocol), NDP (Nortel Discovery Protocol) and LLTD (Link Layer Topology Discovery).

Information gathered with LLDP is stored in the device as a MIB (Management Information Database) and can be queried with SNMP (Simple Network Management Protocol) as specified in [RFC 2922](#). The topology of an LLDP-enabled network can be discovered by crawling the hosts and querying this database. Information that may be retrieved include:

- System Name and Description
- Port name and description
- VLAN name
- IP management address
- System capabilities (switching, routing, etc.)
- MAC/PHY information

- MDI power
- Link aggregation

## Configuration

### set service lldp

Enable LLDP service

### set service lldp management-address <address>

Define IPv4/IPv6 management address transmitted via LLDP. Multiple addresses can be defined. Only addresses connected to the system will be transmitted.

### set service lldp interface <interface>

Enable transmission of LLDP information on given <interface>. You can also say all here so LLDP is turned on on every interface.

### set service lldp interface <interface> disable

Disable transmit of LLDP frames on given <interface>. Useful to exclude certain interfaces from LLDP when all have been enabled.

### set service lldp snmp

Enable SNMP queries of the LLDP database

### set service lldp legacy-protocols <cdp|edp|fdp|sonmp>

Enable given legacy protocol on this LLDP instance. Legacy protocols include:

- cdp - Listen for CDP for Cisco routers/switches
- edp - Listen for EDP for Extreme routers/switches
- fdp - Listen for FDP for Foundry routers/switches
- sonmp - Listen for SONMP for Nortel routers/switches

## Operation

### show lldp neighbors

Displays information about all neighbors discovered via LLDP.

```
vyos@vyos:~$ show lldp neighbors
Capability Codes: R - Router, B - Bridge, W - Wlan r - Repeater, S - Station
                  D - Docsis, T - Telephone, O - Other

Device ID          Local    Proto  Cap  Platform          Port ID
-----
BR2.vyos.net       eth0    LLDP   R    VyOS 1.2.4        eth1
BR3.vyos.net       eth0    LLDP   RB   VyOS 1.2.4        eth2
SW1.vyos.net       eth0    LLDP   B    Cisco IOS Software
↳GigabitEthernet0/6
```

### show lldp neighbors detail

Get detailed information about LLDP neighbors.

```

vyos@vyos:~$ show lldp neighbors detail
-----
LLDP neighbors:
-----
Interface:    eth0, via: LLDP, RID: 28, Time: 0 day, 00:24:33
Chassis:
  ChassisID:  mac 00:53:00:01:02:c9
  SysName:    BR2.vyos.net
  SysDescr:   VyOS 1.3-rolling-201912230217
  MgmtIP:     192.0.2.1
  MgmtIP:     2001:db8::ffff
  Capability: Bridge, on
  Capability: Router, on
  Capability: Wlan, off
  Capability: Station, off
Port:
  PortID:     mac 00:53:00:01:02:c9
  PortDescr:  eth0
  TTL:        120
  PMD autoneg: supported: no, enabled: no
  MAU oper type: 10GigBaseCX4 - X copper over 8 pair 100-Ohm balanced cable
VLAN:        201 eth0.201
VLAN:        205 eth0.205
LLDP-MED:
  Device Type: Network Connectivity Device
  Capability: Capabilities, yes
  Capability: Policy, yes
  Capability: Location, yes
  Capability: MDI/PSE, yes
  Capability: MDI/PD, yes
  Capability: Inventory, yes
Inventory:
  Hardware Revision: None
  Software Revision: 4.19.89-amd64-vyos
  Firmware Revision: 6.00
  Serial Number: VMware-42 1d 83 b9 fe c1 bd b2-7
  Manufacturer: VMware, Inc.
  Model:        VMware Virtual Platform
  Asset ID:     No Asset Tag
-----

```

**show lldp neighbors interface <interface>**

Show LLDP neighbors connected via interface <interface>.

**show log lldp**

Used for troubleshooting.

### 8.10.13 mDNS Repeater

Starting with VyOS 1.2 a mDNS (Multicast DNS) repeater functionality is provided. Additional information can be obtained from [https://en.wikipedia.org/wiki/Multicast\\_DNS](https://en.wikipedia.org/wiki/Multicast_DNS).

Multicast DNS uses the reserved address 224.0.0.251, which is “*administratively scoped*” and does not leave the subnet. mDNS repeater retransmits mDNS packets from one interface to other interfaces. This enables support for devices using mDNS discovery (like network printers, Apple Airplay, Chromecast, various IP based home-automation devices etc) across multiple VLANs.

Since the mDNS protocol sends the AA (Authoritative Answer) records in the packet itself, the repeater does not need to forge the source address. Instead, the source address is of the interface that repeats the packet.

#### Configuration

**set service mdns repeater interface <interface>**

To enable mDNS repeater you need to configure at least two interfaces so that all incoming mDNS packets from one interface configured here can be re-broadcasted to any other interface(s) configured under this section.

**set service mdns repeater disable**

mDNS repeater can be temporarily disabled without deleting the service using

**set service mdns repeater ip-version <ipv4 | ipv6 | both>**

mDNS repeater can be enabled either on IPv4 socket or on IPv6 socket or both to re-broadcast. By default, mDNS repeater will listen on both IPv4 and IPv6.

**set service mdns repeater allow-service <service>**

mDNS repeater can be configured to re-broadcast only specific services. By default, all services are re-broadcasted.

**set service mdns repeater browse-domain <domain>**

Allow listing additional custom domains to be browsed (in addition to the default local) so that they can be reflected.

---

**Note:** You can not run this in a VRRP setup, if multiple mDNS repeaters are launched in a subnet you will experience the mDNS packet storm death!

---

#### Example

To listen on both *eth0* and *eth1* mDNS packets and also repeat packets received on *eth0* to *eth1* (and vice-versa) use the following commands:

```
set service mdns repeater interface 'eth0'  
set service mdns repeater interface 'eth1'
```

To allow only specific services, for example *\_airplay.\_tcp* or *\_ipp.\_tcp*, (instead of all services) to be re-broadcasted, use the following command:

```
set service mdns repeater allow-service '_airplay._tcp'  
set service mdns repeater allow-service '_ipp._tcp'
```

To allow listing additional custom domain, for example `openthread.thread.home.arpa`, so that it can be reflected in addition to the default `local`, use the following command:

```
set service mdns repeater browse-domain 'openthread.thread.home.arpa'
```

## Operation

### **restart mdns repeater**

Restart mDNS repeater service.

### **show log mdns repeater**

Show logs for mDNS repeater service.

### **monitor log mdns repeater**

Follow the logs for mDNS repeater service.

## 8.10.14 Monitoring

### Azure-data-explorer

Telegraf output plugin `azure-data-explorer`

```
set service monitoring telegraf azure-data-explorer authentication client-id <client-id>
```

Authentication application client-id.

```
set service monitoring telegraf azure-data-explorer authentication client-secret  
<client-secret>
```

Authentication application client-secret.

```
set service monitoring telegraf azure-data-explorer authentication tenant-id <tenant-id>
```

Authentication application tenant-id

```
set service monitoring telegraf azure-data-explorer database <name>
```

Remote database name.

```
set service monitoring telegraf azure-data-explorer group-metrics <single-table |  
table-per-metric>
```

Type of metrics grouping when push to Azure Data Explorer. The default is `table-per-metric`.

```
set service monitoring telegraf azure-data-explorer table <name>
```

Name of the single table Only if set `group-metrics single-table`.

```
set service monitoring telegraf azure-data-explorer url <url>
```

Remote URL.

## Prometheus-client

Telegraf output plugin `prometheus-client`

```
set service monitoring telegraf prometheus-client
```

Output plugin Prometheus client

```
set service monitoring telegraf prometheus-client allow-from <prefix>
```

Networks allowed to query this server

```
set service monitoring telegraf prometheus-client authentication username <username>
```

HTTP basic authentication username

```
set service monitoring telegraf prometheus-client authentication password <password>
```

HTTP basic authentication password

```
set service monitoring telegraf prometheus-client listen-address <address>
```

Local IP addresses to listen on

```
set service monitoring telegraf prometheus-client metric-version <1 | 2>
```

Metric version, the default is 2

```
set service monitoring telegraf prometheus-client port <port>
```

Port number used by connection, default is 9273

Example:

```
set service monitoring telegraf prometheus-client
```

```
vyos@r14:~$ curl --silent localhost:9273/metrics | egrep -v "#" | grep cpu_usage_system
cpu_usage_system{cpu="cpu-total",host="r14"} 0.20040080160320556
cpu_usage_system{cpu="cpu0",host="r14"} 0.17182130584191915
cpu_usage_system{cpu="cpu1",host="r14"} 0.22896393817971655
```

## Splunk

Telegraf output plugin `splunk`. HTTP Event Collector.

```
set service monitoring telegraf splunk authentication insecure
```

Use TLS but skip host validation

```
set service monitoring telegraf splunk authentication token <token>
```

Authorization token

```
set service monitoring telegraf splunk authentication url <url>
```

Remote URL to Splunk collector

Example:

```
set service monitoring telegraf splunk authentication insecure
set service monitoring telegraf splunk authentication token 'xxxxf5b8-xxxx-452a-xxxx-
↪43828911xxxx'
set service monitoring telegraf splunk url 'https://192.0.2.10:8088/services/collector'
```

## Telegraf

Monitoring functionality with telegraf and InfluxDB 2 is provided. Telegraf is the open source server agent to help you collect metrics, events and logs from your routers.

```
set service monitoring telegraf influxdb authentication organization <organization>
```

Authentication organization name

```
set service monitoring telegraf influxdb authentication token <token>
```

Authentication token

```
set service monitoring telegraf bucket <bucket>
```

Remote InfluxDB bucket name

```
set service monitoring telegraf influxdb port <port>
```

Remote port

```
set service monitoring telegraf influxdb url <url>
```

Remote URL

## Example

An example of a configuration that sends telegraf metrics to remote InfluxDB 2

```
set service monitoring telegraf influxdb authentication organization 'vyos'
set service monitoring telegraf influxdb authentication token 'ZAm19Uy5wrhA...=='
set service monitoring telegraf influxdb bucket 'bucket_vyos'
set service monitoring telegraf influxdb port '8086'
set service monitoring telegraf influxdb url 'http://r1.influxdb2.local'
```

### 8.10.15 NTP

NTP (NETWORK TIME PROTOCOL) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks. In operation since before 1985, NTP is one of the oldest Internet protocols in current use.

NTP is intended to synchronize all participating computers to within a few milliseconds of UTC (Coordinated Universal Time). It uses the intersection algorithm, a modified version of Marzullo's algorithm, to select accurate time servers and is designed to mitigate the effects of variable network latency. NTP can usually maintain time to within tens of milliseconds over the public Internet, and can achieve better than one millisecond accuracy in local area networks under ideal conditions. Asymmetric routes and network congestion can cause errors of 100 ms or more.

The protocol is usually described in terms of a client-server model, but can as easily be used in peer-to-peer relationships where both peers consider the other to be a potential time source. Implementations send and receive timestamps using UDP (User Datagram Protocol) on port number 123.

NTP supplies a warning of any impending leap second adjustment, but no information about local time zones or daylight saving time is transmitted.

The current protocol is version 4 (NTPv4), which is a proposed standard as documented in [RFC 5905](#). It is backward compatible with version 3, specified in [RFC 1305](#).

---

**Note:** VyOS 1.4 uses chrony instead of ntpd (see [T3008](#)) which will no longer accept anonymous NTP requests as in VyOS 1.3. All configurations will be migrated to keep the anonymous functionality. For new setups if you have clients using your VyOS installation as NTP server, you must specify the *allow-client* directive.

---

## Configuration

### **set service ntp server <address>**

Configure one or more servers for synchronisation. Server name can be either an IP address or FQDN (Fully Qualified Domain Name).

There are 3 default NTP server set. You are able to change them.

- 0.pool.ntp.org
- 1.pool.ntp.org
- 2.pool.ntp.org

### **set service ntp server <address> <noselect | nts | pool | prefer>**

Configure one or more attributes to the given NTP server.

- *noselect* marks the server as unused, except for display purposes. The server is discarded by the selection algorithm.
- *nts* enables Network Time Security (NTS) for the server as specified in [RFC 8915](#)
- *pool* mobilizes persistent client mode association with a number of remote servers.
- *prefer* marks the server as preferred. All other things being equal, this host will be chosen for synchronization among a set of correctly operating hosts.

### **set service ntp listen-address <address>**

NTP process will only listen on the specified IP address. You must specify the *<address>* and optionally the permitted clients. Multiple listen addresses can be configured.

### **set service ntp allow-client address <address>**

List of networks or client addresses permitted to contact this NTP server.

Multiple networks/client IP addresses can be configured.

### **set service ntp vrf <name>**

Specify name of the VRF (Virtual Routing and Forwarding) instance.

### **set service ntp leap-second [ignore|smear|system|timezone]**

Define how to handle leaf-seconds.

- *ignore*: No correction is applied to the clock for the leap second. The clock will be corrected later in normal operation when new measurements are made and the estimated offset includes the one second error.
- *smear*: When smearing a leap second, the leap status is suppressed on the server and the served time is corrected slowly by slewing instead of stepping. The clients do not need any special configuration as they do not know there is any leap second and they follow the server time which eventually brings them back to UTC. Care must be taken to ensure they use only NTP servers which smear the leap second in exactly the same way for synchronisation.

- *system*: When inserting a leap second, the kernel steps the system clock backwards by one second when the clock gets to 00:00:00 UTC. When deleting a leap second, it steps forward by one second when the clock gets to 23:59:59 UTC.
- *timezone*: This directive specifies a timezone in the system timezone database which chronyd can use to determine when will the next leap second occur and what is the current offset between TAI and UTC. It will periodically check if 23:59:59 and 23:59:60 are valid times in the timezone. This normally works with the right/UTC timezone which is the default

### 8.10.16 PPPoE Server

VyOS utilizes `accel-ppp` to provide PPPoE server functionality. It can be used with local authentication or a connected RADIUS server.

---

**Note:** Please be aware, due to an upstream bug, config changes/commits will restart the ppp daemon and will reset existing PPPoE connections from connected users, in order to become effective.

---

#### Configuring PPPoE Server

```
set service pppoe-server access-concentrator PPPoE-Server
set service pppoe-server authentication mode local
set service pppoe-server authentication local-users username test password 'test'
set service pppoe-server client-ip-pool PPPOE-POOL range 192.168.255.2-192.168.255.254
set service pppoe-server default-pool 'PPPOE-POOL'
set service pppoe-server outside-address 192.0.2.2
set service pppoe-server gateway-address 192.168.255.1
set service pppoe-server interface eth0
```

**set service pppoe-server access-concentrator <name>**

Use this command to set a name for this PPPoE-server access concentrator.

**set service pppoe-server authentication mode <local | radius>**

Set authentication backend. The configured authentication backend is used for all queries.

- **radius**: All authentication queries are handled by a configured RADIUS server.
- **local**: All authentication queries are handled locally.
- **noauth**: Authentication disabled.

**set service pppoe-server authentication local-users username <name> password <password>**

Create <user> for local authentication on this system. The users password will be set to <pass>.

**set service pppoe-server client-ip-pool <POOL-NAME> range <x.x.x.x-x.x.x.x | x.x.x.x/x>**

Use this command to define the first IP address of a pool of addresses to be given to pppoe clients. If notation `x.x.x.x-x.x.x.x`, it must be within a /24 subnet. If notation `x.x.x.x/x` is used there is possibility to set host/netmask.

**set service pppoe-server default-pool <POOL-NAME>**

Use this command to define default address pool name.

**set service pppoe-server interface <interface>**

Use this command to define the interface the PPPoE server will use to listen for PPPoE clients.

```
set service pppoe-server gateway-address <address>
```

Specifies single *<gateway>* IP address to be used as local address of PPP interfaces.

## Configuring RADIUS authentication

To enable RADIUS based authentication, the authentication mode needs to be changed within the configuration. Previous settings like the local users, still exists within the configuration, however they are not used if the mode has been changed from local to radius. Once changed back to local, it will use all local accounts again.

```
set service pppoe-server authentication mode radius
```

```
set service pppoe-server authentication radius server <server> key <secret>
```

Configure RADIUS *<server>* and its required shared *<secret>* for communicating with the RADIUS server.

Since the RADIUS server would be a single point of failure, multiple RADIUS servers can be setup and will be used subsequently. For example:

```
set service pppoe-server authentication radius server 10.0.0.1 key 'foo'  
set service pppoe-server authentication radius server 10.0.0.2 key 'foo'
```

---

**Note:** Some RADIUS servers use an access control list which allows or denies queries, make sure to add your VyOS router to the allowed client list.

---

## RADIUS source address

If you are using OSPF as IGP, always the closest interface connected to the RADIUS server is used. With VyOS 1.2 you can bind all outgoing RADIUS requests to a single source IP e.g. the loopback interface.

```
set service pppoe-server authentication radius source-address <address>
```

Source IPv4 address used in all RADIUS server queries.

---

**Note:** The source-address must be configured on one of VyOS interface. Best practice would be a loopback or dummy interface.

---

## RADIUS advanced options

```
set service pppoe-server authentication radius server <server> port <port>
```

Configure RADIUS *<server>* and its required port for authentication requests.

```
set service pppoe-server authentication radius server <server> fail-time <time>
```

Mark RADIUS server as offline for this given *<time>* in seconds.

```
set service pppoe-server authentication radius server <server> disable
```

Temporary disable this RADIUS server.

```
set service pppoe-server authentication radius acct-timeout <timeout>
```

Timeout to wait reply for Interim-Update packets. (default 3 seconds)

```
set service pppoe-server authentication radius dynamic-author server <address>
```

Specifies IP address for Dynamic Authorization Extension server (DM/CoA)

```
set service pppoe-server authentication radius dynamic-author port <port>
```

Port for Dynamic Authorization Extension server (DM/CoA)

```
set service pppoe-server authentication radius dynamic-author key <secret>
```

Secret for Dynamic Authorization Extension server (DM/CoA)

```
set service pppoe-server authentication radius max-try <number>
```

Maximum number of tries to send Access-Request/Accounting-Request queries

```
set service pppoe-server authentication radius timeout <timeout>
```

Timeout to wait response from server (seconds)

```
set service pppoe-server authentication radius nas-identifier <identifier>
```

Value to send to RADIUS server in NAS-Identifier attribute and to be matched in DM/CoA requests.

```
set service pppoe-server authentication radius nas-ip-address <address>
```

Value to send to RADIUS server in NAS-IP-Address attribute and to be matched in DM/CoA requests. Also DM/CoA server will bind to that address.

```
set service pppoe-server authentication radius source-address <address>
```

Source IPv4 address used in all RADIUS server queries.

```
set service pppoe-server authentication radius rate-limit attribute <attribute>
```

Specifies which RADIUS server attribute contains the rate limit information. The default attribute is Filter-Id.

---

**Note:** If you set a custom RADIUS attribute you must define it on both dictionaries at RADIUS server and client.

---

```
set service pppoe-server authentication radius rate-limit enable
```

Enables bandwidth shaping via RADIUS.

```
set service pppoe-server authentication radius rate-limit vendor
```

Specifies the vendor dictionary, dictionary needs to be in /usr/share/accel-ppp/radius.

Received RADIUS attributes have a higher priority than parameters defined within the CLI configuration, refer to the explanation below.

### Allocation clients ip addresses by RADIUS

If the RADIUS server sends the attribute Framed-IP-Address then this IP address will be allocated to the client and the option default-pool within the CLI config is being ignored.

If the RADIUS server sends the attribute Framed-Pool, IP address will be allocated from a predefined IP pool whose name equals the attribute value.

If the RADIUS server sends the attribute Stateful-IPv6-Address-Pool, IPv6 address will be allocated from a predefined IPv6 pool prefix whose name equals the attribute value.

If the RADIUS server sends the attribute `Delegated-IPv6-Prefix-Pool`, IPv6 delegation prefix will be allocated from a predefined IPv6 pool `delegate` whose name equals the attribute value.

**Note:** `Stateful-IPv6-Address-Pool` and `Delegated-IPv6-Prefix-Pool` are defined in RFC6911. If they are not defined in your RADIUS server, add new [dictionary](#).

User interface can be put to VRF context via RADIUS Access-Accept packet, or change it via RADIUS CoA. `Accel-VRF-Name` is used from these purposes. It is custom `ACCEL-PPP` attribute. Define it in your RADIUS server.

## Renaming clients interfaces by RADIUS

If the RADIUS server uses the attribute `NAS-Port-Id`, ppp tunnels will be renamed.

**Note:** The value of the attribute `NAS-Port-Id` must be less than 16 characters, otherwise the interface won't be renamed.

## Automatic VLAN Creation

```
set service pppoe-server interface <interface> vlan <id | range>
```

VLAN's can be created by `Accel-ppp` on the fly via the use of a Kernel module named `vlan_mon`, which is monitoring incoming vlans and creates the necessary VLAN if required and allowed. VyOS supports the use of either VLAN ID's or entire ranges, both values can be defined at the same time for an interface.

When configured, PPPoE will create the necessary VLANs when required. Once the user session has been cancelled and the VLAN is not needed anymore, VyOS will remove it again.

```
set service pppoe-server interface eth3 vlan 100
set service pppoe-server interface eth3 vlan 200
set service pppoe-server interface eth3 vlan 500-1000
set service pppoe-server interface eth3 vlan 2000-3000
```

## Bandwidth Shaping

Bandwidth rate limits can be set for local users or RADIUS based attributes.

### For Local Users

```
set service pppoe-server authentication local-users username <user> rate-limit download <bandwidth>
```

Download bandwidth limit in kbit/s for `<user>`.

```
set service pppoe-server authentication local-users username <user> rate-limit upload <bandwidth>
```

Upload bandwidth limit in kbit/s for `<user>`.

```

set service pppoe-server access-concentrator 'ACN'
set service pppoe-server authentication local-users username foo password 'bar'
set service pppoe-server authentication local-users username foo rate-limit download
↪ '20480'
set service pppoe-server authentication local-users username foo rate-limit upload '10240
↪ '
set service pppoe-server authentication mode 'local'
set service pppoe-server client-ip-pool IP-POOL range '10.1.1.100/24'
set service pppoe-server default-pool 'IP-POOL'
set service pppoe-server name-server '10.100.100.1'
set service pppoe-server name-server '10.100.200.1'
set service pppoe-server interface 'eth1'
set service pppoe-server gateway-address '10.1.1.2'

```

Once the user is connected, the user session is using the set limits and can be displayed via `show pppoe-server sessions`.

```

show pppoe-server sessions
ifname | username | ip | calling-sid | rate-limit | state | uptime | ↵
↪ rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----+-----+-----
↪ -----+-----+-----+-----+-----+-----+-----+-----
ppp0 | foo | 10.1.1.100 | 00:53:00:ba:db:15 | 20480/10240 | active | 00:00:11 | ↵
↪ 214 B | 76 B

```

## For RADIUS users

The current attribute `Filter-Id` is being used as default and can be setup within RADIUS:

`Filter-Id=2000/3000` (means 2000Kbit down-stream rate and 3000Kbit up-stream rate)

The command below enables it, assuming the RADIUS connection has been setup and is working.

**set service pppoe-server authentication radius rate-limit enable**

Use this command to enable bandwidth shaping via RADIUS.

Other attributes can be used, but they have to be in one of the dictionaries in `/usr/share/accel-ppp/radius`.

## Load Balancing

**set service pppoe-server pado-delay <number-of-ms> sessions <number-of-sessions>**

Use this command to enable the delay of PADO (PPPoE Active Discovery Offer) packets, which can be used as a session balancing mechanism with other PPPoE servers.

```

set service pppoe-server pado-delay 50 sessions '500'
set service pppoe-server pado-delay 100 sessions '1000'
set service pppoe-server pado-delay 300 sessions '3000'

```

In the example above, the first 499 sessions connect without delay. PADO packets will be delayed 50 ms for connection from 500 to 999, this trick allows other PPPoE servers send PADO faster and clients will connect to other servers. Last command says that this PPPoE server can serve only 3000 clients.

## IPv6

**set service pppoe-server ppp-options ipv6 <require | prefer | allow | deny>**

Specifies IPv6 negotiation preference.

- **require** - Require IPv6 negotiation
- **prefer** - Ask client for IPv6 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv6 only if client requests
- **deny** - Do not negotiate IPv6 (default value)

**set service pppoe-server client-ipv6-pool <IPv6-POOL-NAME> prefix <address> mask <number-of-bits>**

Use this command to set the IPv6 address pool from which an PPPoE client will get an IPv6 prefix of your defined length (mask) to terminate the PPPoE endpoint at their side. The mask length can be set from 48 to 128 bit long, the default value is 64.

**set service pppoe-server client-ipv6-pool <IPv6-POOL-NAME> delegate <address> delegation-prefix <number-of-bits>**

Use this command to configure DHCPv6 Prefix Delegation (RFC3633) on PPPoE. You will have to set your IPv6 pool and the length of the delegation prefix. From the defined IPv6 pool you will be handing out networks of the defined length (delegation-prefix). The length of the delegation prefix can be set from 32 to 64 bit long.

**set service pppoe-server default-ipv6-pool <IPv6-POOL-NAME>**

Use this command to define default IPv6 address pool name.

```
set service pppoe-server ppp-options ipv6 allow
set service pppoe-server client-ipv6-pool IPv6-POOL delegate '2001:db8:8003::/48'
↪delegation-prefix '56'
set service pppoe-server client-ipv6-pool IPv6-POOL prefix '2001:db8:8002::/48' mask '64'
set service pppoe-server default-ipv6-pool IPv6-POOL
```

## IPv6 Advanced Options

**set service pppoe-server ppp-options ipv6-accept-peer-interface-id**

Accept peer interface identifier. By default is not defined.

**set service pppoe-server ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies fixed or random interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6

**set service pppoe-server ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies peer interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6
- **ipv4-addr** - Calculate interface identifier from IPv4 address.
- **calling-sid** - Calculate interface identifier from calling-station-id.

## Scripting

**set service pppoe-server extended-scripts on-change <path\_to\_script>**

Script to run when session interface changed by RADIUS CoA handling

**set service pppoe-server extended-scripts on-down <path\_to\_script>**

Script to run when session interface going to terminate

**set service pppoe-server extended-scripts on-pre-up <path\_to\_script>**

Script to run before session interface comes up

**set service pppoe-server extended-scripts on-up <path\_to\_script>**

Script to run when session interface is completely configured and started

## Advanced Options

### Authentication Advanced Options

**set service pppoe-server authentication local-users username <user> disable**

Disable <user> account.

**set service pppoe-server authentication local-users username <user> static-ip <address>**

Assign static IP address to <user> account.

**set service pppoe-server authentication protocols <pap | chap | mschap | mschap-v2>**

Require the peer to authenticate itself using one of the following protocols: pap, chap, mschap, mschap-v2.

### Client IP Pool Advanced Options

**set service pppoe-server client-ip-pool <POOL-NAME> next-pool <NEXT-POOL-NAME>**

Use this command to define the next address pool name.

### PPP Advanced Options

**set service pppoe-server ppp-options disable-ccp**

Disable Compression Control Protocol (CCP). CCP is enabled by default.

**set service pppoe-server ppp-options interface-cache <number>**

Specifies number of interfaces to keep in cache. It means that don't destroy interface after corresponding session is destroyed, instead place it to cache and use it later for new sessions repeatedly. This should reduce kernel-level interface creation/deletion rate lack. Default value is 0.

**set service pppoe-server ppp-options ipv4 <require | prefer | allow | deny>**

Specifies IPv4 negotiation preference.

- **require** - Require IPv4 negotiation
- **prefer** - Ask client for IPv4 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv4 only if client requests (Default value)

- **deny** - Do not negotiate IPv4

**set service pppoe-server ppp-options lcp-echo-failure <number>**

Defines the maximum <number> of unanswered echo requests. Upon reaching the value <number>, the session will be reset. Default value is **3**.

**set service pppoe-server ppp-options lcp-echo-interval <interval>**

If this option is specified and is greater than 0, then the PPP module will send LCP pings of the echo request every <interval> seconds. Default value is **30**.

**set service pppoe-server ppp-options lcp-echo-timeout**

Specifies timeout in seconds to wait for any peer activity. If this option specified it turns on adaptive lcp echo functionality and “lcp-echo-failure” is not used. Default value is **0**.

**set service pppoe-server ppp-options min-mtu <number>**

Defines minimum acceptable MTU. If client will try to negotiate less then specified MTU then it will be NAKed or disconnected if rejects greater MTU. Default value is **100**.

**set service pppoe-server ppp-options mppe <require | prefer | deny>**

Specifies MPPE (Microsoft Point-to-Point Encryption) negotiation preference.

- **require** - ask client for mppe, if it rejects drop connection
- **prefer** - ask client for mppe, if it rejects don't fail. (Default value)
- **deny** - deny mppe

Default behavior - don't ask client for mppe, but allow it if client wants. Please note that RADIUS may override this option by MS-MPPE-Encryption-Policy attribute.

**set service pppoe-server ppp-options mru <number>**

Defines preferred MRU. By default is not defined.

## Global Advanced options

**set service pppoe-server description <description>**

Set description.

**set service pppoe-server limits burst <value>**

Burst count

**set service pppoe-server limits connection-limit <value>**

Acceptable rate of connections (e.g. 1/min, 60/sec)

**set service pppoe-server limits timeout <value>**

Timeout in seconds

**set service pppoe-server mtu**

Maximum Transmission Unit (MTU) (default: **1492**)

**set service pppoe-server max-concurrent-sessions**

Maximum number of concurrent session start attempts

**set service pppoe-server name-server <address>**

Connected client should use *<address>* as their DNS server. This command accepts both IPv4 and IPv6 addresses. Up to two nameservers can be configured for IPv4, up to three for IPv6.

**set service pppoe-server service-name <names>**

Specifies Service-Name to respond. If absent any Service-Name is acceptable and client's Service-Name will be sent back. Also possible set multiple service-names: *sn1,sn2,sn3*

Per default the user session is being replaced if a second authentication request succeeds. Such session requests can be either denied or allowed entirely, which would allow multiple sessions for a user in the latter case. If it is denied, the second session is being rejected even if the authentication succeeds, the user has to terminate its first session and can then authentication again.

**set service pppoe-server session-control**

- **disable**: Disables session control.
- **deny**: Deny second session authorization.
- **replace**: Terminate first session when second is authorized (**default**)

**set service pppoe-server shaper fwmark <1-2147483647>**

Match firewall mark value

**set service pppoe-server snmp master-agent**

Enable SNMP

**set service pppoe-server wins-server <address>**

Windows Internet Name Service (WINS) servers propagated to client

## Monitoring

**show pppoe-server sessions**

Use this command to locally check the active sessions in the PPPoE server.

```
show pppoe-server sessions
ifname | username | ip | calling-sid | rate-limit | state | uptime |
↳rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----+-----+
↳-----+-----+-----+-----+-----+-----+-----+
ppp0 | foo | 10.1.1.100 | 00:53:00:ba:db:15 | 20480/10240 | active | 00:00:11 |
↳214 B | 76 B
```

## Examples

### IPv4

The example below uses ACN as access-concentrator name, assigns an address from the pool 10.1.1.100-111, terminates at the local endpoint 10.1.1.1 and serves requests only on eth1.

```
set service pppoe-server access-concentrator 'ACN'
set service pppoe-server authentication local-users username foo password 'bar'
set service pppoe-server authentication mode 'local'
set service pppoe-server client-ip-pool IP-POOL range '10.1.1.100-10.1.1.111'
```

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```

set service pppoe-server default-pool 'IP-POOL'
set service pppoe-server interface eth1
set service pppoe-server gateway-address '10.1.1.2'
set service pppoe-server name-server '10.100.100.1'
set service pppoe-server name-server '10.100.200.1'

```

## Dual-Stack IPv4/IPv6 provisioning with Prefix Delegation

The example below covers a dual-stack configuration.

```

set service pppoe-server authentication local-users username test password 'test'
set service pppoe-server authentication mode 'local'
set service pppoe-server client-ip-pool IP-POOL range '192.168.0.1/24'
set service pppoe-server default-pool 'IP-POOL'
set service pppoe-server client-ipv6-pool IPv6-POOL delegate '2001:db8:8003::/48' ↵
↵delegation-prefix '56'
set service pppoe-server client-ipv6-pool IPv6-POOL prefix '2001:db8:8002::/48' mask '64'
set service pppoe-server default-ipv6-pool IPv6-POOL
set service pppoe-server ppp-options ipv6 allow
set service pppoe-server name-server '10.1.1.1'
set service pppoe-server name-server '2001:db8:4860::8888'
set service pppoe-server interface 'eth2'
set service pppoe-server gateway-address '10.100.100.1'

```

The client, once successfully authenticated, will receive an IPv4 and an IPv6 /64 address to terminate the PPPoE endpoint on the client side and a /56 subnet for the clients internal use.

```

vyos@pppoe-server:~$ sh pppoe-server sessions
ifname | username | ip | ip6 | ip6-dp | ↵
↵calling-sid | rate-limit | state | uptime | rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----
↵-----+-----+-----+-----+-----+-----
ppp0 | test | 192.168.0.1 | 2001:db8:8002:0:200::/64 | 2001:db8:8003::1/56 | ↵
↵00:53:00:12:42:eb | | active | 00:00:49 | 875 B | 2.1 KiB

```

### 8.10.17 Router Advertisements

RAs (Router advertisements) are described in [RFC 4861#section-4.6.2](#). They are part of what is known as SLAAC.

Supported interface types:

- bonding
- bridge
- ethernet
- geneve
- l2tpv3
- openvpn
- pseudo-ethernet

- tunnel
- vxlan
- wireguard
- wireless
- wwan

## Configuration

**set service router-advert interface <interface> ...**

Field	VyOS Option	Description
Cur Hop Limit	hop-limit	Hop count field of the outgoing RA packets
“Managed address configuration” flag	managed-flag	Tell hosts to use the administered stateful protocol (i.e. DHCP) for autoconfiguration
“Other configuration” flag	other-config-flag	Tell hosts to use the administered (stateful) protocol (i.e. DHCP) for autoconfiguration of other (non-address) information
MTU	link-mtu	Link MTU value placed in RAs, excluded in RAs if unset
Router Lifetime	default-lifetime	Lifetime associated with the default router in units of seconds
Reachable Time	reachable-time	Time, in milliseconds, that a node assumes a neighbor is reachable after having received a reachability confirmation
Retransmit Timer	retrans-timer	Time in milliseconds between retransmitted Neighbor Solicitation messages
Default Router Preference	default-preference	Preference associated with the default router
Interval	interval	Min and max intervals between unsolicited multicast RAs
DNSSL	dnssl	DNS search list to advertise
Name Server	name-server	Advertise DNS server per <a href="https://tools.ietf.org/html/rfc6106">https://tools.ietf.org/html/rfc6106</a>

## Advertising a Prefix

**set service router-advert interface <interface> prefix <prefix/mask>**

---

**Note:** You can also opt for using `::/64` as prefix for your RAs. This will take the IPv6 GUA prefix assigned to the interface, which comes in handy when using DHCPv6-PD.

---

VyOS Field	Description
decrement-lifetime	Lifetime is decremented by the number of seconds since the last RA - use in conjunction with a DHCPv6-PD prefix
deprecate-prefix	Upon shutdown, this option will deprecate the prefix by announcing it in the shutdown RA
no-autonomous-flag	Prefix can not be used for stateless address auto-configuration
no-on-link-flag	Prefix can not be used for on-link determination
preferred-lifetime	Time in seconds that the prefix will remain preferred (default 4 hours)
valid-lifetime	Time in seconds that the prefix will remain valid (default: 30 days)

### Advertising a NAT64 Prefix

```
set service router-advert interface <interface> nat64prefix <prefix/mask>
```

Enable PREF64 option as outlined in [RFC 8781](#).

NAT64 prefix mask must be one of: /32, /40, /48, /56, /64 or 96.

---

**Note:** The well known NAT64 prefix is 64:ff9b::/96

---

VyOS Field	Description
valid-lifetime	Time in seconds that the prefix will remain valid (default: 65528 seconds)

### Disabling Advertisements

To disable advertisements without deleting the configuration:

```
set service router-advert interface <interface> no-send-advert
```

### Example

Your LAN connected on eth0 uses prefix 2001:db8:beef:2::/64 with the router being 2001:db8:beef:2::1

```
set interfaces ethernet eth0 address 2001:db8:beef:2::1/64

set service router-advert interface eth0 default-preference 'high'
set service router-advert interface eth0 name-server '2001:db8::1'
set service router-advert interface eth0 name-server '2001:db8::2'
set service router-advert interface eth0 other-config-flag
set service router-advert interface eth0 prefix 2001:db8:beef:2::/64
```

## 8.10.18 Salt-Minion

SaltStack is Python-based, open-source software for event-driven IT automation, remote task execution, and configuration management. Supporting the “infrastructure as code” approach to data center system and network deployment and management, configuration automation, SecOps orchestration, vulnerability remediation, and hybrid cloud control.

### Requirements

To use the Salt-Minion, a running Salt-Master is required. You can find more in the [Salt Project Documentaion](#)

### Configuration

**set service salt-minion hash <type>**

The hash type used when discovering file on master server (default: sha256)

**set service salt-minion id <id>**

Explicitly declare ID for this minion to use (default: hostname)

**set service salt-minion interval <1-1440>**

Interval in minutes between updates (default: 60)

**set service salt-minion master <hostname | IP>**

The hostname or IP address of the master

**set service salt-minion master-key <key>**

URL with signature of master for auth reply verification

Please take a look in the Automation section to find some usefull Examples.

## 8.10.19 SNMP

SNMP is an Internet Standard protocol for collecting and organizing information about managed devices on IP networks and for modifying that information to change device behavior. Devices that typically support SNMP include cable modems, routers, switches, servers, workstations, printers, and more.

SNMP is widely used in network management for network monitoring. SNMP exposes management data in the form of variables on the managed systems organized in a management information base (MIB) which describe the system status and configuration. These variables can then be remotely queried (and, in some circumstances, manipulated) by managing applications.

Three significant versions of SNMP have been developed and deployed. SNMPv1 is the original version of the protocol. More recent versions, SNMPv2c and SNMPv3, feature improvements in performance, flexibility and security.

SNMP is a component of the Internet Protocol Suite as defined by the Internet Engineering Task Force (IETF). It consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects.

## Overview and basic concepts

In typical uses of SNMP, one or more administrative computers called managers have the task of monitoring or managing a group of hosts or devices on a computer network. Each managed system executes a software component called an agent which reports information via SNMP to the manager.

An SNMP-managed network consists of three key components:

- Managed devices
- Agent - software which runs on managed devices
- Network management station (NMS) - software which runs on the manager

A managed device is a network node that implements an SNMP interface that allows unidirectional (read-only) or bidirectional (read and write) access to node-specific information. Managed devices exchange node-specific information with the NMSs. Sometimes called network elements, the managed devices can be any type of device, including, but not limited to, routers, access servers, switches, cable modems, bridges, hubs, IP telephones, IP video cameras, computer hosts, and printers.

An agent is a network-management software module that resides on a managed device. An agent has local knowledge of management information and translates that information to or from an SNMP-specific form.

A network management station executes applications that monitor and control managed devices. NMSs provide the bulk of the processing and memory resources required for network management. One or more NMSs may exist on any managed network.

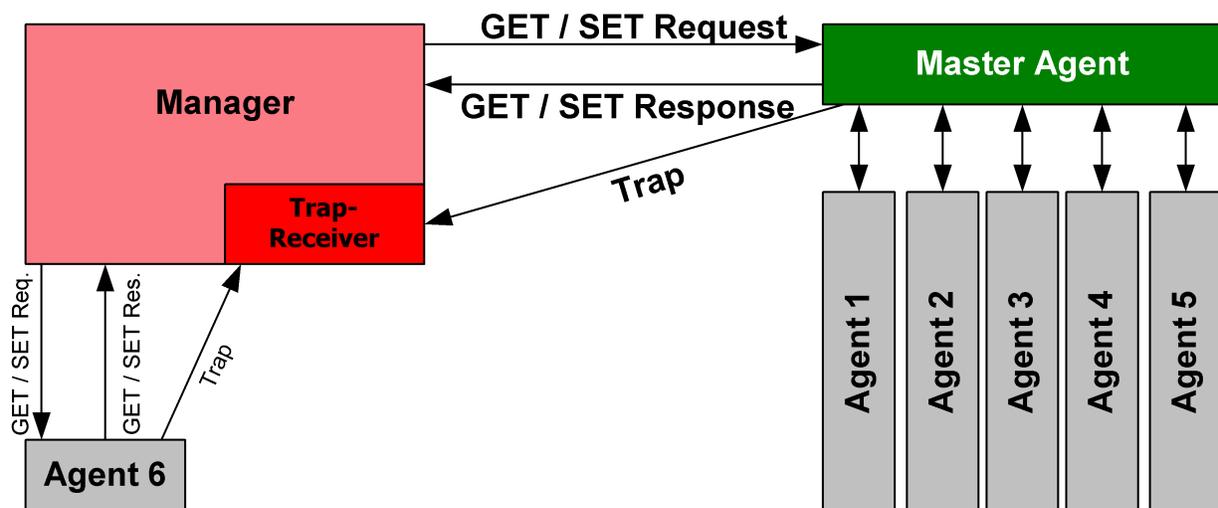


Fig. 5: Image thankfully borrowed from [https://en.wikipedia.org/wiki/File:SNMP\\_communication\\_principles\\_diagram.PNG](https://en.wikipedia.org/wiki/File:SNMP_communication_principles_diagram.PNG) which is under the GNU Free Documentation License

---

**Note:** VyOS SNMP supports both IPv4 and IPv6.

---

## SNMP Protocol Versions

VyOS itself supports [SNMPv2](#) (version 2) and [SNMPv3](#) (version 3) where the later is recommended because of improved security (optional authentication and encryption).

### SNMPv2

SNMPv2 is the original and most commonly used version. For authorizing clients, SNMP uses the concept of communities. Communities may have authorization set to read only (this is most common) or to read and write (this option is not actively used in VyOS).

SNMP can work synchronously or asynchronously. In synchronous communication, the monitoring system queries the router periodically. In asynchronous, the router sends notification to the “trap” (the monitoring host).

SNMPv2 does not support any authentication mechanisms, other than client source address, so you should specify addresses of clients allowed to monitor the router. Note that SNMPv2 also supports no encryption and always sends data in plain text.

### Example

```
# Define a community
set service snmp community routers authorization ro

# Allow monitoring access from the entire network
set service snmp community routers network 192.0.2.0/24
set service snmp community routers network 2001::db8:ffff:eeee::/64

# Allow monitoring access from specific addresses
set service snmp community routers client 203.0.113.10
set service snmp community routers client 203.0.113.20

# Define optional router information
set service snmp location "UK, London"
set service snmp contact "admin@example.com"

# Trap target if you want asynchronous communication
set service snmp trap-target 203.0.113.10

# Listen only on specific IP addresses (port defaults to 161)
set service snmp listen-address 172.16.254.36 port 161
set service snmp listen-address 2001:db8::f00::1
```

## SNMPv3

SNMPv3 (version 3 of the SNMP protocol) introduced a whole slew of new security related features that have been missing from the previous versions. Security was one of the biggest weakness of SNMP until v3. Authentication in SNMP Versions 1 and 2 amounts to nothing more than a password (community string) sent in clear text between a manager and agent. Each SNMPv3 message contains security parameters which are encoded as an octet string. The meaning of these security parameters depends on the security model being used.

The security approach in SNMPv3 targets:

- Confidentiality – Encryption of packets to prevent snooping by an unauthorized source.
- Integrity – Message integrity to ensure that a packet has not been tampered while in transit including an optional packet replay protection mechanism.
- Authentication – to verify that the message is from a valid source.

### Example

- Let SNMP daemon listen only on IP address 192.0.2.1
- Configure new SNMP user named “vyos” with password “vyos12345678”
- New user will use SHA/AES for authentication and privacy

```
set service snmp listen-address 192.0.2.1
set service snmp location 'VyOS Datacenter'
set service snmp v3 engineid '000000000000000000000002'
set service snmp v3 group default mode 'ro'
set service snmp v3 group default view 'default'
set service snmp v3 user vyos auth plaintext-password 'vyos12345678'
set service snmp v3 user vyos auth type 'sha'
set service snmp v3 user vyos group 'default'
set service snmp v3 user vyos privacy plaintext-password 'vyos12345678'
set service snmp v3 user vyos privacy type 'aes'
set service snmp v3 view default oid 1
```

After commit the plaintext passwords will be hashed and stored in your configuration. The resulting CLI config will look like:

```
vyos@vyos# show service snmp
listen-address 192.0.2.1 {
}
location "VyOS Datacenter"
v3 {
  engineid 000000000000000000000002
  group default {
    mode ro
    view default
  }
  user vyos {
    auth {
      encrypted-password 4e52fe55fd011c9c51ae2c65f4b78ca93dcafdfe
      type sha
    }
  }
}
```

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```

group default
  privacy {
    encrypted-password 4e52fe55fd011c9c51ae2c65f4b78ca93dcafdfe
    type aes
  }
}
view default {
  oid 1 {
  }
}
}

```

You can test the SNMPv3 functionality from any linux based system, just run the following command: `snmpwalk -v 3 -u vyos -a SHA -A vyos12345678 -x AES -X vyos12345678 -l authPriv 192.0.2.1 .1`

## VyOS MIBs

All SNMP MIBs are located in each image of VyOS here: `/usr/share/snmp/mibs/`

You are be able to download the files using SCP, once the SSH service has been activated like so

```
scp -r vyos@your_router:/usr/share/snmp/mibs /your_folder/mibs
```

## SNMP Extensions

To extend SNMP agent functionality, custom scripts can be executed every time the agent is being called. This can be achieved by using arbitrary `extensioncommands`. The first step is to create a functional script of course, then upload it to your VyOS instance via the command `scp your_script.sh vyos@your_router:/config/user-data`. Once the script is uploaded, it needs to be configured via the command below.

```
set service snmp script-extensions extension-name my-extension script your_script.sh
commit
```

The OID `.1.3.6.1.4.1.8072.1.3.2.3.1.1.4.116.101.115.116`, once called, will contain the output of the extension.

```

root@vyos:/home/vyos# snmpwalk -v2c -c public 127.0.0.1 nsExtendOutput1
NET-SNMP-EXTEND-MIB::nsExtendOutput1Line."my-extension" = STRING: hello
NET-SNMP-EXTEND-MIB::nsExtendOutputFull."my-extension" = STRING: hello
NET-SNMP-EXTEND-MIB::nsExtendOutNumLines."my-extension" = INTEGER: 1
NET-SNMP-EXTEND-MIB::nsExtendResult."my-extension" = INTEGER: 0

```

## SolarWinds

If you happen to use SolarWinds Orion as NMS you can also use the Device Templates Management. A template for VyOS can be easily imported.

Create a file named `VyOS-1.3.6.1.4.1.44641.ConfigMgmt-Commands` using the following content:

```
<Configuration-Management Device="VyOS" SystemOID="1.3.6.1.4.1.44641">
  <Commands>
    <Command Name="Reset" Value="set terminal width 0${CRLF}set terminal length 0"/>
    <Command Name="Reboot" Value="reboot${CRLF}Yes"/>
    <Command Name="EnterConfigMode" Value="configure"/>
    <Command Name="ExitConfigMode" Value="commit${CRLF}exit"/>
    <Command Name="DownloadConfig" Value="show configuration commands"/>
    <Command Name="SaveConfig" Value="commit${CRLF}save"/>
    <Command Name="Version" Value="show version"/>
    <Command Name="MenuBased" Value="False"/>
    <Command Name="VirtualPrompt" Value=":~/>
  </Commands>
</Configuration-Management>
```

### 8.10.20 SSH

SSH (Secure Shell) is a cryptographic network protocol for operating network services securely over an unsecured network. The standard TCP port for SSH is 22. The best known example application is for remote login to computer systems by users.

SSH provides a secure channel over an unsecured network in a client-server architecture, connecting an SSH client application with an SSH server. Common applications include remote command-line login and remote command execution, but any network service can be secured with SSH. The protocol specification distinguishes between two major versions, referred to as SSH-1 and SSH-2.

The most visible application of the protocol is for access to shell accounts on Unix-like operating systems, but it sees some limited use on Windows as well. In 2015, Microsoft announced that they would include native support for SSH in a future release.

SSH was designed as a replacement for Telnet and for unsecured remote shell protocols such as the Berkeley rlogin, rsh, and rexec protocols. Those protocols send information, notably passwords, in plaintext, rendering them susceptible to interception and disclosure using packet analysis. The encryption used by SSH is intended to provide confidentiality and integrity of data over an unsecured network, such as the Internet.

---

**Note:** VyOS 1.1 supported login as user `root`. This has been removed due to tighter security in VyOS 1.2.

---

#### See also:

SSH *Key Based Authentication*

## Configuration

### **set service ssh port <port>**

Enabling SSH only requires you to specify the port <port> you want SSH to listen on. By default, SSH runs on port 22.

### **set service ssh listen-address <address>**

Specify IPv4/IPv6 listen address of SSH server. Multiple addresses can be defined.

### **set service ssh ciphers <cipher>**

Define allowed ciphers used for the SSH connection. A number of allowed ciphers can be specified, use multiple occurrences to allow multiple ciphers.

List of supported ciphers: 3des-cbc, aes128-cbc, aes192-cbc, aes256-cbc, aes128-ctr, aes192-ctr, aes256-ctr, arcfour128, arcfour256, arcfour, blowfish-cbc, cast128-cbc

### **set service ssh disable-password-authentication**

Disable password based authentication. Login via SSH keys only. This hardens security!

### **set service ssh disable-host-validation**

Disable the host validation through reverse DNS lookups - can speedup login time when reverse lookup is not possible.

### **set service ssh macs <mac>**

Specifies the available MAC algorithms. The MAC algorithm is used in protocol version 2 for data integrity protection. Multiple algorithms can be provided.

List of supported MACs: hmac-md5, hmac-md5-96, hmac-ripemd160, hmac-sha1, hmac-sha1-96, hmac-sha2-256, hmac-sha2-512, umac-64@openssh.com, umac-128@openssh.com, hmac-md5-etm@openssh.com, hmac-md5-96-etm@openssh.com, hmac-ripemd160-etm@openssh.com, hmac-sha1-etm@openssh.com, hmac-sha1-96-etm@openssh.com, hmac-sha2-256-etm@openssh.com, hmac-sha2-512-etm@openssh.com, umac-64-etm@openssh.com, umac-128-etm@openssh.com

### **set service ssh access-control <allow | deny> <group | user> <name>**

Add access-control directive to allow or deny users and groups. Directives are processed in the following order of precedence: deny-users, allow-users, deny-groups and allow-groups.

### **set service ssh client-keepalive-interval <interval>**

Specify timeout interval for keepalive message in seconds.

### **set service ssh key-exchange <kex>**

Specify allowed KEX (Key Exchange) algorithms.

List of supported algorithms: diffie-hellman-group1-sha1, diffie-hellman-group14-sha1, diffie-hellman-group14-sha256, diffie-hellman-group16-sha512, diffie-hellman-group18-sha512, diffie-hellman-group-exchange-sha1, diffie-hellman-group-exchange-sha256, ecdh-sha2-nistp256, ecdh-sha2-nistp384, ecdh-sha2-nistp521, curve25519-sha256 and curve25519-sha256@libssh.org.

### **set service ssh loglevel <quiet | fatal | error | info | verbose>**

Set the sshd log level. The default is info.

### **set service ssh vrf <name>**

Specify name of the VRF instance.

## Dynamic-protection

Protects host from brute-force attacks against SSH. Log messages are parsed, line-by-line, for recognized patterns. If an attack, such as several login failures within a few seconds, is detected, the offending IP is blocked. Offenders are unblocked after a set interval.

### set service ssh dynamic-protection

Allow ssh dynamic-protection.

### set service ssh dynamic-protection allow-from <address | prefix>

Whitelist of addresses and networks. Always allow inbound connections from these systems.

### set service ssh dynamic-protection block-time <sec>

Block source IP in seconds. Subsequent blocks increase by a factor of 1.5 The default is 120.

### set service ssh dynamic-protection detect-time <sec>

Remember source IP in seconds before reset their score. The default is 1800.

### set service ssh dynamic-protection threshold <sec>

Block source IP when their cumulative attack score exceeds threshold. The default is 30.

## Operation

### restart ssh

Restart the SSH daemon process, the current session is not affected, only the background daemon is restarted.

### generate ssh server-key

Re-generated the public/private keyportion which SSH uses to secure connections.

---

**Note:** Already learned known\_hosts files of clients need an update as the public key will change.

---

### generate ssh client-key /path/to/private\_key

Re-generated a known pub/private keyfile which can be used to connect to other services (e.g. RPKI cache).

Example:

```
vyos@vyos:~$ generate ssh client-key /config/auth/id_rsa_rpkgi
Generating public/private rsa key pair.
Your identification has been saved in /config/auth/id_rsa_rpkgi.
Your public key has been saved in /config/auth/id_rsa_rpkgi.pub.
The key fingerprint is:
SHA256:XGv2PpdOzVCzpmEzJZga8hTRq7B/ZYL3fXaiolFLS5Q vyos@vyos
The key's randomart image is:
+----[RSA 2048]-----+
|          oo          |
|          ..o         |
|         . o.o.. o.   |
|        o+ooo  o.o    |
|         Eo*  =.o     |
|         o = +.o*+    |
|         = o *.o.o    |
```

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```
|      o * +.0+.+|
|      =.. o=.00|
+-----[SHA256]-----+
```

Two new files /config/auth/id\_rsa\_rpki and /config/auth/id\_rsa\_rpki.pub will be created.

### **generate public-key-command user <username> path <location>**

Generate the configuration mode commands to add a public key for *Key Based Authentication*. <location> can be a local path or a URL pointing at a remote file.

Supported remote protocols are FTP, FTPS, HTTP, HTTPS, SCP/SFTP and TFTP.

Example:

```
alyssa@vyos:~$ generate public-key-command user alyssa path sftp://example.net/home/
↪alyssa/.ssh/id_rsa.pub
# To add this key as an embedded key, run the following commands:
configure
set system login user alyssa authentication public-keys alyssa@example.net key AAA..
↪.
set system login user alyssa authentication public-keys alyssa@example.net type ssh-
↪rsa
commit
save
exit

ben@vyos:~$ generate public-key-command user ben path ~/.ssh/id_rsa.pub
# To add this key as an embedded key, run the following commands:
configure
set system login user ben authentication public-keys ben@vyos key AAA...
set system login user ben authentication public-keys ben@vyos type ssh-dss
commit
save
exit
```

### **show log ssh**

Show SSH server log.

### **monitor log ssh**

Follow the SSH server log.

### **show log ssh dynamic-protection**

Show SSH dynamic-protection log.

### **monitor log ssh dynamic-protection**

Follow the SSH dynamic-protection log.

### **show ssh dynamic-protection**

Show list of IPs currently blocked by SSH dynamic-protection.

### **show ssh fingerprints**

Show SSH server public key fingerprints.

### **show ssh fingerprints ascii**

Show SSH server public key fingerprints, including a visual ASCII art representation.

### 8.10.21 TFTP Server

TFTP (Trivial File Transfer Protocol) is a simple, lockstep file transfer protocol which allows a client to get a file from or put a file onto a remote host. One of its primary uses is in the early stages of nodes booting from a local area network. TFTP has been used for this application because it is very simple to implement.

#### Configuration

```
set service tftp-server directory <directory>
```

Enable TFTP service by specifying the *<directory>* which will be used to serve files.

---

**Hint:** Choose your *directory* location carefully or you will loose the content on image upgrades. Any directory under */config* is save at this will be migrated.

---

```
set service tftp-server listen-address <address>
```

Configure the IPv4 or IPv6 listen address of the TFTP server. Multiple IPv4 and IPv6 addresses can be given. There will be one TFTP server instances listening on each IP address.

```
set service tftp-server listen-address <address> vrf <name>
```

Additional option to run TFTP server in the VRF context

---

**Note:** Configuring a *listen-address* is essential for the service to work.

---

```
set service tftp-server allow-upload
```

Optional, if you want to enable uploads, else TFTP server will act as a read-only server.

#### Example

Provide TFTP server listening on both IPv4 and IPv6 addresses `192.0.2.1` and `2001:db8::1` serving the content from `/config/tftpboot`. Uploading via TFTP to this server is disabled.

The resulting configuration will look like:

```
vyos@vyos# show service
tftp-server {
    directory /config/tftpboot
    listen-address 2001:db8::1
    listen-address 192.0.2.1
}
```

## Verification

Client:

```
vyos@RTR2:~$ tftp -p -l /config/config.boot -r backup 192.0.2.1
backup1          100% |*****|          723  0:00:00 ETA
```

Server:

```
vyos@RTR1# ls -ltr /config/tftpboot/
total 1
-rw-rw-rw- 1 tftp tftp  1995 May 19 16:02 backup
```

### 8.10.22 Webproxy

The proxy service in VyOS is based on [Squid](#) and some related modules.

[Squid](#) is a caching and forwarding HTTP web proxy. It has a wide variety of uses, including speeding up a web server by caching repeated requests, caching web, DNS and other computer network lookups for a group of people sharing network resources, and aiding security by filtering traffic. Although primarily used for HTTP and FTP, Squid includes limited support for several other protocols including Internet Gopher, SSL,[6] TLS and HTTPS. Squid does not support the SOCKS protocol.

URL Filtering is provided by [SquidGuard](#).

## Configuration

### **set service webproxy append-domain <domain>**

Use this command to specify a domain name to be appended to domain-names within URLs that do not include a dot . the domain is appended.

Example: to be appended is set to `vyos.net` and the URL received is `www/foo.html`, the system will use the generated, final URL of `www.vyos.net/foo.html`.

```
set service webproxy append-domain vyos.net
```

### **set service webproxy cache-size <size>**

The size of the on-disk Proxy cache is user configurable. The Proxies default cache-size is configured to 100 MB.

Unit of this command is MB.

```
set service webproxy cache-size 1024
```

### **set service webproxy default-port <port>**

Specify the port used on which the proxy service is listening for requests. This port is the default port used for the specified listen-address.

Default port is 3128.

```
set service webproxy default-port 8080
```

### **set service webproxy domain-block <domain>**

Used to block specific domains by the Proxy. Specifying “vyos.net” will block all access to vyos.net, and specifying “.xxx” will block all access to URLs having an URL ending on .xxx.

```
set service webproxy domain-block vyos.net
```

#### **set service webproxy domain-noncache <domain>**

Allow access to sites in a domain without retrieving them from the Proxy cache. Specifying “vyos.net” will allow access to vyos.net but the pages accessed will not be cached. It useful for working around problems with “If-Modified-Since” checking at certain sites.

```
set service webproxy domain-noncache vyos.net
```

#### **set service webproxy listen-address <address>**

Specifies proxy service listening address. The listen address is the IP address on which the web proxy service listens for client requests.

For security, the listen address should only be used on internal/trusted networks!

```
set service webproxy listen-address 192.0.2.1
```

#### **set service webproxy listen-address <address> disable-transparent**

Disables web proxy transparent mode at a listening address.

In transparent proxy mode, all traffic arriving on port 80 and destined for the Internet is automatically forwarded through the proxy. This allows immediate proxy forwarding without configuring client browsers.

Non-transparent proxying requires that the client browsers be configured with the proxy settings before requests are redirected. The advantage of this is that the client web browser can detect that a proxy is in use and can behave accordingly. In addition, web-transmitted malware can sometimes be blocked by a non-transparent web proxy, since they are not aware of the proxy settings.

```
set service webproxy listen-address 192.0.2.1 disable-transparent
```

#### **set service webproxy listen-address <address> port <port>**

Sets the listening port for a listening address. This overrides the default port of 3128 on the specific listen address.

```
set service webproxy listen-address 192.0.2.1 port 8080
```

#### **set service webproxy reply-block-mime <mime>**

Used to block a specific mime-type.

```
# block all PDFs
set service webproxy reply-block-mime application/pdf
```

#### **set service webproxy reply-body-max-size <size>**

Specifies the maximum size of a reply body in KB, used to limit the reply size.

All reply sizes are accepted by default.

```
set service webproxy reply-body-max-size 2048
```

#### **set service webproxy safe-ports <port>**

Add new port to Safe-ports acl. Ports included by default in Safe-ports acl: 21, 70, 80, 210, 280, 443, 488, 591, 777, 873, 1025-65535

**set service webproxy ssl-safe-ports <port>**

Add new port to SSL-ports acl. Ports included by default in SSL-ports acl: 443

## Authentication

The embedded Squid proxy can use LDAP to authenticate users against a company wide directory. The following configuration is an example of how to use Active Directory as authentication backend. Queries are done via LDAP.

**set service webproxy authentication children <number>**

Maximum number of authenticator processes to spawn. If you start too few Squid will have to wait for them to process a backlog of credential verifications, slowing it down. When password verifications are done via a (slow) network you are likely to need lots of authenticator processes.

This defaults to 5.

```
set service webproxy authentication children 10
```

**set service webproxy authentication credentials-ttl <time>**

Specifies how long squid assumes an externally validated username:password pair is valid for - in other words how often the helper program is called for that user. Set this low to force revalidation with short lived passwords.

Time is in minutes and defaults to 60.

```
set service webproxy authentication credentials-ttl 120
```

**set service webproxy authentication method <ldap>**

Proxy authentication method, currently only LDAP is supported.

```
set service webproxy authentication method ldap
```

**set service webproxy authentication realm**

Specifies the protection scope (aka realm name) which is to be reported to the client for the authentication scheme. It is commonly part of the text the user will see when prompted for their username and password.

```
set service webproxy authentication realm "VyOS proxy auth"
```

## LDAP

**set service webproxy authentication ldap base-dn <base-dn>**

Specifies the base DN under which the users are located.

```
set service webproxy authentication ldap base-dn DC=vyos,DC=net
```

**set service webproxy authentication ldap bind-dn <bind-dn>**

The DN and password to bind as while performing searches.

```
set service webproxy authentication ldap bind-dn CN=proxyuser,CN=Users,DC=vyos,
↪DC=net
```

**set service webproxy authentication ldap filter-expression <expr>**

LDAP search filter to locate the user DN. Required if the users are in a hierarchy below the base DN, or if the login name is not what builds the user specific part of the users DN.

The search filter can contain up to 15 occurrences of %s which will be replaced by the username, as in “uid=%s” for [RFC 2037](#) directories. For a detailed description of LDAP search filter syntax see [RFC 2254](#).

```
set service webproxy authentication ldap filter-expression (cn=%s)
```

**set service webproxy authentication ldap password <password>**

The DN and password to bind as while performing searches. As the password needs to be printed in plain text in your Squid configuration it is strongly recommended to use a account with minimal associated privileges. This to limit the damage in case someone could get hold of a copy of your Squid configuration file.

```
set service webproxy authentication ldap password vyos
```

**set service webproxy authentication ldap persistent-connection**

Use a persistent LDAP connection. Normally the LDAP connection is only open while validating a username to preserve resources at the LDAP server. This option causes the LDAP connection to be kept open, allowing it to be reused for further user validations.

Recommended for larger installations.

```
set service webproxy authentication ldap persistent-connection
```

**set service webproxy authentication ldap port <port>**

Specify an alternate TCP port where the ldap server is listening if other than the default LDAP port 389.

```
set service webproxy authentication ldap port 389
```

**set service webproxy authentication ldap server <server>**

Specify the LDAP server to connect to.

```
set service webproxy authentication ldap server ldap.vyos.net
```

**set service webproxy authentication ldap use-ssl**

Use TLS encryption.

```
set service webproxy authentication ldap use-ssl
```

**set service webproxy authentication ldap username-attribute <attr>**

Specifies the name of the DN attribute that contains the username/login. Combined with the base DN to construct the users DN when no search filter is specified (*filter-expression*).

Defaults to ‘uid’

---

**Note:** This can only be done if all your users are located directly under the same position in the LDAP tree and the login name is used for naming each user object. If your LDAP tree does not match these criterias or if you want to filter who are valid users then you need to use a search filter to search for your users DN (*filter-expression*).

---

```
set service webproxy authentication ldap username-attribute uid
```

```
set service webproxy authentication ldap version <2 | 3>
```

LDAP protocol version. Defaults to 3 if not specified.

```
set service webproxy authentication ldap version 2
```

## URL filtering

```
set service webproxy url-filtering disable
```

Disables web filtering without discarding configuration.

```
set service webproxy url-filtering disable
```

## Operation

### Filtering

### Update

If you want to use existing blacklists you have to create/download a database first. Otherwise you will not be able to commit the config changes.

#### update webproxy blacklists

Download/Update complete blacklist

```
vyos@vyos:~$ update webproxy blacklists
Warning: No url-filtering blacklist installed
Would you like to download a default blacklist? [confirm][y]
Connecting to ftp.univ-tlse1.fr (193.49.48.249:21)
blacklists.gz          100%
→ |*****
→ 17.0M  0:00:00 ETA
Uncompressing blacklist...
Checking permissions...
Skip link for [ads] -> [publicite]
Building DB for [adult/domains] - 2467177 entries
Building DB for [adult/urls] - 67798 entries
Skip link for [aggressive] -> [agressif]
Building DB for [agressif/domains] - 348 entries
Building DB for [agressif/urls] - 36 entries
Building DB for [arjel/domains] - 69 entries
...
Building DB for [webmail/domains] - 374 entries
Building DB for [webmail/urls] - 9 entries

The webproxy daemon must be restarted
Would you like to restart it now? [confirm][y]
```

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```
[ ok ] Restarting squid (via systemctl): squid.service.
vyos@vyos:~$
```

**update webproxy blacklists category <category>**

Download/Update partial blacklist.

Use tab completion to get a list of categories.

- To auto update the blacklist files

```
set service webproxy url-filtering squidguard auto-update update-hour 23
```

- To configure blocking add the following to the configuration

```
set service webproxy url-filtering squidguard block-category ads
```

```
set service webproxy url-filtering squidguard block-category malware
```

**Bypassing the webproxy**

Some services don't work correctly when being handled via a web proxy. So sometimes it is useful to bypass a transparent proxy:

- To bypass the proxy for every request that is directed to a specific destination:

```
set service webproxy whitelist destination-address 198.51.100.33
```

```
set service webproxy whitelist destination-address 192.0.2.0/24
```

- To bypass the proxy for every request that is coming from a specific source:

```
set service webproxy whitelist source-address 192.168.1.2
```

```
set service webproxy whitelist source-address 192.168.2.0/24
```

(This can be useful when a called service has many and/or often changing destination addresses - e.g. Netflix.)

**Examples**

```
vyos@vyos# show service webproxy
authentication {
  children 5
  credentials-ttl 60
  ldap {
    base-dn DC=example,DC=local
    bind-dn CN=proxyuser,CN=Users,DC=example,DC=local
    filter-expression (cn=%s)
    password Qwert1234
    server ldap.example.local
    username-attribute cn
  }
  method ldap
  realm "VyOS Webproxy"
}
cache-size 100
```

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```
default-port 3128
listen-address 192.168.188.103 {
    disable-transparent
}
```

## 8.11 System

### 8.11.1 Acceleration

In this command tree, all hardware acceleration options will be handled. At the moment only Intel® QAT is supported

#### Intel® QAT

##### **show system acceleration qat**

use this command to check if there is an Intel® QAT supported Processor in your system.

```
vyos@vyos:~$ show system acceleration qat
01:00.0 Co-processor [0b40]: Intel Corporation Atom Processor C3000 Series
↳QuickAssist Technology [8086:19e2] (rev 11)
```

if there is non device the command will show `No QAT device found`

##### **set system acceleration qat**

if there is a supported device, enable Intel® QAT

##### **show system acceleration qat status**

Check if the Intel® QAT device is up and ready to do the job.

```
vyos@vyos:~$ show system acceleration qat status
Checking status of all devices.
There is 1 QAT acceleration device(s) in the system:
qat_dev0 - type: c3xxx, inst_id: 0, node_id: 0, bsf: 0000:01:00.0, #accel: 3
↳#engines: 6 state: up
```

#### Operation Mode

##### **show system acceleration qat device <device> config**

Show the full config uploaded to the QAT device.

##### **show system acceleration qat device <device> flows**

Get an overview over the encryption counters.

##### **show system acceleration qat interrupts**

Show binded qat device interrupts to certain core.

## Example

Let's build a simple VPN between 2 Intel® QAT ready devices.

Side A:

```
set interfaces vti vti1 address '192.168.1.2/24'
set vpn ipsec authentication psk right id '10.10.10.2'
set vpn ipsec authentication psk right id '10.10.10.1'
set vpn ipsec authentication psk right secret 'Qwerty123'
set vpn ipsec esp-group MyESPGroup proposal 1 encryption 'aes256'
set vpn ipsec esp-group MyESPGroup proposal 1 hash 'sha256'
set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group '14'
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption 'aes256'
set vpn ipsec ike-group MyIKEGroup proposal 1 hash 'sha256'
set vpn ipsec interface 'eth0'
set vpn ipsec site-to-site peer right authentication local-id '10.10.10.2'
set vpn ipsec site-to-site peer right authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer right authentication remote-id '10.10.10.1'
set vpn ipsec site-to-site peer right connection-type 'initiate'
set vpn ipsec site-to-site peer right default-esp-group 'MyESPGroup'
set vpn ipsec site-to-site peer right ike-group 'MyIKEGroup'
set vpn ipsec site-to-site peer right local-address '10.10.10.2'
set vpn ipsec site-to-site peer right remote-address '10.10.10.1'
set vpn ipsec site-to-site peer right vti bind 'vti1'
```

Side B:

```
set interfaces vti vti1 address '192.168.1.1/24'
set vpn ipsec authentication psk left id '10.10.10.2'
set vpn ipsec authentication psk left id '10.10.10.1'
set vpn ipsec authentication psk left secret 'Qwerty123'
set vpn ipsec esp-group MyESPGroup proposal 1 encryption 'aes256'
set vpn ipsec esp-group MyESPGroup proposal 1 hash 'sha256'
set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group '14'
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption 'aes256'
set vpn ipsec ike-group MyIKEGroup proposal 1 hash 'sha256'
set vpn ipsec interface 'eth0'
set vpn ipsec site-to-site peer left authentication local-id '10.10.10.1'
set vpn ipsec site-to-site peer left authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer left authentication remote-id '10.10.10.2'
set vpn ipsec site-to-site peer left connection-type 'initiate'
set vpn ipsec site-to-site peer left default-esp-group 'MyESPGroup'
set vpn ipsec site-to-site peer left ike-group 'MyIKEGroup'
set vpn ipsec site-to-site peer left local-address '10.10.10.1'
set vpn ipsec site-to-site peer left remote-address '10.10.10.2'
set vpn ipsec site-to-site peer left vti bind 'vti1'
```

a bandwidth test over the VPN got these results:

```
Connecting to host 192.168.1.2, port 5201
[ 9] local 192.168.1.1 port 51344 connected to 192.168.1.2 port 5201
[ ID] Interval      Transfer      Bitrate      Retr  Cwnd
[ 9]  0.00-1.01    sec  32.3 MBytes  268 Mbits/sec  0    196 KBytes
```

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```

[ 9] 1.01-2.03 sec 32.5 MBytes 268 Mbits/sec 0 208 KBytes
[ 9] 2.03-3.03 sec 32.5 MBytes 271 Mbits/sec 0 208 KBytes
[ 9] 3.03-4.04 sec 32.5 MBytes 272 Mbits/sec 0 208 KBytes
[ 9] 4.04-5.00 sec 31.2 MBytes 272 Mbits/sec 0 208 KBytes
[ 9] 5.00-6.01 sec 32.5 MBytes 272 Mbits/sec 0 234 KBytes
[ 9] 6.01-7.04 sec 32.5 MBytes 265 Mbits/sec 0 234 KBytes
[ 9] 7.04-8.04 sec 32.5 MBytes 272 Mbits/sec 0 234 KBytes
[ 9] 8.04-9.04 sec 32.5 MBytes 273 Mbits/sec 0 336 KBytes
[ 9] 9.04-10.00 sec 31.2 MBytes 272 Mbits/sec 0 336 KBytes
-----
[ ID] Interval          Transfer      Bitrate      Retr
[ 9]  0.00-10.00 sec  322 MBytes  270 Mbits/sec  0          sender
[ 9]  0.00-10.00 sec  322 MBytes  270 Mbits/sec  0          receiver

```

with `set system acceleration qat` on both systems the bandwidth increases.

```

Connecting to host 192.168.1.2, port 5201
[ 9] local 192.168.1.1 port 51340 connected to 192.168.1.2 port 5201
[ ID] Interval          Transfer      Bitrate      Retr  Cwnd
[ 9]  0.00-1.00 sec  97.3 MBytes  817 Mbits/sec  0  1000 KBytes
[ 9]  1.00-2.00 sec  92.5 MBytes  776 Mbits/sec  0  1.07 MBytes
[ 9]  2.00-3.00 sec  92.5 MBytes  776 Mbits/sec  0  820 KBytes
[ 9]  3.00-4.00 sec  92.5 MBytes  776 Mbits/sec  0  899 KBytes
[ 9]  4.00-5.00 sec  91.2 MBytes  765 Mbits/sec  0  972 KBytes
[ 9]  5.00-6.00 sec  92.5 MBytes  776 Mbits/sec  0  1.02 MBytes
[ 9]  6.00-7.00 sec  92.5 MBytes  776 Mbits/sec  0  1.08 MBytes
[ 9]  7.00-8.00 sec  92.5 MBytes  776 Mbits/sec  0  1.14 MBytes
[ 9]  8.00-9.00 sec  91.2 MBytes  765 Mbits/sec  0  915 KBytes
[ 9]  9.00-10.00 sec  92.5 MBytes  776 Mbits/sec  0  1000 KBytes
-----
[ ID] Interval          Transfer      Bitrate      Retr
[ 9]  0.00-10.00 sec  927 MBytes  778 Mbits/sec  0          sender
[ 9]  0.00-10.01 sec  925 MBytes  775 Mbits/sec  0          receiver

```

### 8.11.2 Conntrack

VyOS can be configured to track connections using the connection tracking subsystem. Connection tracking becomes operational once either stateful firewall or NAT is configured.

#### Configure

**set system conntrack table-size <1-50000000>** default: 262144

The connection tracking table contains one entry for each connection being tracked by the system.

**set system conntrack expect-table-size <1-50000000>** default: 2048

The connection tracking expect table contains one entry for each expected connection related to an existing connection. These are generally used by “connection tracking helper” modules such as FTP. The default size of the expect table is 2048 entries.

**set system conntrack hash-size <1-50000000>** default: 32768

Set the size of the hash table. The connection tracking hash table makes searching the connection tracking table faster. The hash table uses “buckets” to record entries in the connection tracking table.

```
set system conntrack modules ftp
set system conntrack modules h323
set system conntrack modules nfs
set system conntrack modules pptp
set system conntrack modules sip
set system conntrack modules sqlnet
set system conntrack modules tftp
```

Configure the connection tracking protocol helper modules. All modules are enable by default.

Use *delete system conntrack modules* to deactivate all modules.  
Or, for example ftp, *delete system conntrack modules ftp*.

```
set system conntrack tcp half-open-connections <1-21474836> default: 512
```

Set the maximum number of TCP half-open connections.

```
set system conntrack tcp loose <enable | disable> default: enable
```

Policy to track previously established connections.

```
set system conntrack tcp max-retrans <1-2147483647> default: 3
```

Set the number of TCP maximum retransmit attempts.

## Contrack Timeouts

VyOS supports setting timeouts for connections according to the connection type. You can set timeout values for generic connections, for ICMP connections, UDP connections, or for TCP connections in a number of different states.

```
set system conntrack timeout icmp <1-21474836> default: 30
set system conntrack timeout other <1-21474836> default: 600
set system conntrack timeout tcp close <1-21474836> default: 10
set system conntrack timeout tcp close-wait <1-21474836> default: 60
set system conntrack timeout tcp established <1-21474836> default: 432000
set system conntrack timeout tcp fin-wait <1-21474836> default: 120
set system conntrack timeout tcp last-ack <1-21474836> default: 30
set system conntrack timeout tcp syn-recv <1-21474836> default: 60
set system conntrack timeout tcp syn-sent <1-21474836> default: 120
set system conntrack timeout tcp time-wait <1-21474836> default: 120
set system conntrack timeout udp other <1-21474836> default: 30
set system conntrack timeout udp stream <1-21474836> default: 180
```

Set the timeout in seconds for a protocol or state.

You can also define custom timeout values to apply to a specific subset of connections, based on a packet and flow selector. To do this, you need to create a rule defining the packet and flow selector.

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> description <test>
```

Set a rule description.

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> destination address <ip-address>
```

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> source address <ip-address>
```

Set a destination and/or source address. Accepted input for ipv4:

```
set system contrack timeout custom ipv4 rule <1-999999> [source | ↵
↵destination] address
Possible completions:
<x.x.x.x>           IPv4 address to match
<x.x.x.x/x>         IPv4 prefix to match
<x.x.x.x>-<x.x.x.x> IPv4 address range to match
!<x.x.x.x>          Match everything except the specified address
!<x.x.x.x/x>        Match everything except the specified prefix
!<x.x.x.x>-<x.x.x.x> Match everything except the specified range

set system contrack timeout custom ipv6 rule <1-999999> [source | ↵
↵destination] address
Possible completions:
<h:h:h:h:h:h>      IP address to match
<h:h:h:h:h:h/x>    Subnet to match
<h:h:h:h:h:h>-<h:h:h:h:h:h>
                    IP range to match
!<h:h:h:h:h:h>     Match everything except the specified address
!<h:h:h:h:h:h/x>   Match everything except the specified prefix
!<h:h:h:h:h:h>-<h:h:h:h:h:h>
                    Match everything except the specified range
```

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> destination port <value>
```

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> source port <value>
```

Set a destination and/or source port. Accepted input:

```
<port name>       Named port (any name in /etc/services, e.g., http)
<1-65535>         Numbered port
<start>-<end>     Numbered port range (e.g., 1001-1005)
```

Multiple destination ports can be specified as a comma-separated list. The whole list can also be “negated” using ‘!’. For example: `!22,telnet,http,123,1001-1005``

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp close <1-21474836>
```

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp close-wait <1-21474836>
```

```
set system contrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp established <1-21474836>
```

```

set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp fin-wait
<1-21474836>
set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp last-ack
<1-21474836>
set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp syn-recv
<1-21474836>
set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp syn-sent
<1-21474836>
set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol tcp time-wait
<1-21474836>
set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol udp replied
<1-21474836>
set system conntrack timeout custom [ipv4 | ipv6] rule <1-999999> protocol udp unreplied
<1-21474836>

```

Set the timeout in seconds for a protocol or state in a custom rule.

### Conntrack ignore rules

Customized ignore rules, based on a packet and flow selector.

```

set system conntrack ignore [ipv4 | ipv6] rule <1-999999> description <text>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> destination address
<ip-address>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> destination port <port>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> inbound-interface <interface>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> protocol <protocol>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> source address <ip-address>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> source port <port>
set system conntrack ignore [ipv4 | ipv6] rule <1-999999> tcp flags [not] <text>

```

Allowed values for TCP flags: ack, cwr, ecn, fin, psh, rst, syn and urg. Multiple values are supported, and for inverted selection use not, as shown in the example.

### Conntrack log

```

set system conntrack log icmp destroy
set system conntrack log icmp new
set system conntrack log icmp update
set system conntrack log other destroy
set system conntrack log other new
set system conntrack log other update
set system conntrack log tcp destroy

```

```
set system conntrack log tcp new
set system conntrack log tcp update close-wait
set system conntrack log tcp update established
set system conntrack log tcp update fin-wait
set system conntrack log tcp update last-ack
set system conntrack log tcp update syn-received
set system conntrack log tcp update time-wait
set system conntrack log udp destroy
set system conntrack log udp new
set system conntrack log udp update
```

Log the connection tracking events per protocol.

### 8.11.3 Serial Console

For the average user a serial console has no advantage over a console offered by a directly attached keyboard and screen. Serial consoles are much slower, taking up to a second to fill a 80 column by 24 line screen. Serial consoles generally only support non-proportional ASCII text, with limited support for languages other than English.

There are some scenarios where serial consoles are useful. System administration of remote computers is usually done using *SSH*, but there are times when access to the console is the only way to diagnose and correct software failures. Major upgrades to the installed distribution may also require console access.

```
set system console device <device>
```

Defines the specified device as a system console. Available console devices can be (see completion helper):

- `ttySN` - Serial device name
- `ttyUSBX` - USB Serial device name
- `hvc0` - Xen console

```
set system console device <device> speed <speed>
```

The speed (baudrate) of the console device. Supported values are:

- `1200` - 1200 bps
- `2400` - 2400 bps
- `4800` - 4800 bps
- `9600` - 9600 bps
- `19200` - 19,200 bps
- `38400` - 38,400 bps (default for Xen console)
- `57600` - 57,600 bps
- `115200` - 115,200 bps (default for serial console)

---

**Note:** If you use USB to serial converters for connecting to your VyOS appliance please note that most of them use software emulation without flow control. This means you should start with a common baud rate (most likely

9600 baud) as otherwise you probably can not connect to the device using high speed baud rates as your serial converter simply can not process this data rate.

---

### 8.11.4 Flow Accounting

VyOS supports flow-accounting for both IPv4 and IPv6 traffic. The system acts as a flow exporter, and you are free to use it with any compatible collector.

Flows can be exported via two different protocols: NetFlow (versions 5, 9 and 10/IPFIX) and sFlow. Additionally, you may save flows to an in-memory table internally in a router.

**Warning:** You need to disable the in-memory table in production environments! Using IMT (In-Memory Table) may lead to heavy CPU overloading and unstable flow-accounting behavior.

#### NetFlow / IPFIX

NetFlow is a feature that was introduced on Cisco routers around 1996 that provides the ability to collect IP network traffic as it enters or exits an interface. By analyzing the data provided by NetFlow, a network administrator can determine things such as the source and destination of traffic, class of service, and the causes of congestion. A typical flow monitoring setup (using NetFlow) consists of three main components:

- **exporter:** aggregates packets into flows and exports flow records towards one or more flow collectors
- **collector:** responsible for reception, storage and pre-processing of flow data received from a flow exporter
- **application:** analyzes received flow data in the context of intrusion detection or traffic profiling, for example

For connectionless protocols as like ICMP and UDP, a flow is considered complete once no more packets for this flow appear after configurable timeout.

NetFlow is usually enabled on a per-interface basis to limit load on the router components involved in NetFlow, or to limit the amount of NetFlow records exported.

#### Configuration

In order for flow accounting information to be collected and displayed for an interface, the interface must be configured for flow accounting.

```
set system flow-accounting interface <interface>
```

Configure and enable collection of flow information for the interface identified by *<interface>*.

You can configure multiple interfaces which would participate in flow accounting.

---

**Note:** Will be recorded only packets/flows on **incoming** direction in configured interfaces by default.

---

By default, recorded flows will be saved internally and can be listed with the CLI command. You may disable using the local in-memory table with the command:

```
set system flow-accounting disable-imt
```

If you need to sample also egress traffic, you may want to configure egress flow-accounting:

```
set system flow-accounting enable-egress
```

Internally, in flow-accounting processes exist a buffer for data exchanging between core process and plugins (each export target is a separated plugin). If you have high traffic levels or noted some problems with missed records or stopping exporting, you may try to increase a default buffer size (10 MiB) with the next command:

```
set system flow-accounting buffer-size <buffer size>
```

In case, if you need to catch some logs from flow-accounting daemon, you may configure logging facility:

```
set system flow-accounting syslog-facility <facility>
```

TBD

## Flow Export

In addition to displaying flow accounting information locally, one can also exported them to a collection server.

## NetFlow

```
set system flow-accounting netflow version <version>
```

There are multiple versions available for the NetFlow data. The *<version>* used in the exported flow data can be configured here. The following versions are supported:

- **5** - Most common version, but restricted to IPv4 flows only
- **9** - NetFlow version 9 (default)
- **10** - IPFIX (IP Flow Information Export) as per [RFC 3917](#)

```
set system flow-accounting netflow server <address>
```

Configure address of NetFlow collector. NetFlow server at *<address>* can be both listening on an IPv4 or IPv6 address.

```
set system flow-accounting netflow source-ip <address>
```

IPv4 or IPv6 source address of NetFlow packets

```
set system flow-accounting netflow engine-id <id>
```

NetFlow engine-id which will appear in NetFlow data. The range is 0 to 255.

```
set system flow-accounting netflow sampling-rate <rate>
```

Use this command to configure the sampling rate for flow accounting. The system samples one in every *<rate>* packets, where *<rate>* is the value configured for the sampling-rate option. The advantage of sampling every *n* packets, where *n > 1*, allows you to decrease the amount of processing resources required for flow accounting. The disadvantage of not sampling every packet is that the statistics produced are estimates of actual data flows.

Per default every packet is sampled (that is, the sampling rate is 1).

```
set system flow-accounting netflow timeout expiry-interval <interval>
```

Specifies the interval at which Netflow data will be sent to a collector. As per default, Netflow data will be sent every 60 seconds.

You may also additionally configure timeouts for different types of connections.

```
set system flow-accounting netflow max-flows <n>
```

If you want to change the maximum number of flows, which are tracking simultaneously, you may do this with this command (default 8192).

## sFlow

### set system flow-accounting sflow server <address>

Configure address of sFlow collector. sFlow server at <address> can be an IPv4 or IPv6 address. But you cannot export to both IPv4 and IPv6 collectors at the same time!

### set system flow-accounting sflow sampling-rate <rate>

Enable sampling of packets, which will be transmitted to sFlow collectors.

### set system flow-accounting sflow agent-address <address>

Configure a sFlow agent address. It can be IPv4 or IPv6 address, but you must set the same protocol, which is used for sFlow collector addresses. By default, using router-id from BGP or OSPF protocol, or the primary IP address from the first interface.

## Example:

NetFlow v5 example:

```
set system flow-accounting netflow engine-id 100
set system flow-accounting netflow version 5
set system flow-accounting netflow server 192.168.2.10 port 2055
```

## Operation

Once flow accounting is configured on an interfaces it provides the ability to display captured network traffic information for all configured interfaces.

### show flow-accounting interface <interface>

Show flow accounting information for given <interface>.

```
vyos@vyos:~$ show flow-accounting interface eth0
```

IN_IFACE	SRC_MAC	DST_MAC	SRC_IP	DST_IP			
→	SRC_PORT	DST_PORT	PROTOCOL	TOS	PACKETS	FLOWS	BYTES
eth0	00:53:01:a8:28:ac	ff:ff:ff:ff:ff:ff	192.0.2.2	255.255.			
→255.255	5678	5678	udp	0	1	1	178
eth0	00:53:01:b2:2f:34	33:33:ff:00:00:00	fe80::253:01ff:feb2:2f34				
→ff02::1:ff00:0	0	0	ipv6-icmp	0	2	1	
→ 144							
eth0	00:53:01:1a:b4:53	33:33:ff:00:00:00	fe80::253:01ff:fe1a:b453				
→ff02::1:ff00:0	0	0	ipv6-icmp	0	1	1	
→ 72							
eth0	00:53:01:b2:22:48	00:53:02:58:a2:92	192.0.2.100	192.0.2.			
→14	40152	22	tcp	16	39	1	2064
eth0	00:53:01:c8:33:af	ff:ff:ff:ff:ff:ff	192.0.2.3	255.255.			
→255.255	5678	5678	udp	0	1	1	154
eth0	00:53:01:b2:22:48	00:53:02:58:a2:92	192.0.2.100	192.0.2.			
→14	40006	22	tcp	16	146	1	9444
eth0	00:53:01:b2:22:48	00:53:02:58:a2:92	192.0.2.100	192.0.2.			
→14	0	0	icmp	192	27	1	4455

**show flow-accounting interface <interface> host <address>**

Show flow accounting information for given <interface> for a specific host only.

```
vyos@vyos:~$ show flow-accounting interface eth0 host 192.0.2.14
IN_IFACE  SRC_MAC          DST_MAC          SRC_IP          DST_IP          SRC_
↪PORT    DST_PORT  PROTOCOL        TOS    PACKETS    FLOWS    BYTES          SRC_
-----
↪-
eth0      00:53:01:b2:22:48  00:53:02:58:a2:92  192.0.2.100  192.0.2.14    ↪
↪40006   22  tcp            16      197        2    12940
eth0      00:53:01:b2:22:48  00:53:02:58:a2:92  192.0.2.100  192.0.2.14    ↪
↪40152   22  tcp            16       94         1    4924
eth0      00:53:01:b2:22:48  00:53:02:58:a2:92  192.0.2.100  192.0.2.14    ↪
↪0        0  icmp          192     36         1    5877
```

### 8.11.5 FRR

VyOS uses [FRRouting](<https://frrouting.org/>) as the control plane for dynamic and static routing. The routing daemon behavior can be adjusted during runtime, but require either a restart of the routing daemon, or a reboot of the system.

**set system frr bmp**

Enable BMP (BGP Monitoring Protocol) support

**set system frr descriptors <numer>**

This allows the operator to control the number of open file descriptors each daemon is allowed to start with. If the operator plans to run bgp with several thousands of peers then this is where we would modify FRR to allow this to happen.

**set system frr irdp**

Enable ICMP Router Discovery Protocol support

**set system frr snmp <daemon>**

Enable SNMP support for an individual routing daemon.

Supported daemons:

- bgpd
- isisd
- ldpd
- ospf6d
- ospfd
- ripd
- zebra

## 8.11.6 Host Information

This section describes the system's host information and how to configure them, it covers the following topics:

- Host name
- Domain
- IP address
- Aliases

### Hostname

A hostname is the label (name) assigned to a network device (a host) on a network and is used to distinguish one device from another on specific networks or over the internet. On the other hand this will be the name which appears on the command line prompt.

```
set system host-name <hostname>
```

The hostname can be up to 63 characters. A hostname must start and end with a letter or digit, and have as interior characters only letters, digits, or a hyphen.

The default hostname used is *vyos*.

### Domain Name

A domain name is the label (name) assigned to a computer network and is thus unique. VyOS appends the domain name as a suffix to any unqualified name. For example, if you set the domain name *example.com*, and you would ping the unqualified name of *crux*, then VyOS qualifies the name to *crux.example.com*.

```
set system domain-name <domain>
```

Configure system domain name. A domain name must start and end with a letter or digit, and have as interior characters only letters, digits, or a hyphen.

### Static Hostname Mapping

How an IP address is assigned to an interface in *Ethernet*. This section shows how to statically map an IP address to a hostname for local (meaning on this VyOS instance) name resolution. This is the VyOS equivalent to */etc/hosts* file entries.

---

**Note:** Do *not* manually edit */etc/hosts*. This file will automatically be regenerated on boot based on the settings in this section, which means you'll lose all your manual edits. Instead, configure static host mappings as follows.

---

```
set system static-host-mapping host-name <hostname> inet <address>
```

Create a static hostname mapping which will always resolve the name *<hostname>* to IP address *<address>*.

```
set system static-host-mapping host-name <hostname> alias <alias>
```

Create named *<alias>* for the configured static mapping for *<hostname>*. Thus the address configured as `set system static-host-mapping host-name <hostname> inet <address>` can be reached via multiple names.

Multiple aliases can be specified per host-name.

## 8.11.7 IP

### System configuration commands

#### **set system ip disable-forwarding**

Use this command to disable IPv4 forwarding on all interfaces.

#### **set system ip disable-directed-broadcast**

Use this command to disable IPv4 directed broadcast forwarding on all interfaces.

If set, IPv4 directed broadcast forwarding will be completely disabled regardless of whether per-interface directed broadcast forwarding is enabled or not.

#### **set system ip arp table-size <number>**

Use this command to define the maximum number of entries to keep in the ARP cache (1024, 2048, 4096, 8192, 16384, 32768).

#### **set system ip multipath layer4-hashing**

Use this command to use Layer 4 information for IPv4 ECMP hashing.

### Zebra/Kernel route filtering

Zebra supports prefix-lists and Route Maps to match routes received from other FRR components. The permit/deny facilities provided by these commands can be used to filter which routes zebra will install in the kernel.

#### **set system ip protocol <protocol> route-map <route-map>**

Apply a route-map filter to routes for the specified protocol. The following protocols can be used: any, babel, bgp, connected, eigrp, isis, kernel, ospf, rip, static, table

---

**Note:** If you choose any as the option that will cause all protocols that are sending routes to zebra.

---

### NextHop Tracking

NextHop tracking resolve nexthops via the default route by default. This is enabled by default for a traditional profile of FRR which we use. It and can be disabled if you do not want to e.g. allow BGP to peer across the default route.

#### **set system ip nht no-resolve-via-default**

Do not allow IPv4 nextHop tracking to resolve via the default route. This parameter is configured per-VRF, so the command is also available in the VRF subnode.

## Operational commands

### show commands

See below the different parameters available for the IPv4 **show** command:

```
vyos@vyos:~$ show ip
Possible completions:
  access-list      Show all IP access-lists
  as-path-access-list
                    Show all as-path-access-lists
  bgp              Show Border Gateway Protocol (BGP) information
  community-list
                    Show IP community-lists
  extcommunity-list
                    Show extended IP community-lists
  forwarding      Show IP forwarding status
  groups          Show IP multicast group membership
  igmp            Show IGMP (Internet Group Management Protocol) information
  large-community-list
                    Show IP large-community-lists
  multicast       Show IP multicast
  ospf            Show IPv4 Open Shortest Path First (OSPF) routing information
  pim             Show PIM (Protocol Independent Multicast) information
  ports           Show IP ports in use by various system services
  prefix-list     Show all IP prefix-lists
  protocol        Show IP route-maps per protocol
  rip             Show Routing Information Protocol (RIP) information
  route          Show IP routes
```

### reset commands

And the different IPv4 **reset** commands available:

```
vyos@vyos:~$ reset ip
Possible completions:
  arp             Reset Address Resolution Protocol (ARP) cache
  bgp            Clear Border Gateway Protocol (BGP) statistics or status
  igmp           IGMP clear commands
  multicast      IP multicast routing table
  route         Reset IP route
```

## 8.11.8 IPv6

### System configuration commands

#### **set system ipv6 disable-forwarding**

Use this command to disable IPv6 forwarding on all interfaces.

#### **set system ipv6 neighbor table-size <number>**

Use this command to define the maximum number of entries to keep in the Neighbor cache (1024, 2048, 4096, 8192, 16384, 32768).

#### **set system ipv6 strict-dad**

Use this command to disable IPv6 operation on interface when Duplicate Address Detection fails on Link-Local address.

#### **set system ipv6 multipath layer4-hashing**

Use this command to user Layer 4 information for ECMP hashing.

### Zebra/Kernel route filtering

Zebra supports prefix-lists and Route Mapss to match routes received from other FRR components. The permit/deny facilities provided by these commands can be used to filter which routes zebra will install in the kernel.

#### **set system ipv6 protocol <protocol> route-map <route-map>**

Apply a route-map filter to routes for the specified protocol. The following protocols can be used: any, babel, bgp, connected, isis, kernel, ospfv3, ripng, static, table

---

**Note:** If you choose any as the option that will cause all protocols that are sending routes to zebra.

---

### NextHop Tracking

NextHop tracking resolve nexthops via the default route by default. This is enabled by default for a traditional profile of FRR which we use. It can be disabled if you do not want to e.g. allow BGP to peer across the default route.

#### **set system ipv6 nht no-resolve-via-default**

Do not allow IPv6 nextHop tracking to resolve via the default route. This parameter is configured per-VRF, so the command is also available in the VRF subnode.

### Operational commands

#### Show commands

##### **show ipv6 neighbors**

Use this command to show IPv6 Neighbor Discovery Protocol information.

##### **show ipv6 groups**

Use this command to show IPv6 multicast group membership.

##### **show ipv6 forwarding**

Use this command to show IPv6 forwarding status.

### show ipv6 route

Use this command to show IPv6 routes.

Check the many parameters available for the *show ipv6 route* command:

```
vyos@vyos:~$ show ipv6 route
Possible completions:
<Enter>          Execute the current command
<X:X::X:X>       Show IPv6 routes of given address or prefix
<X:X::X:X/M>
bgp              Show IPv6 BGP routes
cache           Show kernel IPv6 route cache
connected       Show IPv6 connected routes
forward         Show kernel IPv6 route table
isis           Show IPv6 ISIS routes
kernel         Show IPv6 kernel routes
ospfv3         Show IPv6 OSPF6 routes
ripng          Show IPv6 RIPNG routes
static         Show IPv6 static routes
summary        Show IPv6 routes summary
table          Show IP routes in policy table
tag            Show only routes with tag
vrf            Show IPv6 routes in VRF
```

### show ipv6 prefix-list

Use this command to show all IPv6 prefix lists

There are different parameters for getting prefix-list information:

```
vyos@vyos:~$ show ipv6 prefix-list
Possible completions:
<Enter>          Execute the current command
<WORD>          Show specified IPv6 prefix-list
detail          Show detail of IPv6 prefix-lists
summary         Show summary of IPv6 prefix-lists
```

### show ipv6 access-list

Use this command to show all IPv6 access lists

You can also specify which IPv6 access-list should be shown:

```
vyos@vyos:~$ show ipv6 access-list
Possible completions:
<Enter>          Execute the current command
<text>          Show specified IPv6 access-list
```

### show ipv6 ospfv3

Use this command to get information about OSPFv3.

You can get more specific OSPFv3 information by using the parameters shown below:

```
vyos@vyos:~$ show ipv6 ospfv3
Possible completions:
<Enter>      Execute the current command
area         Show OSPFv3 spf-tree information
border-routers
             Show OSPFv3 border-router (ABR and ASBR) information
database     Show OSPFv3 Link state database information
interface    Show OSPFv3 interface information
linkstate    Show OSPFv3 linkstate routing information
neighbor     Show OSPFv3 neighbor information
redistribute Show OSPFv3 redistribute External information
route        Show OSPFv3 routing table information
```

**show ipv6 ripng**

Use this command to get information about the RIPNG protocol

**show ipv6 ripng status**

Use this command to show the status of the RIPNG protocol

**Reset commands****reset bgp ipv6 <address>**

Use this command to clear Border Gateway Protocol statistics or status.

**reset ipv6 neighbors <address | interface>**

Use this command to reset IPv6 Neighbor Discovery Protocol cache for an address or interface.

**reset ipv6 route cache**

Use this command to flush the kernel IPv6 route cache. An address can be added to flush it only for that route.

**8.11.9 System Display (LCD)**

The system LCD LCD (Liquid-crystal display) option is for users running VyOS on hardware that features an LCD display. This is typically a small display built in an 19 inch rack-mountable appliance. Those displays are used to show runtime data.

To configure your LCD display you must first identify the used hardware, and connectivity of the display to your system. This can be any serial port (*ttySxx*) or serial via USB or even old parallel port interfaces.

**Configuration****set system lcd device <device>**

This is the name of the physical interface used to connect to your LCD display. Tab completion is supported and it will list you all available serial interface.

For serial via USB port information please refer to: [USB](#).

**set system lcd model <model>**

This is the LCD model used in your system.

At the time of this writing the following displays are supported:

- Crystalfontz CFA-533
- Crystalfontz CFA-631
- Crystalfontz CFA-633
- Crystalfontz CFA-635

---

**Note:** We can't support all displays from the beginning. If your display type is missing, please create a feature request via [Phabricator](#).

---

### 8.11.10 Login/User Management

The default VyOS user account (*vyos*), as well as newly created user accounts, have all capabilities to configure the system. All accounts have sudo capabilities and therefore can operate as root on the system.

Both local administered and remote administered RADIUS (Remote Authentication Dial-In User Service) accounts are supported.

#### Local

**set system login user <name> full-name “<string>”**

Create new system user with username *<name>* and real-name specified by *<string>*.

**set system login user <name> authentication plaintext-password <password>**

Specify the plaintext password user by user *<name>* on this system. The plaintext password will be automatically transferred into a secure hashed password and not saved anywhere in plaintext.

**set system login user <name> authentication encrypted-password <password>**

Setup encrypted password for given username. This is useful for transferring a hashed password from system to system.

**set system login user <name> disable**

Disable (lock) account. User will not be able to log in.

#### Key Based Authentication

It is highly recommended to use SSH key authentication. By default there is only one user (*vyos*), and you can assign any number of keys to that user. You can generate a ssh key with the `ssh-keygen` command on your local machine, which will (by default) save it as `~/.ssh/id_rsa.pub`.

Every SSH key comes in three parts:

```
ssh-rsa AAAAB3NzaC1yc2EAAAABAA...VBD5lKwEWB username@host.example.com
```

Only the type (`ssh-rsa`) and the key (`AAAAB3N...`) are used. Note that the key will usually be several hundred characters long, and you will need to copy and paste it. Some terminal emulators may accidentally split this over several lines. Be attentive when you paste it that it only pastes as a single line. The third part is simply an identifier, and is for your own reference.

**See also:**

SSH *Operation*

```
set system login user <username> authentication public-keys <identifier> key <key>
```

Assign the SSH public key portion *<key>* identified by per-key *<identifier>* to the local user *<username>*.

```
set system login user <username> authentication public-keys <identifier> type <type>
```

Every SSH public key portion referenced by *<identifier>* requires the configuration of the *<type>* of public-key used. This type can be any of:

- ecdsa-sha2-nistp256
- ecdsa-sha2-nistp384
- ecdsa-sha2-nistp521
- ssh-dss
- ssh-ed25519
- ssh-rsa

---

**Note:** You can assign multiple keys to the same user by using a unique identifier per SSH key.

---

```
set system login user <username> authentication public-keys <identifier> options <options>
```

Set the options for this public key. See the `ssh authorized_keys` man page for details of what you can specify here. To place a " character in the options field, use `&quot;`, for example `from=&quot;10.0.0.0/24&quot;`; to restrict where the user may connect from when using this key.

## MFA/2FA authentication using OTP (one time passwords)

It is possible to enhance authentication security by using the 2FA (Two-factor authentication)/MFA (Multi-factor authentication) feature together with OTP (One-Time-Pad) on VyOS. 2FA/MFA is configured independently per each user. If an OTP key is configured for a user, 2FA/MFA is automatically enabled for that particular user. If a user does not have an OTP key configured, there is no 2FA/MFA check for that user.

```
set system login user <username> authentication otp key <key>
```

Enable OTP 2FA for user *username* with default settings, using the BASE32 encoded 2FA/MFA key specified by *<key>*.

## Optional/default settings

```
set system login user <username> authentication otp rate-limit <limit> default: 3
```

Limit logins to *<limit>* per every *rate-time* seconds. Rate limit must be between 1 and 10 attempts.

```
set system login user <username> authentication otp rate-time <seconds> default: 30
```

Limit logins to *rate-limit* attempts per every *<seconds>*. Rate time must be between 15 and 600 seconds.

```
set system login user <username> authentication otp window-size <size> default: 3
```

Set window of concurrently valid codes.

By default, a new token is generated every 30 seconds by the mobile application. In order to compensate for possible time-skew between the client and the server, an extra token before and after the current time is allowed. This allows for a time skew of up to 30 seconds between authentication server and client.

For example, if problems with poor time synchronization are experienced, the window can be increased from its default size of 3 permitted codes (one previous code, the current code, the next code) to 17 permitted codes (the 8 previous codes, the current code, and the 8 next codes). This will permit for a time skew of up to 4 minutes between client and server.

The window size must be between 1 and 21.

## OTP-key generation

The following command can be used to generate the OTP key as well as the CLI commands to configure them:

```
generate system login username <username> otp-key hotp-time rate-limit <1-10> rate-time <15-600> window-size <1-21>
```

An example of key generation:

```
vyos@vyos:~$ generate system login username opttester otp-key hotp-time rate-limit 2
↳rate-time 20 window-size 5
# You can share it with the user, he just needs to scan the QR in his OTP app
# username:  opttester
# OTP KEY:   J5A64ERPMGJOZXY6FMHHLKXKANNI6TCY
# OTP URL:  otpauth://totp/opttester@vyos?secret=J5A64ERPMGJOZXY6FMHHLKXKANNI6TCY&
↳digits=6&period=30
```

```
# To add this OTP key to configuration, run the following commands:
set system login user opttester authentication otp key 'J5A64ERPMGJOZXY6FMHHLKXKANNI6TCY'
set system login user opttester authentication otp rate-limit '2'
set system login user opttester authentication otp rate-time '20'
set system login user opttester authentication otp window-size '5'
```

## Display OTP key for user

To display the configured OTP user key, use the command:

```
sh system login authentication user <username> otp <full|key-b32|qrcode|uri>
```

An example:

```
vyos@vyos:~$ sh system login authentication user opttester otp full
# You can share it with the user, he just needs to scan the QR in his OTP app
# username: opttester
# OTP KEY: J5A64ERPMGJOZXY6FMHHLKXKANNI6TCY
# OTP URL: otpauth://totp/opttester@vyos?secret=J5A64ERPMGJOZXY6FMHHLKXKANNI6TCY&
↳digits=6&period=30
```

# To add this OTP key to configuration, run the following commands:

```
set system login user opttester authentication otp key 'J5A64ERPMGJOZXY6FMHHLKXKANNI6TCY'
set system login user opttester authentication otp rate-limit '2'
set system login user opttester authentication otp rate-time '20'
set system login user opttester authentication otp window-size '5'
```

## RADIUS

In large deployments it is not reasonable to configure each user individually on every system. VyOS supports using RADIUS servers as backend for user authentication.

### Configuration

**set system login radius server <address> key <secret>**

Specify the IP <address> of the RADIUS server user with the pre-shared-secret given in <secret>.

Multiple servers can be specified.

**set system login radius server <address> port <port>**

Configure the discrete port under which the RADIUS server can be reached.

This defaults to 1812.

**set system login radius server <address> disable**

Temporary disable this RADIUS server. It won't be queried.

**set system login radius server <address> timeout <timeout>**

Setup the <timeout> in seconds when querying the RADIUS server.

**set system login radius source-address <address>**

RADIUS servers could be hardened by only allowing certain IP addresses to connect. As of this the source address of each RADIUS query can be configured.

If unset, incoming connections to the RADIUS server will use the nearest interface address pointing towards the server - making it error prone on e.g. OSPF networks when a link fails and a backup route is taken.

**set system login radius vrf <name>**

Source all connections to the RADIUS servers from given VRF <name>.

### Configuration Example

```
set system login radius server 192.168.0.2 key 'test-vyos'
set system login radius server 192.168.0.2 port '1812'
set system login radius server 192.168.0.2 timeout '5'
set system login radius source-address '192.168.0.1'
```

If there is no communication between VyOS and RADIUS server users can authenticate from local user accounts. During authentication from the local accounts users can observe some timeouts. Timeout in seconds depends on the configured timeout option.

---

**Hint:** If you want to have admin users to authenticate via RADIUS it is essential to sent the Cisco-AV-Pair shell:priv-lvl=15 attribute. Without the attribute you will only get regular, non privileged, system users.

---

## TACACS+

In addition to RADIUS, TACACS (Terminal Access Controller Access Control System) can also be found in large deployments.

TACACS is defined in [RFC 8907](#).

### Configuration

```
set system login tacacs server <address> key <secret>
```

Specify the IP *<address>* of the TACACS server user with the pre-shared-secret given in *<secret>*.

Multiple servers can be specified.

```
set system login tacacs server <address> port <port>
```

Configure the discrete port under which the TACACS server can be reached.

This defaults to 49.

```
set system login tacacs server <address> disable
```

Temporary disable this TACACS server. It won't be queried.

```
set system login tacacs server <address> timeout <timeout>
```

Setup the *<timeout>* in seconds when querying the TACACS server.

```
set system login tacacs source-address <address>
```

TACACS servers could be hardened by only allowing certain IP addresses to connect. As of this the source address of each TACACS query can be configured.

If unset, incoming connections to the TACACS server will use the nearest interface address pointing towards the server - making it error prone on e.g. OSPF networks when a link fails and a backup route is taken.

```
set system login tacacs vrf <name>
```

Source all connections to the TACACS servers from given VRF *<name>*.

### Configuration Example

```
set system login tacacs server 192.168.0.2 key 'test-vyos'  
set system login tacacs server 192.168.0.2 port '49'  
set system login tacacs source-address '192.168.0.1'
```

If there is no communication between VyOS and TACACS server users can authenticate from local user accounts.

## Login Banner

You are able to set post-login or pre-login banner messages to display certain information for this system.

```
set system login banner pre-login <message>
```

Configure *<message>* which is shown during SSH connect and before a user is logged in.

```
set system login banner post-login <message>
```

Configure *<message>* which is shown after user has logged in to the system.

---

**Note:** To create a new line in your login message you need to escape the new line character by using `\\n`.

---

## Limits

Login limits

```
set system login max-login-session <number>
```

Set a limit on the maximum number of concurrent logged-in users on the system.

This option must be used with `timeout` option.

```
set system login timeout <timeout>
```

Configure session timeout after which the user will be logged out.

## Example

In the following example, both *User1* and *User2* will be able to SSH into VyOS as user `vyos` using their very own keys. *User1* is restricted to only be able to connect from a single IP address. In addition if password base login is wanted for the `vyos` user a 2FA/MFA keycode is required in addition to the password.

```
set system login user vyos authentication public-keys 'User1' key "AAAAB3Nz...KwEW"
set system login user vyos authentication public-keys 'User1' type ssh-rsa
set system login user vyos authentication public-keys 'User1' options "from=&quot;192.
↪168.0.100&quot;"

set system login user vyos authentication public-keys 'User2' key "AAAAQ39x...fbV3"
set system login user vyos authentication public-keys 'User2' type ssh-rsa

set system login user vyos authentication otp key OHZ30J7U2N25BK4G7SOFFJTZDTCFUUE2
set system login user vyos authentication plaintext-password vyos
```

## TACACS Example

We use a container providing the TACACS server in this example.

Load the container image in op-mode.

```
add container image lfkeitel/tacacs_plus:latest

set container network tac-test prefix '100.64.0.0/24'

set container name tacacs1 image 'lfkeitel/tacacs_plus:latest'
set container name tacacs1 network tac-test address '100.64.0.11'

set container name tacacs2 image 'lfkeitel/tacacs_plus:latest'
set container name tacacs2 network tac-test address '100.64.0.12'

set system login tacacs server 100.64.0.11 key 'tac_plus_key'
set system login tacacs server 100.64.0.12 key 'tac_plus_key'

commit
```

You can now SSH into your system using admin/admin as a default user supplied from the lfkeitel/tacacs\_plus:latest container.

### 8.11.11 System DNS

**Warning:** If you are configuring a VRF for management purposes, there is currently no way to force system DNS traffic via a specific VRF.

This section describes configuring DNS on the system, namely:

- DNS name servers
- Domain search order

#### DNS name servers

**set system name-server <address>**

Use this command to specify a DNS server for the system to be used for DNS lookups. More than one DNS server can be added, configuring one at a time. Both IPv4 and IPv6 addresses are supported.

## Example

In this example, some *OpenNIC* servers are used, two IPv4 addresses and two IPv6 addresses:

```
set system name-server 176.9.37.132
set system name-server 195.10.195.195
set system name-server 2a01:4f8:161:3441::1
set system name-server 2a00:f826:8:2::195
```

## Domain search order

In order for the system to use and complete unqualified host names, a list can be defined which will be used for domain searches.

**set system domain-search <domain>**

Use this command to define domains, one at a time, so that the system uses them to complete unqualified host names. Maximum: 6 entries.

---

**Note:** Domain names can include letters, numbers, hyphens and periods with a maximum length of 253 characters.

---

## Example

The system is configured to attempt domain completion in the following order: vyos.io (first), vyos.net (second) and vyos.network (last):

```
set system domain-search vyos.io
set system domain-search vyos.net
set system domain-search vyos.network
```

## 8.11.12 Option

This chapter describe the possibilities of advanced system behavior.

### General

**set system option ctrl-alt-delete <ignore | reboot | poweroff>**

Action which will be run once the ctrl-alt-del keystroke is received.

**set system option reboot-on-panic**

Automatically reboot system on kernel panic after 60 seconds.

**set system option startup-beep**

Play an audible beep to the system speaker when system is ready.

**set system option root-partition-auto-resize**

Enables the root partition auto-extension and resizes to the maximum available space on system boot.

## Kernel

### **set system option kernel disable-mitigations**

Disable all optional CPU mitigations. This improves system performance, but it may also expose users to several CPU vulnerabilities.

This will add the following option to the Kernel commandline:

- `mitigations=off`

---

**Note:** Setting will only become active with the next reboot!

---

### **set system option kernel disable-power-saving**

Disable CPU power saving mechanisms also known as C states.

This will add the following two options to the Kernel commandline:

- `intel_idle.max_cstate=0` Disable `intel_idle` and fall back on `acpi_idle`
- `processor.max_cstate=1` Limit processor to maximum C-state 1

---

**Note:** Setting will only become active with the next reboot!

---

## HTTP client

### **set system option http-client source-address <address>**

Several commands utilize cURL to initiate transfers. Configure the local source IPv4/IPv6 address used for all cURL operations.

### **set system option http-client source-interface <interface>**

Several commands utilize curl to initiate transfers. Configure the local source interface used for all CURL operations.

---

**Note:** *source-address* and *source-interface* can not be used at the same time.

---

## SSH client

### **set system option ssh-client source-address <address>**

Use the specified address on the local machine as the source address of the connection. Only useful on systems with more than one address.

### **set system option ssh-client source-interface <interface>**

Use the address of the specified interface on the local machine as the source address of the connection.

## Keyboard Layout

When starting a VyOS live system (the installation CD) the configured keyboard layout defaults to US. As this might not suite everyones use case you can adjust the used keyboard layout on the system console.

```
set system option keyboard-layout <us | fr | de | fi | no | dk>
```

Change system keyboard layout to given language.

Defaults to us.

---

**Note:** Changing the keymap only has an effect on the system console, using SSH or Serial remote access to the device is not affected as the keyboard layout here corresponds to your access system.

---

## Performance

As more and more routers run on Hypervisors, expecially with a NOS (Network Operating System) as VyOS, it makes fewer and fewer sense to use static resource bindings like `smp-affinity` as present in VyOS 1.2 and earlier to pin certain interrupt handlers to specific CPUs.

We now utilize *tuned* for dynamic resource balancing based on profiles.

**See also:**

<https://access.redhat.com/sites/default/files/attachments/201501-perf-brief-low-latency-tuning-rhel7-v2.1.pdf>

```
set system option performance < throughput | latency >
```

Configure one of the predefined system performance profiles.

- **throughput:** A server profile focused on improving network throughput. This profile favors performance over power savings by setting `intel_pstate` and `max_perf_pct=100` and increasing kernel network buffer sizes.

It enables transparent huge pages, and uses `cpupower` to set the performance `cpufreq` governor. It also sets `kernel.sched_min_granularity_ns` to 10 us, `kernel.sched_wakeup_granularity_ns` to 15 uss, and `vm.dirty_ratio` to 40%.

- **latency:** A server profile focused on lowering network latency. This profile favors performance over power savings by setting `intel_pstate` and `min_perf_pct=100`.

It disables transparent huge pages, and automatic NUMA balancing. It also uses `cpupower` to set the performance `cpufreq` governor, and requests a `cpu_dma_latency` value of 1. It also sets `busy_read` and `busy_poll` times to 50 us, and `tcp_fastopen` to 3.

### 8.11.13 System Proxy

Some IT environments require the use of a proxy to connect to the Internet. Without this configuration VyOS updates could not be installed directly by using the `add system image` command (*Update VyOS*).

```
set system proxy url <url>
```

Set proxy for all connections initiated by VyOS, including HTTP, HTTPS, and FTP (anonymous ftp).

```
set system proxy port <port>
```

Configure proxy port if it does not listen to the default port 80.

```
set system proxy username <username>
```

Some proxys require/support the “basic” HTTP authentication scheme as per [RFC 7617](#), thus a username can be configured.

```
set system proxy password <password>
```

Some proxys require/support the “basic” HTTP authentication scheme as per [RFC 7617](#), thus a password can be configured.

### 8.11.14 sFlow

VyOS supports sFlow accounting for both IPv4 and IPv6 traffic. The system acts as a flow exporter, and you are free to use it with any compatible collector.

sFlow is a technology that enables monitoring of network traffic by sending sampled packets to a collector device.

The sFlow accounting based on hsfowd <https://sflow.net/>

#### Configuration

```
set system sflow agent-address <address>
```

Configure sFlow agent IPv4 or IPv6 address

```
set system sflow agent-interface <interface>
```

Configure agent IP address associated with this interface.

```
set system sflow drop-monitor-limit <limit>
```

Dropped packets reported on DROPMON Netlink channel by Linux kernel are exported via the standard sFlow v5 extension for reporting dropped packets

```
set system sflow interface <interface>
```

Configure and enable collection of flow information for the interface identified by <interface>.

You can configure multiple interfaces which would participate in sflow accounting.

```
set system sflow polling <sec>
```

Configure schedule counter-polling in seconds (default: 30)

```
set system sflow sampling-rate <rate>
```

Use this command to configure the sampling rate for sFlow accounting (default: 1000)

```
set system sflow server <address> port <port>
```

Configure address of sFlow collector. sFlow server at <address> can be both listening on an IPv4 or IPv6 address.

#### Example

```
set system sflow agent-address '192.0.2.14'
set system sflow agent-interface 'eth0'
set system sflow drop-monitor-limit '50'
set system sflow interface 'eth0'
set system sflow interface 'eth1'
set system sflow polling '30'
set system sflow sampling-rate '1000'
```

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```
set system sflow server 192.0.2.1 port '6343'  
set system sflow server 203.0.113.23 port '6343'
```

### 8.11.15 Syslog

Per default VyOSs has minimal syslog logging enabled which is stored and rotated locally. Errors will be always logged to a local file, which includes *local7* error messages, emergency messages will be sent to the console, too.

To configure syslog, you need to switch into configuration mode.

#### Logging

Syslog supports logging to multiple targets, those targets could be a plain file on your VyOS installation itself, a serial console or a remote syslog server which is reached via IP (Internet Protocol) UDP/TCP.

#### Console

```
set system syslog console facility <keyword> level <keyword>
```

Log syslog messages to `/dev/console`, for an explanation on *Facilities* keywords and *Severity Level* keywords see tables below.

#### Custom File

```
set system syslog file <filename> facility <keyword> level <keyword>
```

Log syslog messages to file specified via `<filename>`, for an explanation on *Facilities* keywords and *Severity Level* keywords see tables below.

```
set system syslog file <filename> archive size <size>
```

Syslog will write `<size>` kilobytes into the file specified by `<filename>`. After this limit has been reached, the custom file is “rotated” by logrotate and a new custom file is created.

```
set system syslog file <filename> archive file <number>
```

Syslog uses logrotate to rotate logfiles after a number of gives bytes. We keep as many as `<number>` rotated file before they are deleted on the system.

#### Remote Host

Logging to a remote host leaves the local logging configuration intact, it can be configured in parallel to a custom file or console logging. You can log to multiple hosts at the same time, using either TCP or UDP. The default is sending the messages via port 514/UDP.

```
set system syslog host <address> facility <keyword> level <keyword>
```

Log syslog messages to remote host specified by `<address>`. The address can be specified by either FQDN or IP address. For an explanation on *Facilities* keywords and *Severity Level* keywords see tables below.

```
set system syslog host <address> facility <keyword> protocol <udp|tcp>
```

Configure protocol used for communication to remote syslog host. This can be either UDP or TCP.

```
set system syslog vrf <name>
```

Specify name of the VRF instance.

## Local User Account

```
set system syslog user <username> facility <keyword> level <keyword>
```

If logging to a local user account is configured, all defined log messages are display on the console if the local user is logged in, if the user is not logged in, no messages are being displayed. For an explanation on *Facilities* keywords and *Severity Level* keywords see tables below.

## Facilities

List of facilities used by syslog. Most facilities names are self explanatory. Facilities local0 - local7 common usage is f.e. as network logs facilities for nodes and network equipment. Generally it depends on the situation how to classify logs and put them to facilities. See facilities more as a tool rather than a directive to follow.

Facilities can be adjusted to meet the needs of the user:

Facility Code	Keyword	Description
	all	All facilities
0	kern	Kernel messages
1	user	User-level messages
2	mail	Mail system
3	daemon	System daemons
4	auth	Security/authentication messages
5	syslog	Messages generated internally by syslogd
6	lpr	Line printer subsystem
7	news	Network news subsystem
8	uucp	UUCP subsystem
9	cron	Clock daemon
10	security	Security/authentication messages
11	ftp	FTP daemon
12	ntp	NTP subsystem
13	logaudit	Log audit
14	logalert	Log alert
15	clock	clock daemon (note 2)
16	local0	local use 0 (local0)
17	local1	local use 1 (local1)
18	local2	local use 2 (local2)
19	local3	local use 3 (local3)
20	local4	local use 4 (local4)
21	local5	local use 5 (local5)
22	local6	use 6 (local6)
23	local7	local use 7 (local7)

## Severity Level

Value	Severity	Key-word	Description
		all	Log everything
0	Emergency	emerg	System is unusable - a panic condition
1	Alert	alert	Action must be taken immediately - A condition that should be corrected immediately, such as a corrupted system database.
2	Critical	crit	Critical conditions - e.g. hard drive errors.
3	Error	err	Error conditions
4	Warning	warning	Warning conditions
5	Notice	notice	Normal but significant conditions - conditions that are not error conditions, but that may require special handling.
6	Informational	info	Informational messages
7	Debug	debug	Debug-level messages - Messages that contain information normally of use only when debugging a program.

## Display Logs

**show log [all | authorization | cluster | conntrack-sync | ...]**

Display log files of given category on the console. Use tab completion to get a list of available categories. Those categories could be: all, authorization, cluster, conntrack-sync, dhcp, directory, dns, file, firewall, https, image, lldp, nat, openvpn, snmp, tail, vpn, vrrp

If no option is specified, this defaults to *all*.

**show log image <name> [all | authorization | directory | file <file name> | tail <lines>]**

Log messages from a specified image can be displayed on the console. Details of allowed parameters:

all	Display contents of all master log files of the specified image
authorization	Display all authorization attempts of the specified image
directory	Display list of all user-defined log files of the specified image
file <file name>	Display contents of a specified user-defined log file of the specified image
tail	Display last lines of the system log of the specified image
<lines>	Number of lines to be displayed, default 10

When no options/parameters are used, the contents of the main syslog file are displayed.

---

**Hint:** Use `show log | strip-private` if you want to hide private data when sharing your logs.

---

## Delete Logs

**delete log file** <text>

Deletes the specified user-defined file <text> in the /var/log/user directory

Note that deleting the log file does not stop the system from logging events. If you use this command while the system is logging events, old log events will be deleted, but events after the delete operation will be recorded in the new file. To delete the file altogether, first delete logging to the file using system syslog *Custom File* command, and then delete the file.

### 8.11.16 Sysctl

This chapter describes how to configure kernel parameters at runtime.

sysctl is used to modify kernel parameters at runtime. The parameters available are those listed under /proc/sys/.

**set system sysctl parameter** <parameter> value <value>

### 8.11.17 Task Scheduler

The task scheduler allows you to execute tasks on a given schedule. It makes use of UNIX cron.

---

**Note:** All scripts executed this way are executed as root user - this may be dangerous. Together with *Command Scripting* this can be used for automating (re-)configuration.

---

**set system task-scheduler task** <task> interval <interval>

Specify the time interval when <task> should be executed. The interval is specified as number with one of the following suffixes:

- none - Execution interval in minutes
- m - Execution interval in minutes
- h - Execution interval in hours
- d - Execution interval in days

---

**Note:** If suffix is omitted, minutes are implied.

---

**set system task-scheduler task** <task> crontab-spec <spec>

Set execution time in common cron time format. A cron <spec> of 30 \*/6 \* \* \* would execute the <task> at minute 30 past every 6th hour.

**set system task-scheduler task** <task> executable path <path>

Specify absolute <path> to script which will be run when <task> is executed.

**set system task-scheduler task** <task> executable arguments <args>

Arguments which will be passed to the executable.

### 8.11.18 Time Zone

Time Zone setting is very important as e.g all your logfile entries will be based on the configured zone. Without proper time zone configuration it will be very difficult to compare logfiles from different systems.

**set system time-zone <timezone>**

Specify the systems <timezone> as the Region/Location that best defines your location. For example, specifying US/Pacific sets the time zone to US Pacific time.

Command completion can be used to list available time zones. The adjustment for daylight time will take place automatically based on the time of year.

### 8.11.19 Updates

VyOS supports online checking for updates

#### Configuration

**set system update-check auto-check**

Configure auto-checking for new images

**set system update-check url <url>**

Configure a URL that contains information about images.

#### Example

```
set system update-check auto-check
set system update-check url 'https://raw.githubusercontent.com/vyos/vyos-rolling-nightly-
↳ builds/main/version.json'
```

Check:

```
vyos@r4:~$ show system updates
Current version: 1.5-rolling-202312220023

Update available: 1.5-rolling-202312250024
Update URL: https://github.com/vyos/vyos-rolling-nightly-builds/releases/download/1.5-
↳ rolling-202312250024/1.5-rolling-202312250024-amd64.iso
vyos@r4:~$

vyos@r4:~$ add system image latest
```

## 8.11.20 Default Gateway/Route

In the past (VyOS 1.1) used a gateway-address configured under the system tree (`set system gateway-address <address>`), this is no longer supported and existing configurations are migrated to the new CLI command.

### Configuration

**set protocols static route 0.0.0.0/0 next-hop <address>**

Specify static route into the routing table sending all non local traffic to the nexthop address *<address>*.

**delete protocols static route 0.0.0.0/0**

Delete default route from the system.

### Operation

**show ip route 0.0.0.0**

Show routing table entry for the default route.

```
vyos@vyos:~$ show ip route 0.0.0.0
Routing entry for 0.0.0.0/0
  Known via "static", distance 10, metric 0, best
  Last update 09:46:30 ago
  * 172.18.201.254, via eth0.201
```

### See also:

Configuration of *Static*

## 8.12 Traffic Policy

### 8.12.1 QoS

The generic name of Quality of Service or Traffic Control involves things like shaping traffic, scheduling or dropping packets, which are the kind of things you may want to play with when you have, for instance, a bandwidth bottleneck in a link and you want to somehow prioritize some type of traffic over another.

`tc` is a powerful tool for Traffic Control found at the Linux kernel. However, its configuration is often considered a cumbersome task. Fortunately, VyOS eases the job through its CLI, while using `tc` as backend.

### How to make it work

In order to have VyOS Traffic Control working you need to follow 2 steps:

1. **Create a traffic policy.**
2. **Apply the traffic policy to an interface ingress or egress.**

But before learning to configure your policy, we will warn you about the different units you can use and also show you what *classes* are and how they work, as some policies may require you to configure them.

## Units

When configuring your traffic policy, you will have to set data rate values, watch out the units you are managing, it is easy to get confused with the different prefixes and suffixes you can use. VyOS will always show you the different units you can use.

## Prefixes

They can be **decimal** prefixes.

```
kbit (10^3) kilobit per second
mbit (10^6) megabit per second
gbit (10^9) gigabit per second
tbit (10^12) terabit per second

kbits (8*10^3) kilobyte per second
mbits (8*10^6) megabyte per second
gbits (8*10^9) gigabyte per second
tbits (8*10^12) terabyte per second
```

Or **binary** prefixes.

```
kibit (2^10 = 1024) kibibit per second
mibit (2^20 = 1024^2) mebibit per second
gibit (2^30 = 1024^3) gibibit per second
tbit (2^40 = 1024^4) tebibit per second

kibps (1024*8) kibibyte (KiB) per second
mibps (1024^2*8) mebibyte (MiB) per second
gibps (1024^3*8) gibibyte (GiB) per second
tibps (1024^4*8) tebibyte (TiB) per second
```

## Suffixes

A *bit* is written as **bit**,

```
kbit (kilobits per second)
mbit (megabits per second)
gbit (gigabits per second)
tbit (terabits per second)
```

while a *byte* is written as a single **b**.

```
kbits (kilobytes per second)
mbits (megabytes per second)
gbits (gigabytes per second)
```

## Classes

In the *Creating a traffic policy* section you will see that some of the policies use *classes*. Those policies let you distribute traffic into different classes according to different parameters you can choose. So, a class is just a specific type of traffic you select.

The ultimate goal of classifying traffic is to give each class a different treatment.

## Matching traffic

In order to define which traffic goes into which class, you define filters (that is, the matching criteria). Packets go through these matching rules (as in the rules of a firewall) and, if a packet matches the filter, it is assigned to that class.

In VyOS, a class is identified by a number you can choose when configuring it.

---

**Note:** The meaning of the Class ID is not the same for every type of policy. Normally policies just need a meaningless number to identify a class (Class ID), but that does not apply to every policy. The number of a class in a Priority Queue it does not only identify it, it also defines its priority.

---

```
set qos policy <policy> <policy-name> class <class-ID> match <class-matching-rule-name>
```

In the command above, we set the type of policy we are going to work with and the name we choose for it; a class (so that we can differentiate some traffic) and an identifiable number for that class; then we configure a matching rule (or filter) and a name for it.

A class can have multiple match filters:

```
set qos policy shaper MY-SHAPER class 30 match HTTP
set qos policy shaper MY-SHAPER class 30 match HTTPs
```

A match filter can contain multiple criteria and will match traffic if all those criteria are true.

For example:

```
set qos policy shaper MY-SHAPER class 30 match HTTP ip protocol tcp
set qos policy shaper MY-SHAPER class 30 match HTTP ip source port 80
```

This will match TCP traffic with source port 80.

There are many parameters you will be able to use in order to match the traffic you want for a class:

- **Ethernet (protocol, destination address or source address)**
- **Interface name**
- **IPv4 (DSCP value, maximum packet length, protocol, source address, destination address, source port, destination port or TCP flags)**
- **IPv6 (DSCP value, maximum payload length, protocol, source address, destination address, source port, destination port or TCP flags)**
- **Firewall mark**
- **VLAN ID**

When configuring your filter, you can use the Tab key to see the many different parameters you can configure.

```
vyos@vyos# set qos policy shaper MY-SHAPER class 30 match MY-FIRST-FILTER
Possible completions:
  description  Description
> ether       Ethernet header match
  interface    Interface to use
> ip          Match IP protocol header
> ipv6        Match IPV6 protocol header
  mark         Match on mark applied by firewall
  vif          Virtual Local Area Network (VLAN) ID for this match
```

As shown in the example above, one of the possibilities to match packets is based on marks done by the firewall, that can give you a great deal of flexibility.

You can also write a description for a filter:

```
set qos policy shaper MY-SHAPER class 30 match MY-FIRST-FILTER description "My filter_
↪description"
```

---

**Note:** An IPv4 TCP filter will only match packets with an IPv4 header length of 20 bytes (which is the majority of IPv4 packets anyway).

---



---

**Note:** IPv6 TCP filters will only match IPv6 packets with no header extension, see [https://en.wikipedia.org/wiki/IPv6\\_packet#Extension\\_headers](https://en.wikipedia.org/wiki/IPv6_packet#Extension_headers)

---

## Default

Often you will also have to configure your *default* traffic in the same way you do with a class. *Default* can be considered a class as it behaves like that. It contains any traffic that did not match any of the defined classes, so it is like an open class, a class without matching filters.

## Class treatment

Once a class has a filter configured, you will also have to define what you want to do with the traffic of that class, what specific Traffic-Control treatment you want to give it. You will have different possibilities depending on the Traffic Policy you are configuring.

```
vyos@vyos# set qos policy shaper MY-SHAPER class 30
Possible completions:
  bandwidth    Available bandwidth for this policy (default: auto)
  burst        Burst size for this class (default: 15k)
  ceiling      Bandwidth limit for this class
  codel-quantum
               Deficit in the fair queuing algorithm (default 1514)
  description  Description
  flows        Number of flows into which the incoming packets are classified(default_
↪1024)
  interval     Interval used to measure the delay (default 100)
+> match      Class matching rule name
```

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priority	Priority for rule evaluation
queue-limit	Maximum queue size
queue-type	Queue type for default traffic (default: fq-codel)
set-dscp	Change the Differentiated Services (DiffServ) field in the IP header
target	Acceptable minimum standing/persistent queue delay (default: 5)

For instance, with `set qos policy shaper MY-SHAPER class 30 set-dscp EF` you would be modifying the DSCP field value of packets in that class to Expedite Forwarding.

DSCP values as per [RFC 2474](#) and [RFC 4595](#):

Binary value	Configured value	Drop rate	Description
101110	46	•	Expedited forwarding (EF)
000000	0	•	Best effort traffic, default
001010	10	Low	Assured Forwarding(AF) 11
001100	12	Medium	Assured Forwarding(AF) 12
001110	14	High	Assured Forwarding(AF) 13
010010	18	Low	Assured Forwarding(AF) 21
010100	20	Medium	Assured Forwarding(AF) 22
010110	22	High	Assured Forwarding(AF) 23
011010	26	Low	Assured Forwarding(AF) 31
011100	28	Medium	Assured Forwarding(AF) 32
011110	30	High	Assured Forwarding(AF) 33
100010	34	Low	Assured Forwarding(AF) 41
100100	36	Medium	Assured Forwarding(AF) 42
100110	38	High	Assured Forwarding(AF) 43

## Embedding one policy into another one

Often we need to embed one policy into another one. It is possible to do so on classful policies, by attaching a new policy into a class. For instance, you might want to apply different policies to the different classes of a Round-Robin policy you have configured.

A common example is the case of some policies which, in order to be effective, they need to be applied to an interface that is directly connected where the bottleneck is. If your router is not directly connected to the bottleneck, but some hop before it, you can emulate the bottleneck by embedding your non-shaping policy into a classful shaping one so that it takes effect.

You can configure a policy into a class through the `queue-type` setting.

```
set qos policy shaper FQ-SHAPER bandwidth 4gbit
set qos policy shaper FQ-SHAPER default bandwidth 100%
set qos policy shaper FQ-SHAPER default queue-type fq-code1
```

As shown in the last command of the example above, the `queue-type` setting allows these combinations. You will be able to use it in many policies.

---

**Note:** Some policies already include other embedded policies inside. That is the case of *Shaper*: each of its classes use fair-queue unless you change it.

---

## Creating a traffic policy

VyOS lets you control traffic in many different ways, here we will cover every possibility. You can configure as many policies as you want, but you will only be able to apply one policy per interface and direction (inbound or outbound).

Some policies can be combined, you will be able to *embed* a different policy that will be applied to a class of the main policy.

---

**Hint:** If you are looking for a policy for your outbound traffic but you don't know which one you need and you don't want to go through every possible policy shown here, **our bet is that highly likely you are looking for a *Shaper* policy and you want to set its queues as FQ-CoDel.**

---

## Drop Tail

**Queueing discipline:** PFIFO (Packet First In First Out).

**Applies to:** Outbound traffic.

This the simplest queue possible you can apply to your traffic. Traffic must go through a finite queue before it is actually sent. You must define how many packets that queue can contain.

When a packet is to be sent, it will have to go through that queue, so the packet will be placed at the tail of it. When the packet completely goes through it, it will be dequeued emptying its place in the queue and being eventually handed to the NIC to be actually sent out.

Despite the Drop-Tail policy does not slow down packets, if many packets are to be sent, they could get dropped when trying to get enqueued at the tail. This can happen if the queue has still not been able to release enough packets from its head.

This is the policy that requires the lowest resources for the same amount of traffic. But **very likely you do not need it as you cannot get much from it. Sometimes it is used just to enable logging.**

```
set qos policy drop-tail <policy-name> queue-limit <number-of-packets>
```

Use this command to configure a drop-tail policy (PFIFO). Choose a unique name for this policy and the size of the queue by setting the number of packets it can contain (maximum 4294967295).

## Fair Queue

**Queueing discipline:** SFQ (Stochastic Fairness Queueing).

**Applies to:** Outbound traffic.

Fair Queue is a work-conserving scheduler which schedules the transmission of packets based on flows, that is, it balances traffic distributing it through different sub-queues in order to ensure fairness so that each flow is able to send data in turn, preventing any single one from drowning out the rest.

```
set qos policy fair-queue <policy-name>
```

Use this command to create a Fair-Queue policy and give it a name. It is based on the Stochastic Fairness Queueing and can be applied to outbound traffic.

In order to separate traffic, Fair Queue uses a classifier based on source address, destination address and source port. The algorithm enqueues packets to hash buckets based on those three parameters. Each of these buckets should represent a unique flow. Because multiple flows may get hashed to the same bucket, the hashing algorithm is perturbed at configurable intervals so that the unfairness lasts only for a short while. Perturbation may however cause some inadvertent packet reordering to occur. An advisable value could be 10 seconds.

One of the uses of Fair Queue might be the mitigation of Denial of Service attacks.

```
set qos policy fair-queue <policy-name> hash-interval <seconds>
```

Use this command to define a Fair-Queue policy, based on the Stochastic Fairness Queueing, and set the number of seconds at which a new queue algorithm perturbation will occur (maximum 4294967295).

When dequeuing, each hash-bucket with data is queried in a round robin fashion. You can configure the length of the queue.

```
set qos policy fair-queue <policy-name> queue-limit <limit>
```

Use this command to define a Fair-Queue policy, based on the Stochastic Fairness Queueing, and set the number of maximum packets allowed to wait in the queue. Any other packet will be dropped.

---

**Note:** Fair Queue is a non-shaping (work-conserving) policy, so it will only be useful if your outgoing interface is really full. If it is not, VyOS will not own the queue and Fair Queue will have no effect. If there is bandwidth available on the physical link, you can *embed* Fair-Queue into a classful shaping policy to make sure it owns the queue.

---

## FQ-CoDel

**Queueing discipline** Fair/Flow Queue CoDel.

**Applies to:** Outbound Traffic.

The FQ-CoDel policy distributes the traffic into 1024 FIFO queues and tries to provide good service between all of them. It also tries to keep the length of all the queues short.

FQ-CoDel fights bufferbloat and reduces latency without the need of complex configurations. It has become the new default Queueing Discipline for the interfaces of some GNU/Linux distributions.

It uses a stochastic model to classify incoming packets into different flows and is used to provide a fair share of the bandwidth to all the flows using the queue. Each flow is managed by the CoDel queuing discipline. Reordering within a flow is avoided since CoDel internally uses a FIFO queue.

FQ-CoDel is based on a modified Deficit Round Robin (*DRR*) queue scheduler with the CoDel Active Queue Management (AQM) algorithm operating on each queue.

---

**Note:** FQ-Codel is a non-shaping (work-conserving) policy, so it will only be useful if your outgoing interface is really full. If it is not, VyOS will not own the queue and FQ-Codel will have no effect. If there is bandwidth available on the physical link, you can *embed* FQ-Codel into a classful shaping policy to make sure it owns the queue. If you are not sure if you need to embed your FQ-CoDel policy into a Shaper, do it.

---

FQ-CoDel is tuned to run ok with its default parameters at 10Gbit speeds. It might work ok too at other speeds without configuring anything, but here we will explain some cases when you might want to tune its parameters.

When running it at 1Gbit and lower, you may want to reduce the *queue-limit* to 1000 packets or less. In rates like 10Mbit, you may want to set it to 600 packets.

If you are using FQ-CoDel embedded into *Shaper* and you have large rates (100Mbit and above), you may consider increasing *quantum* to 8000 or higher so that the scheduler saves CPU.

On low rates (below 40Mbit) you may want to tune *quantum* down to something like 300 bytes.

At very low rates (below 3Mbit), besides tuning *quantum* (300 keeps being ok) you may also want to increase *target* to something like 15ms and increase *interval* to something around 150 ms.

**set qos policy fq-codel <policy name> codel-quantum <bytes>**

Use this command to configure an fq-codel policy, set its name and the maximum number of bytes (default: 1514) to be dequeued from a queue at once.

**set qos policy fq-codel <policy name> flows <number-of-flows>**

Use this command to configure an fq-codel policy, set its name and the number of sub-queues (default: 1024) into which packets are classified.

**set qos policy fq-codel <policy name> interval <milliseconds>**

Use this command to configure an fq-codel policy, set its name and the time period used by the control loop of CoDel to detect when a persistent queue is developing, ensuring that the measured minimum delay does not become too stale (default: 100ms).

**set qos policy fq-codel <policy-name> queue-limit <number-of-packets>**

Use this command to configure an fq-codel policy, set its name, and define a hard limit on the real queue size. When this limit is reached, new packets are dropped (default: 10240 packets).

**set qos policy fq-codel <policy-name> target <milliseconds>**

Use this command to configure an fq-codel policy, set its name, and define the acceptable minimum standing/persistent queue delay. This minimum delay is identified by tracking the local minimum queue delay that packets experience (default: 5ms).

## Example

A simple example of an FQ-CoDel policy working inside a Shaper one.

```
set qos policy shaper FQ-CODEL-SHAPER bandwidth 2gbit
set qos policy shaper FQ-CODEL-SHAPER default bandwidth 100%
set qos policy shaper FQ-CODEL-SHAPER default queue-type fq-codel
```

## Limiter

**Queueing discipline:** Ingress policer.

**Applies to:** Inbound traffic.

Limiter is one of those policies that uses *classes* (Ingress qdisc is actually a classless policy but filters do work in it).

The limiter performs basic ingress policing of traffic flows. Multiple classes of traffic can be defined and traffic limits can be applied to each class. Although the policer uses a token bucket mechanism internally, it does not have the capability to delay a packet as a shaping mechanism does. Traffic exceeding the defined bandwidth limits is directly dropped. A maximum allowed burst can be configured too.

You can configure classes (up to 4090) with different settings and a default policy which will be applied to any traffic not matching any of the configured classes.

---

**Note:** In the case you want to apply some kind of **shaping** to your **inbound** traffic, check the *ingress-shaping* section.

---

**set qos policy limiter <policy-name> class <class ID> match <match-name> description <description>**

Use this command to configure an Ingress Policer, defining its name, a class identifier (1-4090), a class matching rule name and its description.

Once the matching rules are set for a class, you can start configuring how you want matching traffic to behave.

**set qos policy limiter <policy-name> class <class-ID> bandwidth <rate>**

Use this command to configure an Ingress Policer, defining its name, a class identifier (1-4090) and the maximum allowed bandwidth for this class.

**set qos policy limiter <policy-name> class <class-ID> burst <burst-size>**

Use this command to configure an Ingress Policer, defining its name, a class identifier (1-4090) and the burst size in bytes for this class (default: 15).

**set qos policy limiter <policy-name> default bandwidth <rate>**

Use this command to configure an Ingress Policer, defining its name and the maximum allowed bandwidth for its default policy.

**set qos policy limiter <policy-name> default burst <burst-size>**

Use this command to configure an Ingress Policer, defining its name and the burst size in bytes (default: 15) for its default policy.

```
set qos policy limiter <policy-name> class <class ID> priority <value>
```

Use this command to configure an Ingress Policer, defining its name, a class identifier (1-4090), and the priority (0-20, default 20) in which the rule is evaluated (the lower the number, the higher the priority).

## Network Emulator

**Queueing discipline:** netem (Network Emulator) + TBF (Token Bucket Filter).

**Applies to:** Outbound traffic.

VyOS Network Emulator policy emulates the conditions you can suffer in a real network. You will be able to configure things like rate, burst, delay, packet loss, packet corruption or packet reordering.

This could be helpful if you want to test how an application behaves under certain network conditions.

```
set qos policy network-emulator <policy-name> bandwidth <rate>
```

Use this command to configure the maximum rate at which traffic will be shaped in a Network Emulator policy. Define the name of the policy and the rate.

```
set qos policy network-emulator <policy-name> burst <burst-size>
```

Use this command to configure the burst size of the traffic in a Network Emulator policy. Define the name of the Network Emulator policy and its traffic burst size (it will be configured through the Token Bucket Filter qdisc). Default:15kb. It will only take effect if you have configured its bandwidth too.

```
set qos policy network-emulator <policy-name> delay <delay>
```

Use this command to configure a Network Emulator policy defining its name and the fixed amount of time you want to add to all packet going out of the interface. The latency will be added through the Token Bucket Filter qdisc. It will only take effect if you have configured its bandwidth too. You can use secs, ms and us. Default: 50ms.

```
set qos policy network-emulator <policy-name> corruption <percent>
```

Use this command to emulate noise in a Network Emulator policy. Set the policy name and the percentage of corrupted packets you want. A random error will be introduced in a random position for the chosen percent of packets.

```
set qos policy network-emulator <policy-name> loss <percent>
```

Use this command to emulate packet-loss conditions in a Network Emulator policy. Set the policy name and the percentage of loss packets your traffic will suffer.

```
set traffic-policy network-emulator <policy-name> reordering <percent>
```

Use this command to emulate packet-reordering conditions in a Network Emulator policy. Set the policy name and the percentage of reordered packets your traffic will suffer.

```
set traffic-policy network-emulator <policy-name> queue-limit <limit>
```

Use this command to define the length of the queue of your Network Emulator policy. Set the policy name and the maximum number of packets (1-4294967295) the queue may hold queued at a time.

## Priority Queue

**Queueing discipline:** PRIO.

**Applies to:** Outbound traffic.

The Priority Queue is a classful scheduling policy. It does not delay packets (Priority Queue is not a shaping policy), it simply dequeues packets according to their priority.

---

**Note:** Priority Queue, as other non-shaping policies, is only useful if your outgoing interface is really full. If it is not, VyOS will not own the queue and Priority Queue will have no effect. If there is bandwidth available on the physical link, you can *embed* Priority Queue into a classful shaping policy to make sure it owns the queue. In that case packets can be prioritized based on DSCP.

---

Up to seven queues -defined as *classes* with different priorities- can be configured. Packets are placed into queues based on associated match criteria. Packets are transmitted from the queues in priority order. If classes with a higher priority are being filled with packets continuously, packets from lower priority classes will only be transmitted after traffic volume from higher priority classes decreases.

---

**Note:** In Priority Queue we do not define classes with a meaningless class ID number but with a class priority number (1-7). The lower the number, the higher the priority.

---

As with other policies, you can define different type of matching rules for your classes:

```
vyos@vyos# set qos policy priority-queue MY-PRIO class 3 match MY-MATCH-RULE
Possible completions:
  description  Description
> ether       Ethernet header match
  interface    Interface to use
> ip          Match IP protocol header
> ipv6        Match IPV6 protocol header
  mark         Match on mark applied by firewall
  vif         Virtual Local Area Network (VLAN) ID for this match
```

As with other policies, you can *embed* other policies into the classes (and default) of your Priority Queue policy through the `queue-type` setting:

```
vyos@vyos# set qos policy priority-queue MY-PRIO class 3 queue-type
Possible completions:
  drop-tail    First-In-First-Out (FIFO) (default)
  fq-codel     Fair Queue Codel
  fair-queue   Stochastic Fair Queue (SFQ)
  priority     Priority queueing
  random-detect
                Random Early Detection (RED)
```

**set qos policy priority-queue <policy-name> class <class-ID> queue-limit <limit>**

Use this command to configure a Priority Queue policy, set its name, set a class with a priority from 1 to 7 and define a hard limit on the real queue size. When this limit is reached, new packets are dropped.

## Random-Detect

**Queueing discipline:** Generalized Random Early Drop.

**Applies to:** Outbound traffic.

A simple Random Early Detection (RED) policy would start randomly dropping packets from a queue before it reaches its queue limit thus avoiding congestion. That is good for TCP connections as the gradual dropping of packets acts as a signal for the sender to decrease its transmission rate.

In contrast to simple RED, VyOS' Random-Detect uses a Generalized Random Early Detect policy that provides different virtual queues based on the IP Precedence value so that some virtual queues can drop more packets than others.

This is achieved by using the first three bits of the ToS (Type of Service) field to categorize data streams and, in accordance with the defined precedence parameters, a decision is made.

IP precedence as defined in [RFC 791](#):

Precedence	Priority
7	Network Control
6	Internetwork Control
5	CRITIC/ECP
4	Flash Override
3	Flash
2	Immediate
1	Priority
0	Routine

Random-Detect could be useful for heavy traffic. One use of this algorithm might be to prevent a backbone overload. But only for TCP (because dropped packets could be retransmitted), not for UDP.

**set qos policy random-detect <policy-name> bandwidth <bandwidth>**

Use this command to configure a Random-Detect policy, set its name and set the available bandwidth for this policy. It is used for calculating the average queue size after some idle time. It should be set to the bandwidth of your interface. Random Detect is not a shaping policy, this command will not shape.

**set qos policy random-detect <policy-name> precedence <IP-precedence-value>  
average-packet <bytes>**

Use this command to configure a Random-Detect policy and set its name, then state the IP Precedence for the virtual queue you are configuring and what the size of its average-packet should be (in bytes, default: 1024).

---

**Note:** When configuring a Random-Detect policy: **the higher the precedence number, the higher the priority.**

---

**set qos policy random-detect <policy-name> precedence <IP-precedence-value>  
mark-probability <value>**

Use this command to configure a Random-Detect policy and set its name, then state the IP Precedence for the virtual queue you are configuring and what its mark (drop) probability will be. Set the probability by giving the N value of the fraction 1/N (default: 10).

**set qos policy random-detect <policy-name> precedence <IP-precedence-value>  
maximum-threshold <packets>**

Use this command to configure a Random-Detect policy and set its name, then state the IP Precedence for the virtual queue you are configuring and what its maximum threshold for random detection will be (from 0 to 4096 packets, default: 18). At this size, the marking (drop) probability is maximal.

```
set qos policy random-detect <policy-name> precedence <IP-precedence-value>
minimum-threshold <packets>
```

Use this command to configure a Random-Detect policy and set its name, then state the IP Precedence for the virtual queue you are configuring and what its minimum threshold for random detection will be (from 0 to 4096 packets). If this value is exceeded, packets start being eligible for being dropped.

The default values for the minimum-threshold depend on IP precedence:

Precedence	default min-threshold
7	16
6	15
5	14
4	13
3	12
2	11
1	10
0	9

```
set qos policy random-detect <policy-name> precedence <IP-precedence-value> queue-limit
<packets>
```

Use this command to configure a Random-Detect policy and set its name, then name the IP Precedence for the virtual queue you are configuring and what the maximum size of its queue will be (from 1 to 1-4294967295 packets). Packets are dropped when the current queue length reaches this value.

If the average queue size is lower than the **min-threshold**, an arriving packet will be placed in the queue.

In the case the average queue size is between **min-threshold** and **max-threshold**, then an arriving packet would be either dropped or placed in the queue, it will depend on the defined **mark-probability**.

If the current queue size is larger than **queue-limit**, then packets will be dropped. The average queue size depends on its former average size and its current one.

If **max-threshold** is set but **min-threshold is not**, then **\*\*min-threshold** is scaled to 50% of **max-threshold**.

In principle, values must be **min-threshold < max-threshold < queue-limit**.

## Rate Control

**Queueing discipline:** Token Bucket Filter.

**Applies to:** Outbound traffic.

Rate-Control is a classless policy that limits the packet flow to a set rate. It is a pure shaper, it does not schedule traffic. Traffic is filtered based on the expenditure of tokens. Tokens roughly correspond to bytes.

Short bursts can be allowed to exceed the limit. On creation, the Rate-Control traffic is stocked with tokens which correspond to the amount of traffic that can be burst in one go. Tokens arrive at a steady rate, until the bucket is full.

```
set qos policy rate-control <policy-name> bandwidth <rate>
```

Use this command to configure a Rate-Control policy, set its name and the rate limit you want to have.

```
set qos policy rate-control <policy-name> burst <burst-size>
```

Use this command to configure a Rate-Control policy, set its name and the size of the bucket in bytes which will be available for burst.

As a reference: for 10mbit/s on Intel, you might need at least 10kbyte buffer if you want to reach your configured rate.

A very small buffer will soon start dropping packets.

```
set qos policy rate-control <policy-name> latency
```

Use this command to configure a Rate-Control policy, set its name and the maximum amount of time a packet can be queued (default: 50 ms).

Rate-Control is a CPU-friendly policy. You might consider using it when you just simply want to slow traffic down.

## Round Robin

**Queueing discipline:** Deficit Round Robin.

**Applies to:** Outbound traffic.

The round-robin policy is a classful scheduler that divides traffic in different *classes* you can configure (up to 4096). You can *embed* a new policy into each of those classes (default included).

Each class is assigned a deficit counter (the number of bytes that a flow is allowed to transmit when it is its turn) initialized to quantum. Quantum is a parameter you configure which acts like a credit of fix bytes the counter receives on each round. Then the Round-Robin policy starts moving its Round Robin pointer through the queues. If the deficit counter is greater than the packet's size at the head of the queue, this packet will be sent and the value of the counter will be decremented by the packet size. Then, the size of the next packet will be compared to the counter value again, repeating the process. Once the queue is empty or the value of the counter is insufficient, the Round-Robin pointer will move to the next queue. If the queue is empty, the value of the deficit counter is reset to 0.

At every round, the deficit counter adds the quantum so that even large packets will have their opportunity to be dequeued.

```
set qos policy round-robin <policy name> class <class-ID> quantum <packets>
```

Use this command to configure a Round-Robin policy, set its name, set a class ID, and the quantum for that class. The deficit counter will add that value each round.

```
set qos policy round-robin <policy name> class <class ID> queue-limit <packets>
```

Use this command to configure a Round-Robin policy, set its name, set a class ID, and the queue size in packets.

As with other policies, Round-Robin can *embed* another policy into a class through the `queue-type` setting.

```
vyos@vyos# set qos policy round-robin DRR class 10 queue-type
Possible completions:
drop-tail      First-In-First-Out (FIFO) (default)
fq-codel       Fair Queue Codel
fair-queue     Stochastic Fair Queue (SFQ)
priority       Priority queueing based
random-detect  Random Early Detection (RED)
```

## Shaper

**Queueing discipline:** Hierarchical Token Bucket.

**Applies to:** Outbound traffic.

The Shaper policy does not guarantee a low delay, but it does guarantee bandwidth to different traffic classes and also lets you decide how to allocate more traffic once the guarantees are met.

Each class can have a guaranteed part of the total bandwidth defined for the whole policy, so all those shares together should not be higher than the policy's whole bandwidth.

If guaranteed traffic for a class is met and there is room for more traffic, the ceiling parameter can be used to set how much more bandwidth could be used. If guaranteed traffic is met and there are several classes willing to use their ceilings, the priority parameter will establish the order in which that additional traffic will be allocated. Priority can be any number from 0 to 7. The lower the number, the higher the priority.

**set qos policy shaper <policy-name> bandwidth <rate>**

Use this command to configure a Shaper policy, set its name and the maximum bandwidth for all combined traffic.

**set qos policy shaper <policy-name> class <class-ID> bandwidth <rate>**

Use this command to configure a Shaper policy, set its name, define a class and set the guaranteed traffic you want to allocate to that class.

**set qos policy shaper <policy-name> class <class-ID> burst <bytes>**

Use this command to configure a Shaper policy, set its name, define a class and set the size of the `token bucket` in bytes, which will be available to be sent at ceiling speed (default: 15Kb).

**set qos policy shaper <policy-name> class <class-ID> ceiling <bandwidth>**

Use this command to configure a Shaper policy, set its name, define a class and set the maximum speed possible for this class. The default ceiling value is the bandwidth value.

**set qos policy shaper <policy-name> class <class-ID> priority <0-7>**

Use this command to configure a Shaper policy, set its name, define a class and set the priority for usage of available bandwidth once guarantees have been met. The lower the priority number, the higher the priority. The default priority value is 0, the highest priority.

As with other policies, Shaper can *embed* other policies into its classes through the `queue-type` setting and then configure their parameters.

```
vyos@vyos# set qos policy shaper HTB class 10 queue-type
```

Possible completions:

```
fq-codel      Fair Queue Codel (default)
fair-queue    Stochastic Fair Queue (SFQ)
drop-tail     First-In-First-Out (FIFO)
priority      Priority queueing
random-detect
              Random Early Detection (RED)
```

```
vyos@vyos# set qos policy shaper HTB class 10
```

Possible completions:

```
bandwidth     Available bandwidth for this policy (default: auto)
burst         Burst size for this class (default: 15k)
```

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ceiling	Bandwidth limit for this class
codel-quantum	Deficit in the fair queuing algorithm (default 1514)
description	Description
flows	Number of flows into which the incoming packets are classified (default ↵ ↵1024)
interval	Interval used to measure the delay (default 100)
+> match	Class matching rule name
priority	Priority for rule evaluation
queue-limit	Maximum queue size (packets)
queue-type	Queue type for default traffic (default: fq-codel)
set-dscp	Change the Differentiated Services (DiffServ) field in the IP header
target	Acceptable minimum standing/persistent queue delay (default: 5)

**Note:** If you configure a class for **VoIP traffic**, don't give it any *ceiling*, otherwise new VoIP calls could start when the link is available and get suddenly dropped when other classes start using their assigned *bandwidth* share.

## Example

A simple example of Shaper using priorities.

```
set qos policy shaper MY-HTB bandwidth '50mbit'
set qos policy shaper MY-HTB class 10 bandwidth '20%'
set qos policy shaper MY-HTB class 10 match DSCP ip dscp 'EF'
set qos policy shaper MY-HTB class 10 queue-type 'fq-codel'
set qos policy shaper MY-HTB class 20 bandwidth '10%'
set qos policy shaper MY-HTB class 20 ceiling '50%'
set qos policy shaper MY-HTB class 20 match PORT666 ip destination port '666'
set qos policy shaper MY-HTB class 20 priority '3'
set qos policy shaper MY-HTB class 20 queue-type 'fair-queue'
set qos policy shaper MY-HTB class 30 bandwidth '10%'
set qos policy shaper MY-HTB class 30 ceiling '50%'
set qos policy shaper MY-HTB class 30 match ADDRESS30 ip source address '192.168.30.0/24'
set qos policy shaper MY-HTB class 30 priority '5'
set qos policy shaper MY-HTB class 30 queue-type 'fair-queue'
set qos policy shaper MY-HTB default bandwidth '10%'
set qos policy shaper MY-HTB default ceiling '100%'
set qos policy shaper MY-HTB default priority '7'
set qos policy shaper MY-HTB default queue-type 'fair-queue'
```

## CAKE

**Queueing discipline:** Deficit mode.

**Applies to:** Outbound traffic.

**Common Applications Kept Enhanced (CAKE)** is a comprehensive queue management system, implemented as a queue discipline (qdisc) for the Linux kernel. It is designed to replace and improve upon the complex hierarchy of simple qdiscs presently required to effectively tackle the bufferbloat problem at the network edge.

**set qos policy cake <text> bandwidth <value>**

Set the shaper bandwidth, either as an explicit bitrate or a percentage of the interface bandwidth.

**set qos policy cake <text> description**

Set a description for the shaper.

**set qos policy cake <text> flow-isolation blind**

Disables flow isolation, all traffic passes through a single queue.

**set qos policy cake <text> flow-isolation dst-host**

Flows are defined only by destination address.

**set qos policy cake <text> flow-isolation dual-dst-host**

Flows are defined by the 5-tuple. Fairness is applied first over destination addresses, then over individual flows.

**set qos policy cake <text> flow-isolation dual-src-host**

Flows are defined by the 5-tuple. Fairness is applied first over source addresses, then over individual flows.

**set qos policy cake <text> flow-isolation flow**

Flows are defined by the entire 5-tuple (source IP address, source port, destination IP address, destination port, transport protocol).

**set qos policy cake <text> flow-isolation host**

Flows are defined by source-destination host pairs.

**set qos policy cake <text> flow-isolation nat**

Perform NAT lookup before applying flow-isolation rules.

**set qos policy cake <text> flow-isolation src-host**

Flows are defined only by source address.

**set qos policy cake <text> flow-isolation triple-isolate**

**(Default)** Flows are defined by the 5-tuple, fairness is applied over source and destination addresses and also over individual flows.

**set qos policy cake <text> rtt**

Defines the round-trip time used for active queue management (AQM) in milliseconds. The default value is 100.

## Applying a traffic policy

Once a traffic-policy is created, you can apply it to an interface:

```
set qos interface eth0 egress WAN-OUT
```

You can only apply one policy per interface and direction, but you could reuse a policy on different interfaces and directions:

```
set qos interface eth0 ingress WAN-IN
set qos interface eth0 egress WAN-OUT
set qos interface eth1 ingress LAN-IN
set qos interface eth1 egress LAN-OUT
set qos interface eth2 ingress LAN-IN
set qos interface eth2 egress LAN-OUT
set qos interface eth3 ingress TWO-WAY-POLICY
set qos interface eth3 egress TWO-WAY-POLICY
set qos interface eth4 ingress TWO-WAY-POLICY
set qos interface eth4 egress TWO-WAY-POLICY
```

## The case of ingress shaping

**Applies to:** Inbound traffic.

For the ingress traffic of an interface, there is only one policy you can directly apply, a **Limitter** policy. You cannot apply a shaping policy directly to the ingress traffic of any interface because shaping only works for outbound traffic.

This workaround lets you apply a shaping policy to the ingress traffic by first redirecting it to an in-between virtual interface ([Intermediate Functional Block](#)). There, in that virtual interface, you will be able to apply any of the policies that work for outbound traffic, for instance, a shaping one.

That is how it is possible to do the so-called “ingress shaping”.

```
set qos policy shaper MY-INGRESS-SHAPING bandwidth 1000kbit
set qos policy shaper MY-INGRESS-SHAPING default bandwidth 1000kbit
set qos policy shaper MY-INGRESS-SHAPING default queue-type fair-queue

set qos interface ifb0 egress MY-INGRESS-SHAPING
set interfaces ethernet eth0 redirect ifb0

set interfaces input ifb0
```

**Warning:** Do not configure IFB as the first step. First create everything else of your traffic-policy, and then you can configure IFB. Otherwise you might get the `RTNETLINK answer: File exists` error, which can be solved with `sudo ip link delete ifb0`.

## 8.13 VPN

### 8.13.1 IPsec

GRE (Generic Routing Encapsulation), GRE/IPsec (or IPsec/IPsec, SIT/IPsec, or any other stateless tunnel protocol over IPsec) is the usual way to protect the traffic inside a tunnel.

An advantage of this scheme is that you get a real interface with its own address, which makes it easier to setup static routes or use dynamic routing protocols without having to modify IPsec policies. The other advantage is that it greatly simplifies router to router communication, which can be tricky with plain IPsec because the external outgoing address of the router usually doesn't match the IPsec policy of typical site-to-site setup and you need to add special configuration for it, or adjust the source address for outgoing traffic of your applications. GRE/IPsec has no such problem and is completely transparent for the applications.

GRE/IPsec/SIT and IPsec are widely accepted standards, which make this scheme easy to implement between VyOS and virtually any other router.

For simplicity we'll assume that the protocol is GRE, it's not hard to guess what needs to be changed to make it work with a different protocol. We assume that IPsec will use pre-shared secret authentication and will use AES128/SHA1 for the cipher and hash. Adjust this as necessary.

---

**Note:** VMware users should ensure that a VMXNET3 adapter is used. E1000 adapters have known issues with GRE processing.

---

### IKE (Internet Key Exchange) Attributes

IKE performs mutual authentication between two parties and establishes an IKE security association (SA) that includes shared secret information that can be used to efficiently establish SAs for Encapsulating Security Payload (ESP) or Authentication Header (AH) and a set of cryptographic algorithms to be used by the SAs to protect the traffic that they carry. <https://datatracker.ietf.org/doc/html/rfc5996>

In VyOS, IKE attributes are specified through IKE groups. Multiple proposals can be specified in a single group.

VyOS IKE group has the next options:

- `close-action` defines the action to take if the remote peer unexpectedly closes a CHILD\_SA;
- `none` set action to none (default);
- `trap` installs a trap policy for the CHILD\_SA;
- `start` tries to immediately re-create the CHILD\_SA;
- `dead-peer-detection` controls the use of the Dead Peer Detection protocol (DPD, RFC 3706) where R\_U\_THERE notification messages (IKEv1) or empty INFORMATIONAL messages (IKEv2) are periodically sent in order to check the liveliness of the IPsec peer:
  - `action` keep-alive failure action:
  - `trap` installs a trap policy, which will catch matching traffic and tries to re-negotiate the tunnel on-demand;
  - `clear` closes the CHILD\_SA and does not take further action (default);
  - `restart` immediately tries to re-negotiate the CHILD\_SA under a fresh IKE\_SA;
  - `interval` keep-alive interval in seconds <2-86400> (default 30);
  - `timeout` keep-alive timeout in seconds <2-86400> (default 120) IKEv1 only

- `ikev2-reauth` whether rekeying of an IKE\_SA should also reauthenticate the peer. In IKEv1, reauthentication is always done. Setting this parameter enables remote host re-authentication during an IKE rekey.
- `key-exchange` which protocol should be used to initialize the connection. If not set both protocols are handled and connections will use IKEv2 when initiating, but accept any protocol version when responding:
- `ikev1` use IKEv1 for Key Exchange;
- `ikev2` use IKEv2 for Key Exchange;
- `lifetime` IKE lifetime in seconds <0-86400> (default 28800);
- `disable-mobike` disables MOBIKE Support. MOBIKE is only available for IKEv2 and enabled by default.
- `mode` IKEv1 Phase 1 Mode Selection:
- `main` use Main mode for Key Exchanges in the IKEv1 Protocol (Recommended Default);
- `aggressive` use Aggressive mode for Key Exchanges in the IKEv1 protocol aggressive mode is much more insecure compared to Main mode;
- `proposal` the list of proposals and their parameters:
- `dh-group` dh-group;
- `encryption` encryption algorithm;
- `hash` hash algorithm.
- `prf` pseudo-random function.

## ESP (Encapsulating Security Payload) Attributes

ESP is used to provide confidentiality, data origin authentication, connectionless integrity, an anti-replay service (a form of partial sequence integrity), and limited traffic flow confidentiality. <https://datatracker.ietf.org/doc/html/rfc4303>

In VyOS, ESP attributes are specified through ESP groups. Multiple proposals can be specified in a single group.

VyOS ESP group has the next options:

- `compression` Enables the IPComp(IP Payload Compression) protocol which allows compressing the content of IP packets.
- `life-bytes` ESP life in bytes <1024-26843545600000>. Number of bytes transmitted over an IPsec SA before it expires;
- `life-packets` ESP life in packets <1000-26843545600000>. Number of packets transmitted over an IPsec SA before it expires;
- `lifetime` ESP lifetime in seconds <30-86400> (default 3600). How long a particular instance of a connection (a set of encryption/authentication keys for user packets) should last, from successful negotiation to expiry;
- `mode` the type of the connection:
- `tunnel` tunnel mode (default);
- `transport` transport mode;
- `pfs` whether Perfect Forward Secrecy of keys is desired on the connection's keying channel and defines a Diffie-Hellman group for PFS:
- `enable` Inherit Diffie-Hellman group from IKE group (default);
- `disable` Disable PFS;
- `< dh-group >` defines a Diffie-Hellman group for PFS;

- proposal ESP-group proposal with number <1-65535>:
- encryption encryption algorithm (default 128 bit AES-CBC);
- hash hash algorithm (default sha1).

### Options (Global IPsec settings) Attributes

- options
- disable-route-autoinstall Do not automatically install routes to remote networks;
- flexvpn Allows FlexVPN vendor ID payload (IKEv2 only). Send the Cisco FlexVPN vendor ID payload (IKEv2 only), which is required in order to make Cisco brand devices allow negotiating a local traffic selector (from strongSwan's point of view) that is not the assigned virtual IP address if such an address is requested by strongSwan. Sending the Cisco FlexVPN vendor ID prevents the peer from narrowing the initiator's local traffic selector and allows it to e.g. negotiate a TS of 0.0.0.0/0 == 0.0.0.0/0 instead. This has been tested with a "tunnel mode ipsec ipv4" Cisco template but should also work for GRE encapsulation;
- interface Interface Name to use. The name of the interface on which virtual IP addresses should be installed. If not specified the addresses will be installed on the outbound interface;
- virtual-ip Allows to install virtual-ip addresses. Comma separated list of virtual IPs to request in IKEv2 configuration payloads or IKEv1 Mode Config. The wildcard addresses 0.0.0.0 and :: request an arbitrary address, specific addresses may be defined. The responder may return a different address, though, or none at all. Define the virtual-address option to configure the IP address in site-to-site hierarchy.

### IPsec policy matching GRE

The first and arguably cleaner option is to make your IPsec policy match GRE packets between external addresses of your routers. This is the best option if both routers have static external addresses.

Suppose the LEFT router has external address 192.0.2.10 on its eth0 interface, and the RIGHT router is 203.0.113.45

On the LEFT:

```
# GRE tunnel
set interfaces tunnel tun0 encapsulation gre
set interfaces tunnel tun0 source-address 192.0.2.10
set interfaces tunnel tun0 remote 203.0.113.45
set interfaces tunnel tun0 address 10.10.10.1/30

## IPsec
set vpn ipsec interface eth0

# Pre-shared-secret
set vpn ipsec authentication psk vyos id 192.0.2.10
set vpn ipsec authentication psk vyos id 203.0.113.45
set vpn ipsec authentication psk vyos secret MYSECRETKEY

# IKE group
set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group '2'
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption 'aes128'
set vpn ipsec ike-group MyIKEGroup proposal 1 hash 'sha1'

# ESP group
```

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```

set vpn ipsec esp-group MyESPGroup proposal 1 encryption 'aes128'
set vpn ipsec esp-group MyESPGroup proposal 1 hash 'sha1'

# IPsec tunnel
set vpn ipsec site-to-site peer right authentication mode pre-shared-secret
set vpn ipsec site-to-site peer right authentication remote-id 203.0.113.45

set vpn ipsec site-to-site peer right ike-group MyIKEGroup
set vpn ipsec site-to-site peer right default-esp-group MyESPGroup

set vpn ipsec site-to-site peer right local-address 192.0.2.10
set vpn ipsec site-to-site peer right remote-address 203.0.113.45

# This will match all GRE traffic to the peer
set vpn ipsec site-to-site peer right tunnel 1 protocol gre

```

On the RIGHT, setup by analogy and swap local and remote addresses.

### Source tunnel from dummy interface

The scheme above doesn't work when one of the routers has a dynamic external address though. The classic workaround for this is to setup an address on a loopback interface and use it as a source address for the GRE tunnel, then setup an IPsec policy to match those loopback addresses.

We assume that the LEFT router has static 192.0.2.10 address on eth0, and the RIGHT router has a dynamic address on eth0.

The peer names RIGHT and LEFT are used as informational text.

### Setting up the GRE tunnel

On the LEFT:

```

set interfaces dummy dum0 address 192.168.99.1/32

set interfaces tunnel tun0 encapsulation gre
set interfaces tunnel tun0 address 10.10.10.1/30
set interfaces tunnel tun0 source-address 192.168.99.1
set interfaces tunnel tun0 remote 192.168.99.2

```

On the RIGHT:

```

set interfaces dummy dum0 address 192.168.99.2/32

set interfaces tunnel tun0 encapsulation gre
set interfaces tunnel tun0 address 10.10.10.2/30
set interfaces tunnel tun0 source-address 192.168.99.2
set interfaces tunnel tun0 remote 192.168.99.1

```

### Setting up IPSec

However, now you need to make IPsec work with dynamic address on one side. The tricky part is that pre-shared secret authentication doesn't work with dynamic address, so we'll have to use RSA keys.

First, on both routers run the operational command “generate pki key-pair install <key-pair name>”. You may choose different length than 2048 of course.

```
vyos@left# run generate pki key-pair install ipsec-LEFT
Enter private key type: [rsa, dsa, ec] (Default: rsa)
Enter private key bits: (Default: 2048)
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] N
Configure mode commands to install key pair:
Do you want to install the public key? [Y/n] Y
set pki key-pair ipsec-LEFT public key 'MIIBIjANBgkqh...'
Do you want to install the private key? [Y/n] Y
set pki key-pair ipsec-LEFT private key 'MIEvgIBADAN...'
[edit]
```

Configuration commands for the private and public key will be displayed on the screen which needs to be set on the router first. Note the command with the public key (set pki key-pair ipsec-LEFT public key ‘MIIBIjANBgkqh...’). Then do the same on the opposite router:

```
vyos@left# run generate pki key-pair install ipsec-RIGHT
```

Note the command with the public key (set pki key-pair ipsec-RIGHT public key ‘FAAOCAQ8AMII...’).

Now the noted public keys should be entered on the opposite routers.

On the LEFT:

```
set pki key-pair ipsec-RIGHT public key 'FAAOCAQ8AMII...'
```

On the RIGHT:

```
set pki key-pair ipsec-LEFT public key 'MIIBIjANBgkqh...'
```

Now you are ready to setup IPsec. You’ll need to use an ID instead of address for the peer.

On the LEFT (static address):

```
set vpn ipsec interface eth0

set vpn ipsec esp-group MyESPGroup proposal 1 encryption aes128
set vpn ipsec esp-group MyESPGroup proposal 1 hash sha1

set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group 2
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption aes128
set vpn ipsec ike-group MyIKEGroup proposal 1 hash sha1

set vpn ipsec site-to-site peer RIGHT authentication local-id LEFT
set vpn ipsec site-to-site peer RIGHT authentication mode rsa
set vpn ipsec site-to-site peer RIGHT authentication rsa local-key ipsec-LEFT
set vpn ipsec site-to-site peer RIGHT authentication rsa remote-key ipsec-RIGHT
set vpn ipsec site-to-site peer RIGHT authentication remote-id RIGHT
set vpn ipsec site-to-site peer RIGHT default-esp-group MyESPGroup
set vpn ipsec site-to-site peer RIGHT ike-group MyIKEGroup
set vpn ipsec site-to-site peer RIGHT local-address 192.0.2.10
set vpn ipsec site-to-site peer RIGHT connection-type respond
```

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```
set vpn ipsec site-to-site peer RIGHT tunnel 1 local prefix 192.168.99.1/32 #
↳Additional loopback address on the local
set vpn ipsec site-to-site peer RIGHT tunnel 1 remote prefix 192.168.99.2/32 #
↳Additional loopback address on the remote
```

On the RIGHT (dynamic address):

```
set vpn ipsec interface eth0

set vpn ipsec esp-group MyESPGroup proposal 1 encryption aes128
set vpn ipsec esp-group MyESPGroup proposal 1 hash sha1

set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group 2
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption aes128
set vpn ipsec ike-group MyIKEGroup proposal 1 hash sha1

set vpn ipsec site-to-site peer LEFT authentication local-id RIGHT
set vpn ipsec site-to-site peer LEFT authentication mode rsa
set vpn ipsec site-to-site peer LEFT authentication rsa local-key ipsec-RIGHT
set vpn ipsec site-to-site peer LEFT authentication rsa remote-key ipsec-LEFT
set vpn ipsec site-to-site peer LEFT authentication remote-id LEFT
set vpn ipsec site-to-site peer LEFT connection-type initiate
set vpn ipsec site-to-site peer LEFT default-esp-group MyESPGroup
set vpn ipsec site-to-site peer LEFT ike-group MyIKEGroup
set vpn ipsec site-to-site peer LEFT local-address any
set vpn ipsec site-to-site peer LEFT remote-address 192.0.2.10
set vpn ipsec site-to-site peer LEFT tunnel 1 local prefix 192.168.99.2/32 # Additional
↳loopback address on the local
set vpn ipsec site-to-site peer LEFT tunnel 1 remote prefix 192.168.99.1/32 # Additional
↳loopback address on the remote
```

## IKEv2 IPsec road-warriors remote-access VPN

Internet Key Exchange version 2, IKEv2 for short, is a request/response protocol developed by both Cisco and Microsoft. It is used to establish and secure IPv4/IPv6 connections, be it a site-to-site VPN or from a road-warrior connecting to a hub site. IKEv2, when run in point-to-multipoint, or remote-access/road-warrior mode, secures the server-side with another layer by using an x509 signed server certificate.

Key exchange and payload encryption is still done using IKE and ESP proposals as known from IKEv1 but the connections are faster to establish, more reliable, and also support roaming from IP to IP (called MOBIKE which makes sure your connection does not drop when changing networks from e.g. WIFI to LTE and back).

This feature closely works together with *PKI* subsystem as you required a x509 certificate.

This example uses CACert as certificate authority.

```
set pki ca CACert_Class_3_Root certificate
↳'MIIGPTCCBCwGawIBAgIDF0IoMA0GCSqGSIB3DQEEDQUAMHkxEDA0BgNVBAoTB1Jvb3QgQ0ExHjAcBgNVBAsTFWh0dHA6Ly93d3cu
↳UErEa4w75/
↳ZIOQbCTzYZzA8pD6Ueb1aQFjww9W4kpCz+JEjCUoqMV5CX1GuYrz6fM0KQhF5Byfy5QEHIGoFLOYZcRD7E6CjQnRvApbjZLQ7N6Qx
↳fRb0fEze5ig1JuLgiapNkVGJGmhZJHsK5I6223IeyFGmhyNav/
↳8BBdwPSUp2rV05J+TJAFfpPBLIukjmJ0FXFuC3ED6q8V0JrU0gVyb4z5K+taciX50Ubjchs+BMNkJyIQKopPWKcDrb60LhPtXapI1
↳LP/
```

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```

→ JaT4NsRNlRiNDiPDGcb05dWOK3z0luLoFvqTpa4fnfVoIZwQNORKbeiPK31jLvPgpKK5DR7wNhsX+kKwsOnIJpa3yxdUly6R9Wb7y
→ KcCyQQNokszgnMyXS0XvOhAKq3A6mJVwrTWx6oUrpByAITGprmb6gCZIALgBwJNjVSKRPFbnr9s6JfOPMVTqJouBwfmh0VMRxxXudA
→ Z0EeBtsSw/LIaRmXGapneLNGDRFLQsrJ2vjBDtn8Rq+G8T/HNZ92ZCdB6K4/
→ jc0m+YnMtHmJVABfvpAgMBAAGjgfiwge8wDwYDVR0TAQH/BAUwAwEB/
→ zBhBggrBgEFBQcBAQRVMFmWiwYIKwYBBQUHMAAGGF2h0dHA6Ly9vY3NwLkNBY2VydC5vcmcvMCwGCCsGAQUFBzAChiBodHRwOi8vd3
→ mARN+Yz5R3lzUvXs3zSX+z534NzRg4i6iHNNWqakFcQnCa0PnksTB37vGD75pQGqeSmx51L6UzrIpn+274mhsaFNL85jhX+1Kuk71
→ vvoLNkh/L3iEQ5/
→ LnmLMCYJNRALF7I7gsduAJNJrgKGMvHkt1bo8uIX08wgNV7qoU4Joab1ML30QUqGcFr0TI06FFdgK2fwy5hulPxm6wuxW0v+iAtX
→ mRkwQpYbcVQtrIDvx1CT1k50cQxi+jIKjkcFWhw3kBoDnCos/
→ ukegPT7aQnk2AbL4c7nCkuAcEKw1BALSETkfqj5btdlhh58MhewZv1LcL5zQyg8w1puc1T3wXQvy8VwPGn0J/
→ mGD4gLLZ9rGcHDUECokxFoWk+u5MCcVqmGbsyG4q5suS3Cns1sHURfm8bQK4oLvHR8LCHEBMRcdFbn87cSvOK6eB1kdGKLA8ymXxZ
→ '
set pki ca CAcert_Signing_Authority certificate
→ 'MIIG7jCCBNagAwIBAgIBDzANBgkqhkiG9w0BAQsFADB5MRAwDgYDVQQKEwdSb290IENBMR4wHAYDVQQLExVodHRwOi8vd3d3LmN
→ pnCujW0r8+55jE8Ez64A07NV1sId6eINm6zWYyN3L69wj1x81Yy7nDl7qPv4coRQKFwyGhFtkZip6qUtTefWIonvuLwphK42yfk1
→ JHIJ6BVgrCFvzOKKrF11myZjXnhCLotLddJr3cQxyYN/
→ Nb5gznZY0dj4kepKwDpUeb+agRThHqtdB7Uq3EvbXG40KDy7YCbZZ16oE/
→ 9KTfWgu3YtLq1i6L43q1aegw1Sjpfvbi1EinLDvhG+LJGGi5Z4rSDTii8aP8bQUWWHIEZAWV/
→ RRYH9XzQQUxPKZgh/
→ TMfdQwEUfoZd9vUFBzugcMd9Zi3aQaRIt0AUMyBmawSB3s42mhb5ivUfslfrejrckzzAeVLIL+aplFkKQABi6F1ITe1Yw1nPkJZPC
→ 0PsmBsJUUtawSjx8cTLc6nloQsCAwEAAOCAX8wggF7MB0GA1UdDgQWBQWtTtB1Mfz40a0873SsDrusjkY0TAPBgNVHRMBAf8EBT
→ MDQGCWCGSAGG+EIBCAQnFiVodHRwOi8vd3d3LmNhy2VydC5vcmcvaW5kZXgucGhwP2lkPTEwMFYGCWCGSAGG+EIBDQRJFkdUbyBnZ
→ 1Xpgdw/+IP1GRwdg7xUpReUA482l4MH1kf0W0ad94SuIfNWQHcdLApmno/
→ SUh1bpZyeWrMnlhkGNDKmxCCQXQ360TwFHC8dfEAaq5ry6cZzm1oetrkSviE2qofxv1VFiQ+9TX3/zkECCsUB/
→ EjPM0lxFBmu9T5Ih+Eqns9ivmrEIQDv9tNyJHuLsDNqbUBal70oiPZnXk9LH+qb+plF1ofv5noy5vX2a50KebHe+0Ex/
→ A7e+G/Hu0jVNqhZ9j5Nispfq9zNyOHGWD8ofj8DHwB50L1Xh5H+EbIoga/
→ hJCQnRtxWkHP699T1JpLFYwapplivF4TFv4fqp0nHTK1x9gGrIgvuYJl1txIKmxXdfJzgsCmzqpabhtHOMX0iWQBpWzyJkofF/
→ w55e0LttZDBkEsilv/
→ vW0CJsPs3eNaQF+iMWscG0kgLFlWsAS3HwyiYLNJo26aqyWPaIdc8E4ck7Sk08WrFrHIK3EHr4n1FZwmLpFAvucKqgl0hr+2jypyh
→ '

```

After you obtained your server certificate you can import it from a file on the local filesystem, or paste it into the CLI. Please note that when entering the certificate manually you need to strip the -----BEGIN KEY----- and -----END KEY----- tags. Also, the certificate or key needs to be presented in a single line without line breaks (\n).

To import it from the filesystem use:

```
import pki certificate <name> file /path/to/cert.pem
```

In our example the certificate name is called vyos:

```
set pki certificate vyos certificate 'MIIE45s...'
set pki certificate vyos private key 'MIIEvgI...'
```

After the PKI certs are all set up we can start configuring our IPSec/IKE proposals used for key-exchange end data encryption. The used encryption ciphers and integrity algorithms vary from operating system to operating system. The ones used in this post are validated to work on both Windows 10 and iOS/iPadOS 14 to 17.

```
set vpn ipsec esp-group ESP-RW compression 'disable'
set vpn ipsec esp-group ESP-RW lifetime '3600'
set vpn ipsec esp-group ESP-RW pfs 'disable'
set vpn ipsec esp-group ESP-RW proposal 10 encryption 'aes128gcm128'
set vpn ipsec esp-group ESP-RW proposal 10 hash 'sha256'
```

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```

set vpn ipsec ike-group IKE-RW key-exchange 'ikev2'
set vpn ipsec ike-group IKE-RW lifetime '7200'
set vpn ipsec ike-group IKE-RW mobike 'enable'
set vpn ipsec ike-group IKE-RW proposal 10 dh-group '14'
set vpn ipsec ike-group IKE-RW proposal 10 encryption 'aes128gcm128'
set vpn ipsec ike-group IKE-RW proposal 10 hash 'sha256'

```

Every connection/remote-access pool we configure also needs a pool where we can draw our client IP addresses from. We provide one IPv4 and IPv6 pool. Authorized clients will receive an IPv4 address from the 192.0.2.128/25 prefix and an IPv6 address from the 2001:db8:2000::/64 prefix. We can also send some DNS nameservers down to our clients used on their connection.

```

set vpn ipsec remote-access pool ra-rw-ipv4 name-server '192.0.2.1'
set vpn ipsec remote-access pool ra-rw-ipv4 prefix '192.0.2.128/25'
set vpn ipsec remote-access pool ra-rw-ipv6 name-server '2001:db8:1000::1'
set vpn ipsec remote-access pool ra-rw-ipv6 prefix '2001:db8:2000::/64'

```

VyOS supports multiple IKEv2 remote-access connections. Every connection can have its dedicated IKE/ESP ciphers, certificates or local listen address for e.g. inbound load balancing.

We configure a new connection named `rw` for road-warrior, that identifies itself as 192.0.2.1 to the clients and uses the `vyos` certificate signed by the `CAcert_Class3_Root` intermediate CA. We select our previously specified IKE/ESP groups and also link the IP address pool to draw addresses from.

```

set vpn ipsec remote-access connection rw authentication id '192.0.2.1'
set vpn ipsec remote-access connection rw authentication server-mode 'x509'
set vpn ipsec remote-access connection rw authentication x509 ca-certificate 'CAcert_
↪Class_3_Root'
set vpn ipsec remote-access connection rw authentication x509 certificate 'vyos'
set vpn ipsec remote-access connection rw esp-group 'ESP-RW'
set vpn ipsec remote-access connection rw ike-group 'IKE-RW'
set vpn ipsec remote-access connection rw local-address '192.0.2.1'
set vpn ipsec remote-access connection rw pool 'ra-rw-ipv4'
set vpn ipsec remote-access connection rw pool 'ra-rw-ipv6'

```

VyOS also supports (currently) two different modes of authentication, local and RADIUS. To create a new local user named `vyos` with password `vyos` use the following commands.

```

set vpn ipsec remote-access connection rw authentication client-mode 'eap-mschapv2'
set vpn ipsec remote-access connection rw authentication local-users username vyos
↪password 'vyos'

```

If you feel better forwarding all authentication requests to your enterprises RADIUS server, use the commands below.

```

set vpn ipsec remote-access connection rw authentication client-mode 'eap-radius'
set vpn ipsec remote-access radius server 192.0.2.2 key 'secret'

```

Configuring VyOS to act as your IPsec access concentrator is one thing, but you probably need to setup your client connecting to the server so they can talk to the IPsec gateway.

Windows 10 does not allow a user to choose the integrity and encryption ciphers using the GUI and it uses some older proposals by default. A user can only change the proposals on the client side by configuring the IPsec connection profile via PowerShell.

We generate a connection profile used by Windows clients that will connect to the “rw” connection on our VyOS server on the VPN servers IP address/fqdn *vpn.vyos.net*.

**Note:** Microsoft Windows expects the server name to be also used in the server’s certificate common name, so it’s best to use this DNS name for your VPN connection.

```
vyos@vyos:~$ generate ipsec profile windows-remote-access rw remote vpn.vyos.net

==== <snip> ====
Add-VpnConnection -Name "VyOS IKEv2 VPN" -ServerAddress "vpn.vyos.net" -TunnelType
↪ "Ikev2"
Set-VpnConnectionIPsecConfiguration -ConnectionName "VyOS IKEv2 VPN" -
↪ AuthenticationTransformConstants GCMAES128 -CipherTransformConstants GCMAES128 -
↪ EncryptionMethod GCMAES128 -IntegrityCheckMethod SHA256128 -PfsGroup None -DHGroup
↪ "Group14" -PassThru -Force
==== </snip> ====
```

As both Microsoft Windows and Apple iOS/iPadOS only support a certain set of encryption ciphers and integrity algorithms we will validate the configured IKE/ESP proposals and only list the compatible ones to the user — if multiple are defined. If there are no matching proposals found — we can not generate a profile for you.

When first connecting to the new VPN the user is prompted to enter proper credentials.

Like on Microsoft Windows, Apple iOS/iPadOS out of the box does not expose all available VPN options via the device GUI.

If you want, need, and should use more advanced encryption ciphers (default is still 3DES) you need to provision your device using a so-called “Device Profile”. A profile is a simple text file containing XML nodes with a *.mobileconfig* file extension that can be sent and opened on any device from an E-Mail.

Profile generation happens from the operational level and is as simple as issuing the following command to create a profile to connect to the IKEv2 access server at *vpn.vyos.net* with the configuration for the *rw* remote-access connection group.

**Note:** Apple iOS/iPadOS expects the server name to be also used in the server’s certificate common name, so it’s best to use this DNS name for your VPN connection.

```
vyos@vyos:~$ generate ipsec profile ios-remote-access rw remote vpn.vyos.net

==== <snip> ====
<!DOCTYPE plist PUBLIC "-//Apple//DTD PLIST 1.0//EN" "http://www.apple.com/DTDs/
↪ PropertyList-1.0.dtd">
<plist version="1.0">
...
</plist>
==== </snip> ====
```

In the end, an XML structure is generated which can be saved as *vyos.mobileconfig* and sent to the device by E-Mail where it later can be imported.

During profile import, the user is asked to enter its IPSec credentials (username and password) which is stored on the mobile.

### 8.13.2 L2TP

VyOS utilizes `accel-ppp` to provide L2TP server functionality. It can be used with local authentication or a connected RADIUS server.

#### Configuring L2TP Server

```
set vpn l2tp remote-access authentication mode local
set vpn l2tp remote-access authentication local-users username test password 'test'
set vpn l2tp remote-access client-ip-pool L2TP-POOL range 192.168.255.2-192.168.255.254
set vpn l2tp remote-access default-pool 'L2TP-POOL'
set vpn l2tp remote-access outside-address 192.0.2.2
set vpn l2tp remote-access gateway-address 192.168.255.1
```

**set vpn l2tp remote-access authentication mode <local | radius>**

Set authentication backend. The configured authentication backend is used for all queries.

- **radius:** All authentication queries are handled by a configured RADIUS server.
- **local:** All authentication queries are handled locally.

**set vpn l2tp remote-access authentication local-users username <user> password <pass>**

Create `<user>` for local authentication on this system. The users password will be set to `<pass>`.

**set vpn l2tp remote-access client-ip-pool <POOL-NAME> range <x.x.x.x-x.x.x.x | x.x.x.x/x>**

Use this command to define the first IP address of a pool of addresses to be given to l2tp clients. If notation `x.x.x.x-x.x.x.x`, it must be within a /24 subnet. If notation `x.x.x.x/x` is used there is possibility to set host/netmask.

**set vpn l2tp remote-access default-pool <POOL-NAME>**

Use this command to define default address pool name.

**set vpn l2tp remote-access gateway-address <gateway>**

Specifies single `<gateway>` IP address to be used as local address of PPP interfaces.

#### Configuring IPsec

```
set vpn ipsec interface eth0
set vpn l2tp remote-access ipsec-settings authentication mode pre-shared-secret
set vpn l2tp remote-access ipsec-settings authentication pre-shared-secret <secret>
```

**set vpn ipsec interface <INTERFACE>**

Use this command to define IPsec interface.

**set vpn l2tp remote-access ipsec-settings authentication mode <pre-shared-secret | x509>**

Set mode for IPsec authentication between VyOS and L2TP clients.

**set vpn l2tp remote-access ipsec-settings authentication mode <pre-shared-secret | x509>**

Set predefined shared secret phrase.

If a local firewall policy is in place on your external interface you will need to allow the ports below:

- UDP port 500 (IKE)

- IP protocol number 50 (ESP)
- UDP port 1701 for IPsec

As well as the below to allow NAT-traversal (when NAT is detected by the VPN client, ESP is encapsulated in UDP for NAT-traversal):

- UDP port 4500 (NAT-T)

Example:

```
set firewall name OUTSIDE-LOCAL rule 40 action 'accept'
set firewall name OUTSIDE-LOCAL rule 40 protocol 'esp'
set firewall name OUTSIDE-LOCAL rule 41 action 'accept'
set firewall name OUTSIDE-LOCAL rule 41 destination port '500'
set firewall name OUTSIDE-LOCAL rule 41 protocol 'udp'
set firewall name OUTSIDE-LOCAL rule 42 action 'accept'
set firewall name OUTSIDE-LOCAL rule 42 destination port '4500'
set firewall name OUTSIDE-LOCAL rule 42 protocol 'udp'
set firewall name OUTSIDE-LOCAL rule 43 action 'accept'
set firewall name OUTSIDE-LOCAL rule 43 destination port '1701'
set firewall name OUTSIDE-LOCAL rule 43 ipsec 'match-ipsec'
set firewall name OUTSIDE-LOCAL rule 43 protocol 'udp'
```

To allow VPN-clients access via your external address, a NAT rule is required:

```
set nat source rule 110 outbound-interface name 'eth0'
set nat source rule 110 source address '192.168.255.0/24'
set nat source rule 110 translation address masquerade
```

## Configuring RADIUS authentication

To enable RADIUS based authentication, the authentication mode needs to be changed within the configuration. Previous settings like the local users, still exists within the configuration, however they are not used if the mode has been changed from local to radius. Once changed back to local, it will use all local accounts again.

```
set vpn l2tp remote-access authentication mode radius
```

```
set vpn l2tp remote-access authentication radius server <server> key <secret>
```

Configure RADIUS *<server>* and its required shared *<secret>* for communicating with the RADIUS server.

Since the RADIUS server would be a single point of failure, multiple RADIUS servers can be setup and will be used subsequently. For example:

```
set vpn l2tp remote-access authentication radius server 10.0.0.1 key 'foo'
set vpn l2tp remote-access authentication radius server 10.0.0.2 key 'foo'
```

**Note:** Some RADIUS servers use an access control list which allows or denies queries, make sure to add your VyOS router to the allowed client list.

## RADIUS source address

If you are using OSPF as IGP, always the closest interface connected to the RADIUS server is used. With VyOS 1.2 you can bind all outgoing RADIUS requests to a single source IP e.g. the loopback interface.

```
set vpn l2tp remote-access authentication radius source-address <address>
```

Source IPv4 address used in all RADIUS server queries.

---

**Note:** The source-address must be configured on one of VyOS interface. Best practice would be a loopback or dummy interface.

---

## RADIUS advanced options

```
set vpn l2tp remote-access authentication radius server <server> port <port>
```

Configure RADIUS <server> and its required port for authentication requests.

```
set vpn l2tp remote-access authentication radius server <server> fail-time <time>
```

Mark RADIUS server as offline for this given <time> in seconds.

```
set vpn l2tp remote-access authentication radius server <server> disable
```

Temporary disable this RADIUS server.

```
set vpn l2tp remote-access authentication radius acct-timeout <timeout>
```

Timeout to wait reply for Interim-Update packets. (default 3 seconds)

```
set vpn l2tp remote-access authentication radius dynamic-author server <address>
```

Specifies IP address for Dynamic Authorization Extension server (DM/CoA)

```
set vpn l2tp remote-access authentication radius dynamic-author port <port>
```

Port for Dynamic Authorization Extension server (DM/CoA)

```
set vpn l2tp remote-access authentication radius dynamic-author key <secret>
```

Secret for Dynamic Authorization Extension server (DM/CoA)

```
set vpn l2tp remote-access authentication radius max-try <number>
```

Maximum number of tries to send Access-Request/Accounting-Request queries

```
set vpn l2tp remote-access authentication radius timeout <timeout>
```

Timeout to wait response from server (seconds)

```
set vpn l2tp remote-access authentication radius nas-identifier <identifier>
```

Value to send to RADIUS server in NAS-Identifier attribute and to be matched in DM/CoA requests.

```
set vpn l2tp remote-access authentication radius nas-ip-address <address>
```

Value to send to RADIUS server in NAS-IP-Address attribute and to be matched in DM/CoA requests. Also DM/CoA server will bind to that address.

```
set vpn l2tp remote-access authentication radius source-address <address>
```

Source IPv4 address used in all RADIUS server queries.

```
set vpn l2tp remote-access authentication radius rate-limit attribute <attribute>
```

Specifies which RADIUS server attribute contains the rate limit information. The default attribute is *Filter-Id*.

---

**Note:** If you set a custom RADIUS attribute you must define it on both dictionaries at RADIUS server and client.

---

**set vpn l2tp remote-access authentication radius rate-limit enable**

Enables bandwidth shaping via RADIUS.

**set vpn l2tp remote-access authentication radius rate-limit vendor**

Specifies the vendor dictionary, dictionary needs to be in /usr/share/accel-ppp/radius.

Received RADIUS attributes have a higher priority than parameters defined within the CLI configuration, refer to the explanation below.

### Allocation clients ip addresses by RADIUS

If the RADIUS server sends the attribute `Framed-IP-Address` then this IP address will be allocated to the client and the option `default-pool` within the CLI config is being ignored.

If the RADIUS server sends the attribute `Framed-Pool`, IP address will be allocated from a predefined IP pool whose name equals the attribute value.

If the RADIUS server sends the attribute `Stateful-IPv6-Address-Pool`, IPv6 address will be allocated from a predefined IPv6 pool `prefix` whose name equals the attribute value.

If the RADIUS server sends the attribute `Delegated-IPv6-Prefix-Pool`, IPv6 delegation prefix will be allocated from a predefined IPv6 pool `delegate` whose name equals the attribute value.

---

**Note:** `Stateful-IPv6-Address-Pool` and `Delegated-IPv6-Prefix-Pool` are defined in RFC6911. If they are not defined in your RADIUS server, add new [dictionary](#).

---

User interface can be put to VRF context via RADIUS Access-Accept packet, or change it via RADIUS CoA. `Acce1-VRF-Name` is used from these purposes. It is custom [ACCEL-PPP attribute](#). Define it in your RADIUS server.

### Renaming clients interfaces by RADIUS

If the RADIUS server uses the attribute `NAS-Port-Id`, ppp tunnels will be renamed.

---

**Note:** The value of the attribute `NAS-Port-Id` must be less than 16 characters, otherwise the interface won't be renamed.

---

## Configuring LNS (L2TP Network Server)

LNS are often used to connect to a LAC (L2TP Access Concentrator).

```
set vpn l2tp remote-access lns host-name <hostname>
```

Sent to the client (LAC) in the Host-Name attribute

```
set vpn l2tp remote-access lns shared-secret <secret>
```

Tunnel password used to authenticate the client (LAC)

To explain the usage of LNS follow our blueprint [PPPoE over L2TP](#).

## IPv6

```
set vpn l2tp remote-access ppp-options ipv6 <require | prefer | allow | deny>
```

Specifies IPv6 negotiation preference.

- **require** - Require IPv6 negotiation
- **prefer** - Ask client for IPv6 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv6 only if client requests
- **deny** - Do not negotiate IPv6 (default value)

```
set vpn l2tp remote-access client-ipv6-pool <IPv6-POOL-NAME> prefix <address> mask <number-of-bits>
```

Use this comand to set the IPv6 address pool from which an l2tp client will get an IPv6 prefix of your defined length (mask) to terminate the l2tp endpoint at their side. The mask length can be set from 48 to 128 bit long, the default value is 64.

```
set vpn l2tp remote-access client-ipv6-pool <IPv6-POOL-NAME> delegate <address> delegation-prefix <number-of-bits>
```

Use this command to configure DHCPv6 Prefix Delegation (RFC3633) on l2tp. You will have to set your IPv6 pool and the length of the delegation prefix. From the defined IPv6 pool you will be handing out networks of the defined length (delegation-prefix). The length of the delegation prefix can be set from 32 to 64 bit long.

```
set vpn l2tp remote-access default-ipv6-pool <IPv6-POOL-NAME>
```

Use this command to define default IPv6 address pool name.

```
set vpn l2tp remote-access ppp-options ipv6 allow
set vpn l2tp remote-access client-ipv6-pool IPv6-POOL delegate '2001:db8:8003::/48'
↪delegation-prefix '56'
set vpn l2tp remote-access client-ipv6-pool IPV6-POOL prefix '2001:db8:8002::/48' mask
↪'64'
set vpn l2tp remote-access default-ipv6-pool IPv6-POOL
```

## IPv6 Advanced Options

**set vpn l2tp remote-access ppp-options ipv6-accept-peer-interface-id**

Accept peer interface identifier. By default is not defined.

**set vpn l2tp remote-access ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies fixed or random interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6

**set vpn l2tp remote-access ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies peer interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6
- **ipv4-addr** - Calculate interface identifier from IPv4 address.
- **calling-sid** - Calculate interface identifier from calling-station-id.

## Scripting

**set vpn l2tp remote-access extended-scripts on-change <path\_to\_script>**

Script to run when session interface changed by RADIUS CoA handling

**set vpn l2tp remote-access extended-scripts on-down <path\_to\_script>**

Script to run when session interface going to terminate

**set vpn l2tp remote-access extended-scripts on-pre-up <path\_to\_script>**

Script to run before session interface comes up

**set vpn l2tp remote-access extended-scripts on-up <path\_to\_script>**

Script to run when session interface is completely configured and started

## Advanced Options

### Authentication Advanced Options

**set vpn l2tp remote-access authentication local-users username <user> disable**

Disable <user> account.

**set vpn l2tp remote-access authentication local-users username <user> static-ip <address>**

Assign static IP address to <user> account.

**set vpn l2tp remote-access authentication local-users username <user> rate-limit download <bandwidth>**

Download bandwidth limit in kbit/s for <user>.

**set vpn l2tp remote-access authentication local-users username <user> rate-limit upload <bandwidth>**

Upload bandwidth limit in kbit/s for *<user>*.

```
set vpn l2tp remote-access authentication protocols <pap | chap | mschap | mschap-v2>
```

Require the peer to authenticate itself using one of the following protocols: pap, chap, mschap, mschap-v2.

### Client IP Pool Advanced Options

```
set vpn l2tp remote-access client-ip-pool <POOL-NAME> next-pool <NEXT-POOL-NAME>
```

Use this command to define the next address pool name.

### PPP Advanced Options

```
set vpn l2tp remote-access ppp-options disable-ccp
```

Disable Compression Control Protocol (CCP). CCP is enabled by default.

```
set vpn l2tp remote-access ppp-options interface-cache <number>
```

Specifies number of interfaces to keep in cache. It means that don't destroy interface after corresponding session is destroyed, instead place it to cache and use it later for new sessions repeatedly. This should reduce kernel-level interface creation/deletion rate lack. Default value is **0**.

```
set vpn l2tp remote-access ppp-options ipv4 <require | prefer | allow | deny>
```

Specifies IPv4 negotiation preference.

- **require** - Require IPv4 negotiation
- **prefer** - Ask client for IPv4 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv4 only if client requests (Default value)
- **deny** - Do not negotiate IPv4

```
set vpn l2tp remote-access ppp-options lcp-echo-failure <number>
```

Defines the maximum *<number>* of unanswered echo requests. Upon reaching the value *<number>*, the session will be reset. Default value is **3**.

```
set vpn l2tp remote-access ppp-options lcp-echo-interval <interval>
```

If this option is specified and is greater than 0, then the PPP module will send LCP pings of the echo request every *<interval>* seconds. Default value is **30**.

```
set vpn l2tp remote-access ppp-options lcp-echo-timeout
```

Specifies timeout in seconds to wait for any peer activity. If this option specified it turns on adaptive lcp echo functionality and "lcp-echo-failure" is not used. Default value is **0**.

```
set vpn l2tp remote-access ppp-options min-mtu <number>
```

Defines minimum acceptable MTU. If client will try to negotiate less then specified MTU then it will be NAKed or disconnected if rejects greater MTU. Default value is **100**.

```
set vpn l2tp remote-access ppp-options mppe <require | prefer | deny>
```

Specifies MPPE negotiation preference.

- **require** - ask client for mppe, if it rejects drop connection
- **prefer** - ask client for mppe, if it rejects don't fail. (Default value)

- **deny** - deny mppe

Default behavior - don't ask client for mppe, but allow it if client wants. Please note that RADIUS may override this option by MS-MPPE-Encryption-Policy attribute.

**set vpn l2tp remote-access ppp-options mru <number>**

Defines preferred MRU. By default is not defined.

### Global Advanced options

**set vpn l2tp remote-access description <description>**

Set description.

**set vpn l2tp remote-access limits burst <value>**

Burst count

**set vpn l2tp remote-access limits connection-limit <value>**

Acceptable rate of connections (e.g. 1/min, 60/sec)

**set vpn l2tp remote-access limits timeout <value>**

Timeout in seconds

**set vpn l2tp remote-access mtu**

Maximum Transmission Unit (MTU) (default: **1436**)

**set vpn l2tp remote-access max-concurrent-sessions**

Maximum number of concurrent session start attempts

**set vpn l2tp remote-access name-server <address>**

Connected client should use *<address>* as their DNS server. This command accepts both IPv4 and IPv6 addresses. Up to two nameservers can be configured for IPv4, up to three for IPv6.

**set vpn l2tp remote-access shaper fwmark <1-2147483647>**

Match firewall mark value

**set vpn l2tp remote-access snmp master-agent**

Enable SNMP

**set vpn l2tp remote-access wins-server <address>**

Windows Internet Name Service (WINS) servers propagated to client

### Monitoring

```
vyos@vyos:~$ show l2tp-server sessions
ifname | username |      ip      | ip6 | ip6-dp | calling-sid | rate-limit | state |
↪uptime | rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----+-----+-----+
↪-----+-----+-----+-----+-----+-----+-----+-----+
l2tp0 | test      | 192.168.255.3 |     |         | 192.168.0.36 |           | active |
↪02:01:47 | 7.7 KiB  | 1.2 KiB
```

```
vyos@vyos:~$ show l2tp-server statistics
uptime: 0.02:49:49
cpu: 0%
mem(rss/virt): 5920/100892 kB
core:
  mempool_allocated: 133202
  mempool_available: 131770
  thread_count: 1
  thread_active: 1
  context_count: 5
  context_sleeping: 0
  context_pending: 0
  md_handler_count: 3
  md_handler_pending: 0
  timer_count: 0
  timer_pending: 0
sessions:
  starting: 0
  active: 0
  finishing: 0
l2tp:
  tunnels:
    starting: 0
    active: 0
    finishing: 0
  sessions (control channels):
    starting: 0
    active: 0
    finishing: 0
  sessions (data channels):
    starting: 0
    active: 0
    finishing: 0
```

### 8.13.3 OpenConnect

OpenConnect-compatible server feature is available from this release. Openconnect VPN supports SSL connection and offers full network access. SSL VPN network extension connects the end-user system to the corporate network with access controls based only on network layer information, such as destination IP address and port number. So, it provides safe communication for all types of device traffic across public networks and private networks, also encrypts the traffic with SSL protocol.

The remote user will use the openconnect client to connect to the router and will receive an IP address from a VPN pool, allowing full access to the network.

## Configuration

### SSL Certificates

We need to generate the certificate which authenticates users who attempt to access the network resource through the SSL VPN tunnels. The following commands will create a self signed certificates and will be stored in configuration:

```
run generate pki ca install <CA name>
run generate pki certificate sign <CA name> install <Server name>
```

We can also create the certificates using Cerbort which is an easy-to-use client that fetches a certificate from Let's Encrypt an open certificate authority launched by the EFF, Mozilla, and others and deploys it to a web server.

```
sudo certbot certonly --standalone --preferred-challenges http -d <domain name>
```

### Server Configuration

```
set vpn openconnect authentication local-users username <user> password <pass>
set vpn openconnect authentication mode <local password|radius>
set vpn openconnect network-settings client-ip-settings subnet <subnet>
set vpn openconnect network-settings name-server <address>
set vpn openconnect network-settings name-server <address>
set vpn openconnect ssl ca-certificate <pki-ca-name>
set vpn openconnect ssl certificate <pki-cert-name>
set vpn openconnect ssl passphrase <pki-password>
```

### 2FA OTP support

Instead of password only authentication, 2FA password authentication + OTP key can be used. Alternatively, OTP authentication only, without a password, can be used. To do this, an OTP configuration must be added to the configuration above:

```
set vpn openconnect authentication mode local <password-otp|otp>
set vpn openconnect authentication local-users username <user> otp <key>
set vpn openconnect authentication local-users username <user> interval <interval>
↳(optional)>
set vpn openconnect authentication local-users username <user> otp-length <otp-length>
↳(optional)>
set vpn openconnect authentication local-users username <user> token-type <token-type>
↳(optional)>
```

For generating an OTP key in VyOS, you can use the CLI command (operational mode):

```
generate openconnect username <user> otp-key hotp-time
```

## Verification

```
vyos@vyos:~$ sh openconnect-server sessions
interface  username  ip          remote IP  RX      TX      state      ↵
↵uptime
-----
↵---
sslvpn0    tst       172.20.20.198  192.168.6.1  0 bytes  152 bytes  connected  3s
```

**Note:** It is compatible with Cisco (R) AnyConnect (R) clients.

## Example

### SSL Certificates generation

Follow the instructions to generate CA cert (in configuration mode):

```
vyos@vyos# run generate pki ca install ca-ocserv
Enter private key type: [rsa, dsa, ec] (Default: rsa)
Enter private key bits: (Default: 2048)
Enter country code: (Default: GB) US
Enter state: (Default: Some-State) Delaware
Enter locality: (Default: Some-City) Mycity
Enter organization name: (Default: VyOS) MyORG
Enter common name: (Default: vyos.io) oc-ca
Enter how many days certificate will be valid: (Default: 1825) 3650
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] N
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.
[edit]
```

Follow the instructions to generate server cert (in configuration mode):

```
vyos@vyos# run generate pki certificate sign ca-ocserv install srv-ocserv
Do you already have a certificate request? [y/N] N
Enter private key type: [rsa, dsa, ec] (Default: rsa)
Enter private key bits: (Default: 2048)
Enter country code: (Default: GB) US
Enter state: (Default: Some-State) Delaware
Enter locality: (Default: Some-City) Mycity
Enter organization name: (Default: VyOS) MyORG
Enter common name: (Default: vyos.io) oc-srv
Do you want to configure Subject Alternative Names? [y/N] N
Enter how many days certificate will be valid: (Default: 365) 1830
Enter certificate type: (client, server) (Default: server)
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] N
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.
[edit]
```

Each of the install command should be applied to the configuration and committed before using under the openconnect configuration:

```
vyos@vyos# commit
[edit]
vyos@vyos# save
Saving configuration to '/config/config.boot'...
Done
[edit]
```

## Openconnect Configuration

Simple setup with one user added and password authentication:

```
set vpn openconnect authentication local-users username tst password 'OC_bad_Secret'
set vpn openconnect authentication mode local password
set vpn openconnect network-settings client-ip-settings subnet '172.20.20.0/24'
set vpn openconnect network-settings name-server '10.1.1.1'
set vpn openconnect network-settings name-server '10.1.1.2'
set vpn openconnect ssl ca-certificate 'ca-ocserv'
set vpn openconnect ssl certificate 'srv-ocserv'
```

To enable the HTTP security headers in the configuration file, use the command:

```
set vpn openconnect http-security-headers
```

## Adding a 2FA with an OTP-key

First the OTP keys must be generated and sent to the user and to the configuration:

```
vyos@vyos:~$ generate openconnect username tst otp-key hotp-time
# You can share it with the user, he just needs to scan the QR in his OTP app
# username:  tst
# OTP KEY:  5PA4SGYTQSGOB03H3EQSSNCUNZAYAPH2
# OTP URL:  otpauth://totp/tst@vyos?secret=5PA4SGYTQSGOB03H3EQSSNCUNZAYAPH2&digits=6&
↳period=30
```

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```
# To add this OTP key to configuration, run the following commands:
set vpn openconnect authentication local-users username tst otp key
↪ 'ebc1c91b13848ce0bb67d9212934546e41803cfa'
```

Next it is necessary to configure 2FA for OpenConnect:

```
set vpn openconnect authentication mode local password-otp
set vpn openconnect authentication local-users username tst otp key
↪ 'ebc1c91b13848ce0bb67d9212934546e41803cfa'
```

Now when connecting the user will first be asked for the password and then the OTP key.

**Warning:** When using Time-based one-time password (TOTP) (OTP HOTP-time), be sure that the time on the server and the OTP token generator are synchronized by NTP

To display the configured OTP user settings, use the command:

```
show openconnect-server user <username> otp <full|key-b32|key-hex|qrcode|uri>
```

## Identity Based Configuration

OpenConnect supports a subset of its configuration options to be applied on a per user/group basis, for configuration purposes we refer to this functionality as “Identity based config”. The following [OpenConnect Server Manual](#) outlines the set of configuration options that are allowed. This can be leveraged to apply different sets of configs to different users or groups of users.

```
sudo mkdir -p /config/auth/ocserv/config-per-user
sudo touch /config/auth/ocserv/default-user.conf

set vpn set vpn openconnect authentication identity-based-config mode user
set vpn openconnect authentication identity-based-config directory /config/auth/ocserv/
↪ config-per-user
set vpn openconnect authentication identity-based-config default-config /config/auth/
↪ ocserv/default-user.conf
```

**Warning:** The above directory and default-config must be a child directory of /config/auth, since files outside this directory are not persisted after an image upgrade.

Once you commit the above changes you can create a config file in the /config/auth/ocserv/config-per-user directory that matches a username of a user you have created e.g. “tst”. Now when logging in with the “tst” user the config options you set in this file will be loaded.

Be sure to set a sane default config in the default config file, this will be loaded in the case that a user is authenticated and no file is found in the configured directory matching the users username/group.

```
sudo nano /config/auth/ocserv/config-per-user/tst
```

The same configuration options apply when Identity based config is configured in group mode except that group mode can only be used with RADIUS authentication.

**Warning:** OpenConnect server matches the filename in a case sensitive manner, make sure the username/group name you configure matches the filename exactly.

### Configuring RADIUS accounting

OpenConnect can be configured to send accounting information to a RADIUS server to capture user session data such as time of connect/disconnect, data transferred, and so on.

Configure an accounting server and enable accounting with:

```
set vpn openconnect accounting mode radius
set vpn openconnect accounting radius server 172.20.20.10
set vpn openconnect accounting radius server 172.20.20.10 port 1813
set vpn openconnect accounting radius server 172.20.20.10 key your_radius_secret
```

**Warning:** The RADIUS accounting feature must be used with the OpenConnect authentication mode RADIUS. It cannot be used with local authentication. You must configure the OpenConnect authentication mode to “radius”.

An example of the data captured by a FREERADIUS server with sql accounting:

```
mysql> SELECT username, nasipaddress, acctstarttime, acctstoptime, acctinputoctets,
↵acctoutputoctets, callingstationid, framedipaddress, connectinfo_start FROM radacct;
+-----+-----+-----+-----+-----+
↵+-----+-----+-----+-----+-----+
↵-----+
| username | nasipaddress | acctstarttime | acctstoptime | acctinputoctets|
↵| acctoutputoctets | callingstationid | framedipaddress | connectinfo_start |
↵ |
+-----+-----+-----+-----+-----+
↵+-----+-----+-----+-----+-----+
↵-----+
| test | 198.51.100.15 | 2023-01-13 00:59:15 | 2023-01-13 00:59:21 | 10606|
↵| 152 | 192.168.6.1 | 172.20.20.198 | Open AnyConnect VPN Agent|
↵v8.05-1 |
+-----+-----+-----+-----+-----+
↵+-----+-----+-----+-----+-----+
↵-----+
```

### 8.13.4 PPTP-Server

The Point-to-Point Tunneling Protocol (*PPTP*) has been implemented in VyOS only for backwards compatibility. PPTP has many well known security issues and you should use one of the many other new VPN implementations.

#### Configuring PPTP Server

```
set vpn pptp remote-access authentication mode local
set vpn pptp remote-access authentication local-users username test password 'test'
set vpn pptp remote-access client-ip-pool PPTP-POOL range 192.168.255.2-192.168.255.254
set vpn pptp remote-access default-pool 'PPTP-POOL'
set vpn pptp remote-access outside-address 192.0.2.2
set vpn pptp remote-access gateway-address 192.168.255.1
```

**set vpn pptp remote-access authentication mode <local | radius>**

Set authentication backend. The configured authentication backend is used for all queries.

- **radius:** All authentication queries are handled by a configured RADIUS server.
- **local:** All authentication queries are handled locally.
- **noauth:** Authentication disabled.

**set vpn pptp remote-access authentication local-users username <user> password <pass>**

Create *<user>* for local authentication on this system. The users password will be set to *<pass>*.

**set vpn pptp remote-access client-ip-pool <POOL-NAME> range <x.x.x.x-x.x.x.x | x.x.x.x/x>**

Use this command to define the first IP address of a pool of addresses to be given to PPTP clients. If notation *x.x.x.x-x.x.x.x*, it must be within a /24 subnet. If notation *x.x.x.x/x* is used there is possibility to set host/netmask.

**set vpn pptp remote-access default-pool <POOL-NAME>**

Use this command to define default address pool name.

**set vpn pptp remote-access gateway-address <gateway>**

Specifies single *<gateway>* IP address to be used as local address of PPP interfaces.

#### Configuring RADIUS authentication

To enable RADIUS based authentication, the authentication mode needs to be changed within the configuration. Previous settings like the local users, still exists within the configuration, however they are not used if the mode has been changed from local to radius. Once changed back to local, it will use all local accounts again.

```
set vpn pptp remote-access authentication mode radius
```

**set vpn pptp remote-access authentication radius server <server> key <secret>**

Configure RADIUS *<server>* and its required shared *<secret>* for communicating with the RADIUS server.

Since the RADIUS server would be a single point of failure, multiple RADIUS servers can be setup and will be used subsequently. For example:

```
set vpn pptp remote-access authentication radius server 10.0.0.1 key 'foo'
set vpn pptp remote-access authentication radius server 10.0.0.2 key 'foo'
```

---

**Note:** Some RADIUS servers use an access control list which allows or denies queries, make sure to add your VyOS router to the allowed client list.

---

### RADIUS source address

If you are using OSPF as IGP, always the closest interface connected to the RADIUS server is used. You can bind all outgoing RADIUS requests to a single source IP e.g. the loopback interface.

```
set vpn pptp remote-access authentication radius source-address <address>
```

Source IPv4 address used in all RADIUS server queries.

---

**Note:** The source-address must be configured on one of VyOS interface. Best practice would be a loopback or dummy interface.

---

### RADIUS advanced options

```
set vpn pptp remote-access authentication radius server <server> port <port>
```

Configure RADIUS *<server>* and its required port for authentication requests.

```
set vpn pptp remote-access authentication radius server <server> fail-time <time>
```

Mark RADIUS server as offline for this given *<time>* in seconds.

```
set vpn pptp remote-access authentication radius server <server> disable
```

Temporary disable this RADIUS server.

```
set vpn pptp remote-access authentication radius acct-timeout <timeout>
```

Timeout to wait reply for Interim-Update packets. (default 3 seconds)

```
set vpn pptp remote-access authentication radius dynamic-author server <address>
```

Specifies IP address for Dynamic Authorization Extension server (DM/CoA)

```
set vpn pptp remote-access authentication radius dynamic-author port <port>
```

Port for Dynamic Authorization Extension server (DM/CoA)

```
set vpn pptp remote-access authentication radius dynamic-author key <secret>
```

Secret for Dynamic Authorization Extension server (DM/CoA)

```
set vpn pptp remote-access authentication radius max-try <number>
```

Maximum number of tries to send Access-Request/Accounting-Request queries

```
set vpn pptp remote-access authentication radius timeout <timeout>
```

Timeout to wait response from server (seconds)

```
set vpn pptp remote-access authentication radius nas-identifier <identifier>
```

Value to send to RADIUS server in NAS-Identifier attribute and to be matched in DM/CoA requests.

```
set vpn pptp remote-access authentication radius nas-ip-address <address>
```

Value to send to RADIUS server in NAS-IP-Address attribute and to be matched in DM/CoA requests. Also DM/CoA server will bind to that address.

**set vpn pptp remote-access authentication radius source-address <address>**

Source IPv4 address used in all RADIUS server queires.

**set vpn pptp remote-access authentication radius rate-limit attribute <attribute>**

Specifies which RADIUS server attribute contains the rate limit information. The default attribute is *Filter-Id*.

---

**Note:** If you set a custom RADIUS attribute you must define it on both dictionaries at RADIUS server and client.

---

**set vpn pptp remote-access authentication radius rate-limit enable**

Enables bandwidth shaping via RADIUS.

**set vpn pptp remote-access authentication radius rate-limit vendor**

Specifies the vendor dictionary, dictionary needs to be in /usr/share/accel-ppp/radius.

Received RADIUS attributes have a higher priority than parameters defined within the CLI configuration, refer to the explanation below.

### Allocation clients ip addresses by RADIUS

If the RADIUS server sends the attribute `Framed-IP-Address` then this IP address will be allocated to the client and the option `default-pool` within the CLI config is being ignored.

If the RADIUS server sends the attribute `Framed-Pool`, IP address will be allocated from a predefined IP pool whose name equals the attribute value.

If the RADIUS server sends the attribute `Stateful-IPv6-Address-Pool`, IPv6 address will be allocated from a predefined IPv6 pool `prefix` whose name equals the attribute value.

If the RADIUS server sends the attribute `Delegated-IPv6-Prefix-Pool`, IPv6 delegation pefix will be allocated from a predefined IPv6 pool `delegate` whose name equals the attribute value.

---

**Note:** `Stateful-IPv6-Address-Pool` and `Delegated-IPv6-Prefix-Pool` are defined in RFC6911. If they are not defined in your RADIUS server, add new [dictionary](#).

---

User interface can be put to VRF context via RADIUS Access-Accept packet, or change it via RADIUS CoA. `Acce1-VRF-Name` is used from these purposes. It is custom [ACCEL-PPP attribute](#). Define it in your RADIUS server.

### Renaming clients interfaces by RADIUS

If the RADIUS server uses the attribute `NAS-Port-Id`, ppp tunnels will be renamed.

---

**Note:** The value of the attribute `NAS-Port-Id` must be less than 16 characters, otherwise the interface won't be renamed.

---

## IPv6

**set vpn pptp remote-access ppp-options ipv6 <require | prefer | allow | deny>**

Specifies IPv6 negotiation preference.

- **require** - Require IPv6 negotiation
- **prefer** - Ask client for IPv6 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv6 only if client requests
- **deny** - Do not negotiate IPv6 (default value)

**set vpn pptp remote-access client-ipv6-pool <IPv6-POOL-NAME> prefix <address> mask <number-of-bits>**

Use this command to set the IPv6 address pool from which an PPTP client will get an IPv6 prefix of your defined length (mask) to terminate the PPTP endpoint at their side. The mask length can be set from 48 to 128 bit long, the default value is 64.

**set vpn pptp remote-access client-ipv6-pool <IPv6-POOL-NAME> delegate <address> delegation-prefix <number-of-bits>**

Use this command to configure DHCPv6 Prefix Delegation (RFC3633) on PPTP. You will have to set your IPv6 pool and the length of the delegation prefix. From the defined IPv6 pool you will be handing out networks of the defined length (delegation-prefix). The length of the delegation prefix can be set from 32 to 64 bit long.

**set vpn pptp remote-access default-ipv6-pool <IPv6-POOL-NAME>**

Use this command to define default IPv6 address pool name.

```
set vpn pptp remote-access ppp-options ipv6 allow
set vpn pptp remote-access client-ipv6-pool IPv6-POOL delegate '2001:db8:8003::/48'
↪delegation-prefix '56'
set vpn pptp remote-access client-ipv6-pool IPV6-POOL prefix '2001:db8:8002::/48' mask
↪'64'
set vpn pptp remote-access default-ipv6-pool IPv6-POOL
```

## IPv6 Advanced Options

**set vpn pptp remote-access ppp-options ipv6-accept-peer-interface-id**

Accept peer interface identifier. By default is not defined.

**set vpn pptp remote-access ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies fixed or random interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6

**set vpn pptp remote-access ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies peer interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6
- **ipv4-addr** - Calculate interface identifier from IPv4 address.
- **calling-sid** - Calculate interface identifier from calling-station-id.

## Scripting

```
set vpn pptp remote-access extended-scripts on-change <path_to_script>
```

Script to run when session interface changed by RADIUS CoA handling

```
set vpn pptp remote-access extended-scripts on-down <path_to_script>
```

Script to run when session interface going to terminate

```
set vpn pptp remote-access extended-scripts on-pre-up <path_to_script>
```

Script to run before session interface comes up

```
set vpn pptp remote-access extended-scripts on-up <path_to_script>
```

Script to run when session interface is completely configured and started

## Advanced Options

### Authentication Advanced Options

```
set vpn pptp remote-access authentication local-users username <user> disable
```

Disable *<user>* account.

```
set vpn pptp remote-access authentication local-users username <user> static-ip <address>
```

Assign static IP address to *<user>* account.

```
set vpn pptp remote-access authentication local-users username <user> rate-limit download <bandwidth>
```

Download bandwidth limit in kbit/s for *<user>*.

```
set vpn pptp remote-access authentication local-users username <user> rate-limit upload <bandwidth>
```

Upload bandwidth limit in kbit/s for *<user>*.

```
set vpn pptp remote-access authentication protocols <pap | chap | mschap | mschap-v2>
```

Require the peer to authenticate itself using one of the following protocols: pap, chap, mschap, mschap-v2.

### Client IP Pool Advanced Options

```
set vpn pptp remote-access client-ip-pool <POOL-NAME> next-pool <NEXT-POOL-NAME>
```

Use this command to define the next address pool name.

## PPP Advanced Options

**set vpn pptp remote-access ppp-options disable-ccp**

Disable Compression Control Protocol (CCP). CCP is enabled by default.

**set vpn pptp remote-access ppp-options interface-cache <number>**

Specifies number of interfaces to keep in cache. It means that don't destroy interface after corresponding session is destroyed, instead place it to cache and use it later for new sessions repeatedly. This should reduce kernel-level interface creation/deletion rate lack. Default value is **0**.

**set vpn pptp remote-access ppp-options ipv4 <require | prefer | allow | deny>**

Specifies IPv4 negotiation preference.

- **require** - Require IPv4 negotiation
- **prefer** - Ask client for IPv4 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv4 only if client requests (Default value)
- **deny** - Do not negotiate IPv4

**set vpn pptp remote-access ppp-options lcp-echo-failure <number>**

Defines the maximum <number> of unanswered echo requests. Upon reaching the value <number>, the session will be reset. Default value is **3**.

**set vpn pptp remote-access ppp-options lcp-echo-interval <interval>**

If this option is specified and is greater than 0, then the PPP module will send LCP pings of the echo request every <interval> seconds. Default value is **30**.

**set vpn pptp remote-access ppp-options lcp-echo-timeout**

Specifies timeout in seconds to wait for any peer activity. If this option specified it turns on adaptive lcp echo functionality and "lcp-echo-failure" is not used. Default value is **0**.

**set vpn pptp remote-access ppp-options min-mtu <number>**

Defines minimum acceptable MTU. If client will try to negotiate less then specified MTU then it will be NAKed or disconnected if rejects greater MTU. Default value is **100**.

**set vpn pptp remote-access ppp-options mppe <require | prefer | deny>**

Specifies MPPE negotiation preference.

- **require** - ask client for mppe, if it rejects drop connection
- **prefer** - ask client for mppe, if it rejects don't fail. (Default value)
- **deny** - deny mppe

Default behavior - don't ask client for mppe, but allow it if client wants. Please note that RADIUS may override this option by MS-MPPE-Encryption-Policy attribute.

**set vpn pptp remote-access ppp-options mru <number>**

Defines preferred MRU. By default is not defined.

## Global Advanced options

**set vpn pptp remote-access description <description>**

Set description.

**set vpn pptp remote-access limits burst <value>**

Burst count

**set vpn pptp remote-access limits connection-limit <value>**

Acceptable rate of connections (e.g. 1/min, 60/sec)

**set vpn pptp remote-access limits timeout <value>**

Timeout in seconds

**set vpn pptp remote-access mtu**

Maximum Transmission Unit (MTU) (default: **1436**)

**set vpn pptp remote-access max-concurrent-sessions**

Maximum number of concurrent session start attempts

**set vpn pptp remote-access name-server <address>**

Connected client should use <address> as their DNS server. This command accepts both IPv4 and IPv6 addresses. Up to two nameservers can be configured for IPv4, up to three for IPv6.

**set vpn pptp remote-access shaper fwmark <1-2147483647>**

Match firewall mark value

**set vpn pptp remote-access snmp master-agent**

Enable SNMP

**set vpn pptp remote-access wins-server <address>**

Windows Internet Name Service (WINS) servers propagated to client

## Monitoring

**show pptp-server sessions**

Use this command to locally check the active sessions in the PPTP server.

```
vyos@vyos:~$ show pptp-server sessions
ifname | username | ip | ip6 | ip6-dp | calling-sid | rate-limit | state |
↳uptime | rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----+-----+-----+-----+
↳-----+-----+-----+-----+-----+-----+-----+-----+-----+
pptp0 | test | 10.0.0.2 | | | 192.168.10.100 | | active |
↳00:01:26 | 6.9 KiB | 220 B
```

```
vyos@vyos:~$ show pptp-server statistics
uptime: 0.00:04:52
cpu: 0%
mem(rss/virt): 5504/100176 kB
core:
```

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```

mempool_allocated: 152007
mempool_available: 149007
thread_count: 1
thread_active: 1
context_count: 6
context_sleeping: 0
context_pending: 0
md_handler_count: 6
md_handler_pending: 0
timer_count: 2
timer_pending: 0
sessions:
  starting: 0
  active: 1
  finishing: 0
pptp:
  starting: 0
  active: 1

```

## Troubleshooting

```

vyos@vyos:~$sudo journalctl -u accel-ppp@pptp -b 0

Feb 29 14:58:57 vyos accel-pptp[4629]: pptp: new connection from 192.168.10.100
Feb 29 14:58:57 vyos accel-pptp[4629]: :: recv [PPTP Start-Ctrl-Conn-Request <Version 1>
↳<Framing 1> <Bearer 1> <Max-Chan 0>]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: send [PPTP Start-Ctrl-Conn-Reply <Version 1>
↳<Result 1> <Error 0> <Framing 3> <Bearer 3> <Max-Chan 1>]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: recv [PPTP Outgoing-Call-Request <Call-ID 2961>
↳<Call-Serial 2> <Min-BPS 300> <Max-BPS 1000000000> <Bearer 3> <Framing 3> <Window-Size_
↳64> <Delay 0>]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: send [PPTP Outgoing-Call-Reply <Call-ID 2>
↳<Peer-Call-ID 2961> <Result 1> <Error 0> <Cause 0> <Speed 1000000000> <Window-Size 64>
↳<Delay 0> <Channel 0>]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: lcp_layer_init
Feb 29 14:58:57 vyos accel-pptp[4629]: :: auth_layer_init
Feb 29 14:58:57 vyos accel-pptp[4629]: :: ccp_layer_init
Feb 29 14:58:57 vyos accel-pptp[4629]: :: ipcp_layer_init
Feb 29 14:58:57 vyos accel-pptp[4629]: :: ipv6cp_layer_init
Feb 29 14:58:57 vyos accel-pptp[4629]: :: ppp establishing
Feb 29 14:58:57 vyos accel-pptp[4629]: :: lcp_layer_start
Feb 29 14:58:57 vyos accel-pptp[4629]: :: send [LCP ConfReq id=75 <auth PAP> <mru 1436>
↳<magic 483920bd>]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: recv [PPTP Set-Link-Info]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: recv [LCP ConfReq id=0 <mru 1400> <magic_
↳0142785a> <pcomp> <accomp> < d 3 6 >]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: send [LCP ConfRej id=0 <pcomp> <accomp> < d 3_
↳6 >]
Feb 29 14:58:57 vyos accel-pptp[4629]: :: recv [LCP ConfReq id=1 <mru 1400> <magic_
↳0142785a>]

```

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```

Feb 29 14:58:57 vyos accel-pptp[4629]: :: send [LCP ConfAck id=1]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: fsm timeout 9
Feb 29 14:59:00 vyos accel-pptp[4629]: :: send [LCP ConfReq id=75 <auth PAP> <mru 1436>
↳<magic 483920bd>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [LCP ConfNak id=75 <auth MSCHAP-v2>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: send [LCP ConfReq id=76 <auth CHAP-md5> <mru.
↳1436> <magic 483920bd>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [LCP ConfNak id=76 <auth MSCHAP-v2>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: send [LCP ConfReq id=77 <auth MSCHAP-v1> <mru.
↳1436> <magic 483920bd>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [LCP ConfNak id=77 <auth MSCHAP-v2>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: send [LCP ConfReq id=78 <auth MSCHAP-v2> <mru.
↳1436> <magic 483920bd>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [LCP ConfAck id=78 <auth MSCHAP-v2> <mru.
↳1436> <magic 483920bd>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: lcp_layer_started
Feb 29 14:59:00 vyos accel-pptp[4629]: :: auth_layer_start
Feb 29 14:59:00 vyos accel-pptp[4629]: :: send [MSCHAP-v2 Challenge id=1
↳<8aa758781676e6a8e85c11963ee010>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [LCP Ident id=2 <MSRASV5.20>]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [LCP Ident id=3 <MSRAS-0-MSEDGEWIN10>]
Feb 29 14:59:00 vyos accel-pptp[4629]: [43B blob data]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [PPTP Set-Link-Info]
Feb 29 14:59:00 vyos accel-pptp[4629]: :: recv [MSCHAP-v2 Response id=1
↳<90c21af1091f745e8bf22388b058>, <e695ae5aae274c88a3fa1ee3dc9057aece4d53c87b9fea>, F=0,
↳name="test"]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: connect: ppp0 <--> pptp(192.168.10.100)
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: ppp connected
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [MSCHAP-v2 Success id=1
↳"S=347F417CF04BEBBC7F75CFA7F43474C36FB218F9 M=Authentication succeeded"]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: test: authentication succeeded
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: auth_layer_started
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: ccp_layer_start
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [CCP ConfReq id=b9 <mppe +H -M +S.
↳-L -D -C>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: ipcp_layer_start
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: ipv6cp_layer_start
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: IPV6CP: discarding packet
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [LCP ProtoRej id=122 <8057>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: recv [IPCP ConfReq id=6 <addr 0.0.0.0>
↳<dns1 0.0.0.0> <wins1 0.0.0.0> <dns2 0.0.0.0> <wins2 0.0.0.0>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [IPCP ConfReq id=3b <addr 10.0.0.
↳1>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [IPCP ConfRej id=6 <dns1 0.0.0.0>
↳<wins1 0.0.0.0> <dns2 0.0.0.0> <wins2 0.0.0.0>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: recv [LCP ProtoRej id=7 <80fd>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: ccp_layer_finished
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: recv [IPCP ConfAck id=3b <addr 10.0.0.
↳1>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: recv [IPCP ConfReq id=8 <addr 0.0.0.0>]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [IPCP ConfNak id=8 <addr 10.0.0.2>
↳]

```

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```
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: recv [IPCP ConfReq id=9 <addr 10.0.0.2>
↵]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: send [IPCP ConfAck id=9]
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: ipcp_layer_started
Feb 29 14:59:00 vyos accel-pptp[4629]: ppp0:test: rename interface to 'pptp0'
Feb 29 14:59:00 vyos accel-pptp[4629]: pptp0:test: pptp: ppp started
```

### 8.13.5 RSA-Keys

RSA can be used for services such as key exchanges and for encryption purposes. To make IPSec work with dynamic address on one/both sides, we will have to use RSA keys for authentication. They are very fast and easy to setup.

First, on both routers run the operational command “generate pki key-pair install <key-pair nam>>”. You may choose different length than 2048 of course.

```
vyos@left# run generate pki key-pair install ipsec-LEFT
Enter private key type: [rsa, dsa, ec] (Default: rsa)
Enter private key bits: (Default: 2048)
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] N
Configure mode commands to install key pair:
Do you want to install the public key? [Y/n] Y
set pki key-pair ipsec-LEFT public key 'MIIBIjANBgkqh...'
Do you want to install the private key? [Y/n] Y
set pki key-pair ipsec-LEFT private key 'MIIEvgIBADAN...'
[edit]
```

Configuration commands will display. Note the command with the public key (set pki key-pair ipsec-LEFT public key 'MIIBIjANBgkqh...'). Then do the same on the opposite router:

```
vyos@left# run generate pki key-pair install ipsec-RIGHT
```

Note the command with the public key (set pki key-pair ipsec-RIGHT public key 'FAAOCAQ8AMI...').

The noted public keys should be entered on the opposite routers.

On the LEFT:

```
set pki key-pair ipsec-RIGHT public key 'FAAOCAQ8AMI...'
```

On the RIGHT:

```
set pki key-pair ipsec-LEFT public key 'MIIBIjANBgkqh...'
```

Now you are ready to setup IPsec. The key points:

1. Since both routers do not know their effective public addresses, we set the local-address of the peer to “any”.
2. On the initiator, we set the peer address to its public address, but on the responder we only set the id.
3. On the initiator, we need to set the remote-id option so that it can identify IKE traffic from the responder correctly.
4. On the responder, we need to set the local id so that initiator can know who’s talking to it for the point #3 to work.

On the LEFT (static address):

```

set vpn ipsec interface eth0

set vpn ipsec esp-group MyESPGroup proposal 1 encryption aes128
set vpn ipsec esp-group MyESPGroup proposal 1 hash sha1

set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group 2
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption aes128
set vpn ipsec ike-group MyIKEGroup proposal 1 hash sha1

set vpn ipsec site-to-site peer @RIGHT authentication id LEFT
set vpn ipsec site-to-site peer @RIGHT authentication mode rsa
set vpn ipsec site-to-site peer @RIGHT authentication rsa local-key ipsec-LEFT
set vpn ipsec site-to-site peer @RIGHT authentication rsa remote-key ipsec-RIGHT
set vpn ipsec site-to-site peer @RIGHT authentication remote-id RIGHT
set vpn ipsec site-to-site peer @RIGHT default-esp-group MyESPGroup
set vpn ipsec site-to-site peer @RIGHT ike-group MyIKEGroup
set vpn ipsec site-to-site peer @RIGHT local-address 192.0.2.10
set vpn ipsec site-to-site peer @RIGHT connection-type respond
set vpn ipsec site-to-site peer @RIGHT tunnel 1 local prefix 192.168.99.1/32 #_
↪Additional loopback address on the local
set vpn ipsec site-to-site peer @RIGHT tunnel 1 remote prefix 192.168.99.2/32 #_
↪Additional loopback address on the remote

```

On the RIGHT (dynamic address):

```

set vpn ipsec interface eth0

set vpn ipsec esp-group MyESPGroup proposal 1 encryption aes128
set vpn ipsec esp-group MyESPGroup proposal 1 hash sha1

set vpn ipsec ike-group MyIKEGroup proposal 1 dh-group 2
set vpn ipsec ike-group MyIKEGroup proposal 1 encryption aes128
set vpn ipsec ike-group MyIKEGroup proposal 1 hash sha1

set vpn ipsec site-to-site peer 192.0.2.10 authentication id RIGHT
set vpn ipsec site-to-site peer 192.0.2.10 authentication mode rsa
set vpn ipsec site-to-site peer 192.0.2.10 authentication rsa local-key ipsec-RIGHT
set vpn ipsec site-to-site peer 192.0.2.10 authentication rsa remote-key ipsec-LEFT
set vpn ipsec site-to-site peer 192.0.2.10 authentication remote-id LEFT
set vpn ipsec site-to-site peer 192.0.2.10 connection-type initiate
set vpn ipsec site-to-site peer 192.0.2.10 default-esp-group MyESPGroup
set vpn ipsec site-to-site peer 192.0.2.10 ike-group MyIKEGroup
set vpn ipsec site-to-site peer 192.0.2.10 local-address any
set vpn ipsec site-to-site peer 192.0.2.10 tunnel 1 local prefix 192.168.99.2/32 #_
↪Additional loopback address on the local
set vpn ipsec site-to-site peer 192.0.2.10 tunnel 1 remote prefix 192.168.99.1/32 #_
↪Additional loopback address on the remote

```

### 8.13.6 SSTP Server

SSTP is a form of VPN (Virtual Private Network) tunnel that provides a mechanism to transport PPP traffic through an SSL/TLS channel. SSL/TLS provides transport-level security with key negotiation, encryption and traffic integrity checking. The use of SSL/TLS over TCP port 443 allows SSTP to pass through virtually all firewalls and proxy servers except for authenticated web proxies.

SSTP is available for Linux, BSD, and Windows.

VyOS utilizes `accel-ppp` to provide SSTP server functionality. We support both local and RADIUS authentication.

As SSTP provides PPP via a SSL/TLS channel the use of either publically signed certificates as well as a private PKI is required.

#### Configuring SSTP Server

##### Certificates

Using our documentation chapter - *PKI* generate and install CA and Server certificate

```
vyos@vyos:~$ generate pki ca install CA
```

```
vyos@vyos:~$ generate pki certificate sign CA install Server
```

##### Configuration

```
set vpn sstp authentication local-users username test password 'test'
set vpn sstp authentication mode 'local'
set vpn sstp client-ip-pool SSTP-POOL range '10.0.0.2-10.0.0.100'
set vpn sstp default-pool 'SSTP-POOL'
set vpn sstp gateway-address '10.0.0.1'
set vpn sstp ssl ca-certificate 'CA1'
set vpn sstp ssl certificate 'Server'
```

**set vpn sstp authentication mode <local | radius>**

Set authentication backend. The configured authentication backend is used for all queries.

- **radius:** All authentication queries are handled by a configured RADIUS server.
- **local:** All authentication queries are handled locally.

**set vpn sstp authentication local-users username <user> password <pass>**

Create *<user>* for local authentication on this system. The users password will be set to *<pass>*.

**set vpn sstp client-ip-pool <POOL-NAME> range <x.x.x.x-x.x.x.x | x.x.x.x/x>**

Use this command to define the first IP address of a pool of addresses to be given to SSTP clients. If notation *x.x.x.x-x.x.x.x*, it must be within a /24 subnet. If notation *x.x.x.x/x* is used there is possibility to set host/netmask.

**set vpn sstp default-pool <POOL-NAME>**

Use this command to define default address pool name.

**set vpn sstp gateway-address <gateway>**

Specifies single *<gateway>* IP address to be used as local address of PPP interfaces.

**set vpn sstp ssl ca-certificate <file>**

Name of installed certificate authority certificate.

**set vpn sstp ssl certificate <file>**

Name of installed server certificate.

### Configuring RADIUS authentication

To enable RADIUS based authentication, the authentication mode needs to be changed within the configuration. Previous settings like the local users, still exists within the configuration, however they are not used if the mode has been changed from local to radius. Once changed back to local, it will use all local accounts again.

```
set vpn sstp authentication mode radius
```

**set vpn sstp authentication radius server <server> key <secret>**

Configure RADIUS *<server>* and its required shared *<secret>* for communicating with the RADIUS server.

Since the RADIUS server would be a single point of failure, multiple RADIUS servers can be setup and will be used subsequently. For example:

```
set vpn sstp authentication radius server 10.0.0.1 key 'foo'  
set vpn sstp authentication radius server 10.0.0.2 key 'foo'
```

---

**Note:** Some RADIUS servers use an access control list which allows or denies queries, make sure to add your VyOS router to the allowed client list.

---

### RADIUS source address

If you are using OSPF as IGP, always the closest interface connected to the RADIUS server is used. You can bind all outgoing RADIUS requests to a single source IP e.g. the loopback interface.

**set vpn sstp authentication radius source-address <address>**

Source IPv4 address used in all RADIUS server queries.

---

**Note:** The *source-address* must be configured on one of VyOS interface. Best practice would be a loopback or dummy interface.

---

## RADIUS advanced options

**set vpn sstp authentication radius server <server> port <port>**

Configure RADIUS <server> and its required port for authentication requests.

**set vpn sstp authentication radius server <server> fail-time <time>**

Mark RADIUS server as offline for this given <time> in seconds.

**set vpn sstp authentication radius server <server> disable**

Temporary disable this RADIUS server.

**set vpn sstp authentication radius acct-timeout <timeout>**

Timeout to wait reply for Interim-Update packets. (default 3 seconds)

**set vpn sstp authentication radius dynamic-author server <address>**

Specifies IP address for Dynamic Authorization Extension server (DM/CoA)

**set vpn sstp authentication radius dynamic-author port <port>**

Port for Dynamic Authorization Extension server (DM/CoA)

**set vpn sstp authentication radius dynamic-author key <secret>**

Secret for Dynamic Authorization Extension server (DM/CoA)

**set vpn sstp authentication radius max-try <number>**

Maximum number of tries to send Access-Request/Accounting-Request queries

**set vpn sstp authentication radius timeout <timeout>**

Timeout to wait response from server (seconds)

**set vpn sstp authentication radius nas-identifier <identifier>**

Value to send to RADIUS server in NAS-Identifier attribute and to be matched in DM/CoA requests.

**set vpn sstp authentication radius nas-ip-address <address>**

Value to send to RADIUS server in NAS-IP-Address attribute and to be matched in DM/CoA requests. Also DM/CoA server will bind to that address.

**set vpn sstp authentication radius source-address <address>**

Source IPv4 address used in all RADIUS server queries.

**set vpn sstp authentication radius rate-limit attribute <attribute>**

Specifies which RADIUS server attribute contains the rate limit information. The default attribute is *Filter-Id*.

---

**Note:** If you set a custom RADIUS attribute you must define it on both dictionaries at RADIUS server and client.

---

**set vpn sstp authentication radius rate-limit enable**

Enables bandwidth shaping via RADIUS.

**set vpn sstp authentication radius rate-limit vendor**

Specifies the vendor dictionary, dictionary needs to be in /usr/share/accel-ppp/radius.

Received RADIUS attributes have a higher priority than parameters defined within the CLI configuration, refer to the explanation below.

## Allocation clients ip addresses by RADIUS

If the RADIUS server sends the attribute `Framed-IP-Address` then this IP address will be allocated to the client and the option `default-pool` within the CLI config is being ignored.

If the RADIUS server sends the attribute `Framed-Pool`, IP address will be allocated from a predefined IP pool whose name equals the attribute value.

If the RADIUS server sends the attribute `Stateful-IPv6-Address-Pool`, IPv6 address will be allocated from a predefined IPv6 pool `prefix` whose name equals the attribute value.

If the RADIUS server sends the attribute `Delegated-IPv6-Prefix-Pool`, IPv6 delegation prefix will be allocated from a predefined IPv6 pool `delegate` whose name equals the attribute value.

---

**Note:** `Stateful-IPv6-Address-Pool` and `Delegated-IPv6-Prefix-Pool` are defined in RFC6911. If they are not defined in your RADIUS server, add new `dictionary`.

---

User interface can be put to VRF context via RADIUS Access-Accept packet, or change it via RADIUS CoA. `Acce1-VRF-Name` is used from these purposes. It is custom `ACCEL-PPP attribute`. Define it in your RADIUS server.

## Renaming clients interfaces by RADIUS

If the RADIUS server uses the attribute `NAS-Port-Id`, ppp tunnels will be renamed.

---

**Note:** The value of the attribute `NAS-Port-Id` must be less than 16 characters, otherwise the interface won't be renamed.

---

## IPv6

**set vpn sstp ppp-options ipv6 <require | prefer | allow | deny>**

Specifies IPv6 negotiation preference.

- **require** - Require IPv6 negotiation
- **prefer** - Ask client for IPv6 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv6 only if client requests
- **deny** - Do not negotiate IPv6 (default value)

**set vpn sstp client-ipv6-pool <IPv6-POOL-NAME> prefix <address> mask <number-of-bits>**

Use this comand to set the IPv6 address pool from which an SSTP client will get an IPv6 prefix of your defined length (mask) to terminate the SSTP endpoint at their side. The mask length can be set from 48 to 128 bit long, the default value is 64.

**set vpn sstp client-ipv6-pool <IPv6-POOL-NAME> delegate <address> delegation-prefix <number-of-bits>**

Use this command to configure DHCPv6 Prefix Delegation (RFC3633) on SSTP. You will have to set your IPv6 pool and the length of the delegation prefix. From the defined IPv6 pool you will be handing out networks of the defined length (delegation-prefix). The length of the delegation prefix can be set from 32 to 64 bit long.

**set vpn sstp default-ipv6-pool <IPv6-POOL-NAME>**

Use this command to define default IPv6 address pool name.

```
set vpn sstp ppp-options ipv6 allow
set vpn sstp client-ipv6-pool IPv6-POOL delegate '2001:db8:8003::/48' delegation-prefix
↪ '56'
set vpn sstp client-ipv6-pool IPv6-POOL prefix '2001:db8:8002::/48' mask '64'
set vpn sstp default-ipv6-pool IPv6-POOL
```

## IPv6 Advanced Options

**set vpn sstp ppp-options ipv6-accept-peer-interface-id**

Accept peer interface identifier. By default is not defined.

**set vpn sstp ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies fixed or random interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6

**set vpn sstp ppp-options ipv6-interface-id <random | x:x:x:x>**

Specifies peer interface identifier for IPv6. By default is fixed.

- **random** - Random interface identifier for IPv6
- **x:x:x:x** - Specify interface identifier for IPv6
- **ipv4-addr** - Calculate interface identifier from IPv4 address.
- **calling-sid** - Calculate interface identifier from calling-station-id.

## Scripting

**set vpn sstp extended-scripts on-change <path\_to\_script>**

Script to run when session interface changed by RADIUS CoA handling

**set vpn sstp extended-scripts on-down <path\_to\_script>**

Script to run when session interface going to terminate

**set vpn sstp extended-scripts on-pre-up <path\_to\_script>**

Script to run before session interface comes up

**set vpn sstp extended-scripts on-up <path\_to\_script>**

Script to run when session interface is completely configured and started

## Advanced Options

### Authentication Advanced Options

**set vpn sstp authentication local-users username <user> disable**

Disable <user> account.

**set vpn sstp authentication local-users username <user> static-ip <address>**

Assign static IP address to <user> account.

**set vpn sstp authentication local-users username <user> rate-limit download <bandwidth>**

Download bandwidth limit in kbit/s for <user>.

**set vpn sstp authentication local-users username <user> rate-limit upload <bandwidth>**

Upload bandwidth limit in kbit/s for <user>.

**set vpn sstp authentication protocols <pap | chap | mschap | mschap-v2>**

Require the peer to authenticate itself using one of the following protocols: pap, chap, mschap, mschap-v2.

### Client IP Pool Advanced Options

**set vpn sstp client-ip-pool <POOL-NAME> next-pool <NEXT-POOL-NAME>**

Use this command to define the next address pool name.

### PPP Advanced Options

**set vpn sstp ppp-options disable-ccp**

Disable Compression Control Protocol (CCP). CCP is enabled by default.

**set vpn sstp ppp-options interface-cache <number>**

Specifies number of interfaces to keep in cache. It means that don't destroy interface after corresponding session is destroyed, instead place it to cache and use it later for new sessions repeatedly. This should reduce kernel-level interface creation/deletion rate lack. Default value is 0.

**set vpn sstp ppp-options ipv4 <require | prefer | allow | deny>**

Specifies IPv4 negotiation preference.

- **require** - Require IPv4 negotiation
- **prefer** - Ask client for IPv4 negotiation, do not fail if it rejects
- **allow** - Negotiate IPv4 only if client requests (Default value)
- **deny** - Do not negotiate IPv4

**set vpn sstp ppp-options lcp-echo-failure <number>**

Defines the maximum <number> of unanswered echo requests. Upon reaching the value <number>, the session will be reset. Default value is 3.

**set vpn sstp ppp-options lcp-echo-interval <interval>**

If this option is specified and is greater than 0, then the PPP module will send LCP pings of the echo request every <interval> seconds. Default value is 30.

**set vpn sstp ppp-options lcp-echo-timeout**

Specifies timeout in seconds to wait for any peer activity. If this option specified it turns on adaptive lcp echo functionality and “lcp-echo-failure” is not used. Default value is **0**.

**set vpn sstp ppp-options min-mtu <number>**

Defines minimum acceptable MTU. If client will try to negotiate less then specified MTU then it will be NAKed or disconnected if rejects greater MTU. Default value is **100**.

**set vpn sstp ppp-options mppe <require | prefer | deny>**

Specifies MPPE negotiation preference.

- **require** - ask client for mppe, if it rejects drop connection
- **prefer** - ask client for mppe, if it rejects don't fail. (Default value)
- **deny** - deny mppe

Default behavior - don't ask client for mppe, but allow it if client wants. Please note that RADIUS may override this option by MS-MPPE-Encryption-Policy attribute.

**set vpn sstp ppp-options mru <number>**

Defines preferred MRU. By default is not defined.

**Global Advanced options**

**set vpn sstp description <description>**

Set description.

**set vpn sstp limits burst <value>**

Burst count

**set vpn sstp limits connection-limit <value>**

Acceptable rate of connections (e.g. 1/min, 60/sec)

**set vpn sstp limits timeout <value>**

Timeout in seconds

**set vpn sstp mtu**

Maximum Transmission Unit (MTU) (default: **1500**)

**set vpn sstp max-concurrent-sessions**

Maximum number of concurrent session start attempts

**set vpn sstp name-server <address>**

Connected client should use <address> as their DNS server. This command accepts both IPv4 and IPv6 addresses. Up to two nameservers can be configured for IPv4, up to three for IPv6.

**set vpn sstp shaper fwmark <1-2147483647>**

Match firewall mark value

**set vpn sstp snmp master-agent**

Enable SNMP

**set vpn sstp wins-server <address>**

Windows Internet Name Service (WINS) servers propagated to client

## Configuring SSTP client

Once you have setup your SSTP server there comes the time to do some basic testing. The Linux client used for testing is called `sstpc`. `sstpc` requires a PPP configuration/peer file.

If you use a self-signed certificate, do not forget to install CA on the client side.

The following PPP configuration tests MSCHAP-v2:

```
$ cat /etc/ppp/peers/vyos
usepeerdns
#require-mppe
#require-pap
require-mschap-v2
noauth
lock
refuse-pap
refuse-eap
refuse-chap
refuse-mschap
#refuse-mschap-v2
nobsdcomp
nodeflate
debug
```

You can now “dial” the peer with the following command: `sstpc --log-level 4 --log-stderr --user vyos --password vyos vpn.example.com -- call vyos`.

A connection attempt will be shown as:

```
$ sstpc --log-level 4 --log-stderr --user vyos --password vyos vpn.example.com -- call
↪vyos

Mar 22 13:29:12 sstpc[12344]: Resolved vpn.example.com to 192.0.2.1
Mar 22 13:29:12 sstpc[12344]: Connected to vpn.example.com
Mar 22 13:29:12 sstpc[12344]: Sending Connect-Request Message
Mar 22 13:29:12 sstpc[12344]: SEND SSTP CTRL PKT(14)
Mar 22 13:29:12 sstpc[12344]:   TYPE(1): CONNECT REQUEST, ATTR(1):
Mar 22 13:29:12 sstpc[12344]:   ENCAP PROTO(1): 6
Mar 22 13:29:12 sstpc[12344]: RECV SSTP CTRL PKT(48)
Mar 22 13:29:12 sstpc[12344]:   TYPE(2): CONNECT ACK, ATTR(1):
Mar 22 13:29:12 sstpc[12344]:   CRYPTO BIND REQ(4): 40
Mar 22 13:29:12 sstpc[12344]: Started PPP Link Negotiation
Mar 22 13:29:15 sstpc[12344]: Sending Connected Message
Mar 22 13:29:15 sstpc[12344]: SEND SSTP CTRL PKT(112)
Mar 22 13:29:15 sstpc[12344]:   TYPE(4): CONNECTED, ATTR(1):
Mar 22 13:29:15 sstpc[12344]:   CRYPTO BIND(3): 104
Mar 22 13:29:15 sstpc[12344]: Connection Established

$ ip addr show ppp0
164: ppp0: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1452 qdisc fq_codel state
↪UNKNOWN group default qlen 3
```

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```
link/ppp promiscuity 0
inet 100.64.2.2 peer 100.64.1.1/32 scope global ppp0
    valid_lft forever preferred_lft forever
```

## Monitoring

### show sstp-server sessions

Use this command to locally check the active sessions in the SSTP server.

```
vyos@vyos:~$ show sstp-server sessions
ifname | username | ip | ip6 | ip6-dp | calling-sid | rate-limit | state |
↳uptime | rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----+-----+-----+-----+
↳-----+-----+-----+-----+-----+-----+-----+-----+-----+
sstp0 | test | 10.0.0.2 | | | 192.168.10.100 | | active |
↳00:15:46 | 16.3 KiB | 210 B
```

```
vyos@vyos:~$ show sstp-server statistics
uptime: 0.01:21:54
cpu: 0%
mem(rss/virt): 6688/100464 kB
core:
  mempool_allocated: 149420
  mempool_available: 146092
  thread_count: 1
  thread_active: 1
  context_count: 6
  context_sleeping: 0
  context_pending: 0
  md_handler_count: 7
  md_handler_pending: 0
  timer_count: 2
  timer_pending: 0
sessions:
  starting: 0
  active: 1
  finishing: 0
sstp:
  starting: 0
  active: 1
```

## Troubleshooting

```

vyos@vyos:~$sudo journalctl -u accel-ppp@sstp -b 0

Feb 28 17:03:04 vyos accel-sstp[2492]: sstp: new connection from 192.168.10.100:49852
Feb 28 17:03:04 vyos accel-sstp[2492]: sstp: starting
Feb 28 17:03:04 vyos accel-sstp[2492]: sstp: started
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [HTTP <SSTP_DUPLEX_POST /sra_{BA195980-
↳CD49-458b-9E23-C84EE0ADCD75}/ HTTP/1.1>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [HTTP <SSTPCORRELATIONID: {48B82435-099A-
↳4158-A987-052E7570CFAA}>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [HTTP <Content-Length:
↳18446744073709551615>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [HTTP <Host: vyos.io>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [HTTP <HTTP/1.1 200 OK>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [HTTP <Date: Wed, 28 Feb 2024 17:03:04
↳GMT>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [HTTP <Content-Length:
↳18446744073709551615>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [SSTP SSTP_MSG_CALL_CONNECT_REQUEST]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [SSTP SSTP_MSG_CALL_CONNECT_ACK]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: lcp_layer_init
Feb 28 17:03:04 vyos accel-sstp[2492]: :: auth_layer_init
Feb 28 17:03:04 vyos accel-sstp[2492]: :: ccp_layer_init
Feb 28 17:03:04 vyos accel-sstp[2492]: :: ipcp_layer_init
Feb 28 17:03:04 vyos accel-sstp[2492]: :: ipv6cp_layer_init
Feb 28 17:03:04 vyos accel-sstp[2492]: :: ppp establishing
Feb 28 17:03:04 vyos accel-sstp[2492]: :: lcp_layer_start
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [LCP ConfReq id=56 <auth PAP> <mru 1452>
↳<magic 1cd9ad05>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [LCP ConfReq id=0 <mru 4091> <magic
↳345f64ca> <pcomp> <accomp> < d 3 6 >]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [LCP ConfRej id=0 <pcomp> <accomp> < d 3
↳6 >]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [LCP ConfReq id=1 <mru 4091> <magic
↳345f64ca>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [LCP ConfNak id=1 <mru 1452>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: recv [LCP ConfReq id=2 <mru 1452> <magic
↳345f64ca>]
Feb 28 17:03:04 vyos accel-sstp[2492]: :: send [LCP ConfAck id=2]
Feb 28 17:03:07 vyos accel-sstp[2492]: :: fsm timeout 9
Feb 28 17:03:07 vyos accel-sstp[2492]: :: send [LCP ConfReq id=56 <auth PAP> <mru 1452>
↳<magic 1cd9ad05>]
Feb 28 17:03:07 vyos accel-sstp[2492]: :: recv [LCP ConfAck id=56 <auth PAP> <mru 1452>
↳<magic 1cd9ad05>]
Feb 28 17:03:07 vyos accel-sstp[2492]: :: lcp_layer_started
Feb 28 17:03:07 vyos accel-sstp[2492]: :: auth_layer_start
Feb 28 17:03:07 vyos accel-sstp[2492]: :: recv [LCP Ident id=3 <MSRASV5.20>]
Feb 28 17:03:07 vyos accel-sstp[2492]: :: recv [LCP Ident id=4 <MSRAS-0-MSEDGEWIN10>]
Feb 28 17:03:07 vyos accel-sstp[2492]: [50B blob data]
Feb 28 17:03:07 vyos accel-sstp[2492]: :: recv [PAP AuthReq id=3]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: connect: ppp0 <--> sstp(192.168.10.
↳100:49852)

```

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```

Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: ppp connected
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: send [PAP AuthAck id=3 "Authentication_
↪succeeded"]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: test: authentication succeeded
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: auth_layer_started
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: ccp_layer_start
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: ipcp_layer_start
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: ipv6cp_layer_start
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: recv [SSTP SSTP_MSG_CALL_CONNECTED]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: IPV6CP: discarding packet
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: send [LCP ProtoRej id=88 <8057>]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: recv [IPCP ConfReq id=7 <addr 0.0.0.0>
↪<dns1 0.0.0.0> <wins1 0.0.0.0> <dns2 0.0.0.0> <wins2 0.0.0.0>]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: send [IPCP ConfReq id=25 <addr 10.0.0.
↪1>]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: send [IPCP ConfRej id=7 <dns1 0.0.0.0>
↪<wins1 0.0.0.0> <dns2 0.0.0.0> <wins2 0.0.0.0>]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: recv [IPCP ConfAck id=25 <addr 10.0.0.
↪1>]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: recv [IPCP ConfReq id=8 <addr 0.0.0.0>]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: send [IPCP ConfNak id=8 <addr 10.0.0.5>
↪]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: recv [IPCP ConfReq id=9 <addr 10.0.0.5>
↪]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: send [IPCP ConfAck id=9]
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: ipcp_layer_started
Feb 28 17:03:07 vyos accel-sstp[2492]: ppp0:test: rename interface to 'sstp0'
Feb 28 17:03:07 vyos accel-sstp[2492]: sstp0:test: sstp: ppp: started

```

pages to sort

### 8.13.7 DMVPN

DMVPN (Dynamic Multipoint Virtual Private Network) is a dynamic VPN technology originally developed by Cisco. While their implementation was somewhat proprietary, the underlying technologies are actually standards based. The three technologies are:

- NHRP (Next Hop Resolution Protocol) [RFC 2332](#)
- mGRE (Multipoint Generic Routing Encapsulation) [RFC 1702](#)
- IPSEC (IP Security) - too many RFCs to list, but start with [RFC 4301](#)

NHRP provides the dynamic tunnel endpoint discovery mechanism (endpoint registration, and endpoint discovery/lookup), mGRE provides the tunnel encapsulation itself, and the IPsec protocols handle the key exchange, and crypto mechanism.

In short, DMVPN provides the capability for creating a dynamic-mesh VPN network without having to pre-configure (static) all possible tunnel end-point peers.

---

**Note:** DMVPN only automates the tunnel endpoint discovery and setup. A complete solution also incorporates the use of a routing protocol. BGP is particularly well suited for use with DMVPN.

---

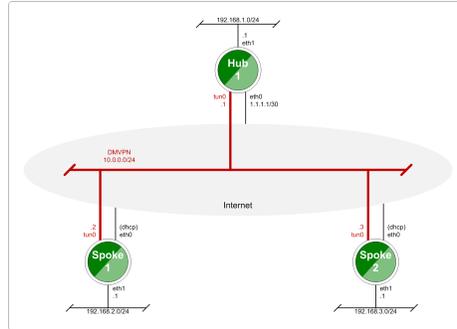


Fig. 6: Baseline DMVPN topology

## Configuration

- Please refer to the [Tunnel](#) documentation for the individual tunnel related options.
- Please refer to the [IPsec](#) documentation for the individual IPsec related options.

**set protocols nhrp tunnel <tunnel> cisco-authentication <secret>**

Enables Cisco style authentication on NHRP packets. This embeds the secret plaintext password to the outgoing NHRP packets. Incoming NHRP packets on this interface are discarded unless the secret password is present. Maximum length of the secret is 8 characters.

**set protocols nhrp tunnel <tunnel> dynamic-map <address> nbma-domain-name <fqdn>**

Specifies that the NBMA (Non-broadcast multiple-access network) addresses of the next hop servers are defined in the domain name nbma-domain-name. For each A record opennhrp creates a dynamic NHS entry.

Each dynamic NHS will get a peer entry with the configured network address and the discovered NBMA address.

The first registration request is sent to the protocol broadcast address, and the server's real protocol address is dynamically detected from the first registration reply.

**set protocols nhrp tunnel <tunnel> holding-time <timeout>**

Specifies the holding time for NHRP Registration Requests and Resolution Replies sent from this interface or shortcut-target. The holdtime is specified in seconds and defaults to two hours.

**set protocols nhrp tunnel <tunnel> map cisco**

If the statically mapped peer is running Cisco IOS, specify the cisco keyword. It is used to fix statically the Registration Request ID so that a matching Purge Request can be sent if NBMA address has changed. This is to work around broken IOS which requires Purge Request ID to match the original Registration Request ID.

**set protocols nhrp tunnel <tunnel> map nbma-address <address>**

Creates static peer mapping of protocol-address to NBMA address.

If the IP prefix mask is present, it directs opennhrp to use this peer as a next hop server when sending Resolution Requests matching this subnet.

This is also known as the HUBs IP address or FQDN.

**set protocols nhrp tunnel <tunnel> map register**

The optional parameter register specifies that Registration Request should be sent to this peer on startup.

This option is required when running a DMVPN spoke.

**set protocols nhrp tunnel <tunnel> multicast <dynamic | nhs>**

Determines how `opennhrp` daemon should soft switch the multicast traffic. Currently, multicast traffic is captured by `opennhrp` daemon using a packet socket, and resent back to proper destinations. This means that multicast packet sending is CPU intensive.

Specifying `nhs` makes all multicast packets to be repeated to each statically configured next hop.

`Synamic` instructs to forward to all peers which we have a direct connection with. Alternatively, you can specify the directive multiple times for each protocol-address the multicast traffic should be sent to.

**Warning:** It is very easy to misconfigure multicast repeating if you have multiple NHSes.

#### **set protocols nhrp tunnel <tunnel> non-caching**

Disables caching of peer information from forwarded NHRP Resolution Reply packets. This can be used to reduce memory consumption on big NBMA subnets.

---

**Note:** Currently does not do much as caching is not implemented.

---

#### **set protocols nhrp tunnel <tunnel> redirect**

Enable sending of Cisco style NHRP Traffic Indication packets. If this is enabled and `opennhrp` detects a forwarded packet, it will send a message to the original sender of the packet instructing it to create a direct connection with the destination. This is basically a protocol independent equivalent of ICMP redirect.

#### **set protocols nhrp tunnel <tunnel> shortcut**

Enable creation of shortcut routes.

A received NHRP Traffic Indication will trigger the resolution and establishment of a shortcut route.

#### **set protocols nhrp tunnel <tunnel> shortcut-destination**

This instructs `opennhrp` to reply with authoritative answers on NHRP Resolution Requests destined to addresses in this interface (instead of forwarding the packets). This effectively allows the creation of shortcut routes to subnets located on the interface.

When specified, this should be the only keyword for the interface.

#### **set protocols nhrp tunnel <tunnel> shortcut-target <address>**

Defines an off-NBMA network prefix for which the GRE interface will act as a gateway. This an alternative to defining local interfaces with `shortcut-destination` flag.

#### **set protocols nhrp tunnel <tunnel> shortcut-target <address> holding-time <timeout>**

Specifies the holding time for NHRP Registration Requests and Resolution Replies sent from this interface or `shortcut-target`. The holdtime is specified in seconds and defaults to two hours.

### **Example**

This blueprint uses VyOS as the DMVPN Hub and Cisco (7206VXR) and VyOS as multiple spoke sites. The lab was build using EVE-NG (Emulated Virtual Environment NG).

Each node (Hub and Spoke) uses an IP address from the network 172.16.253.128/29.

The below referenced IP address *192.0.2.1* is used as example address representing a global unicast address under which the HUB can be contacted by each and every individual spoke.

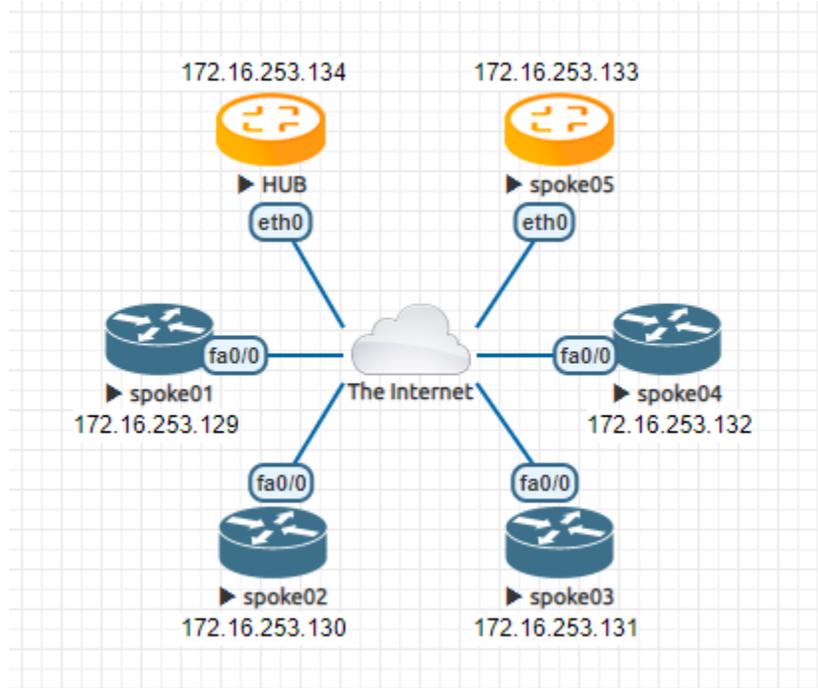


Fig. 7: DMVPN example network

## Configuration

### Hub

```

set interfaces ethernet eth0 address 192.0.2.1/24

set interfaces tunnel tun100 address '172.16.253.134/29'
set interfaces tunnel tun100 encapsulation 'gre'
set interfaces tunnel tun100 source-address '192.0.2.1'
set interfaces tunnel tun100 enable-multicast
set interfaces tunnel tun100 parameters ip key '1'

set protocols nhrp tunnel tun100 cisco-authentication 'secret'
set protocols nhrp tunnel tun100 holding-time '300'
set protocols nhrp tunnel tun100 multicast 'dynamic'
set protocols nhrp tunnel tun100 redirect
set protocols nhrp tunnel tun100 shortcut

set vpn ipsec esp-group ESP-HUB lifetime '1800'
set vpn ipsec esp-group ESP-HUB mode 'transport'
set vpn ipsec esp-group ESP-HUB pfs 'dh-group2'
set vpn ipsec esp-group ESP-HUB proposal 1 encryption 'aes256'
set vpn ipsec esp-group ESP-HUB proposal 1 hash 'sha1'
set vpn ipsec esp-group ESP-HUB proposal 2 encryption '3des'
set vpn ipsec esp-group ESP-HUB proposal 2 hash 'md5'
set vpn ipsec ike-group IKE-HUB key-exchange 'ikev1'
set vpn ipsec ike-group IKE-HUB lifetime '3600'

```

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```

set vpn ipsec ike-group IKE-HUB proposal 1 dh-group '2'
set vpn ipsec ike-group IKE-HUB proposal 1 encryption 'aes256'
set vpn ipsec ike-group IKE-HUB proposal 1 hash 'sha1'
set vpn ipsec ike-group IKE-HUB proposal 2 dh-group '2'
set vpn ipsec ike-group IKE-HUB proposal 2 encryption 'aes128'
set vpn ipsec ike-group IKE-HUB proposal 2 hash 'sha1'

set vpn ipsec interface 'eth0'

set vpn ipsec profile NHRPVPN authentication mode 'pre-shared-secret'
set vpn ipsec profile NHRPVPN authentication pre-shared-secret 'secret'
set vpn ipsec profile NHRPVPN bind tunnel 'tun100'
set vpn ipsec profile NHRPVPN esp-group 'ESP-HUB'
set vpn ipsec profile NHRPVPN ike-group 'IKE-HUB'

```

**Note:** Setting this up on AWS will require a “Custom Protocol Rule” for protocol number “47” (GRE) Allow Rule in TWO places. Firstly on the VPC Network ACL, and secondly on the security group network ACL attached to the EC2 instance. This has been tested as working for the official AMI image on the AWS Marketplace. (Locate the correct VPC and security group by navigating through the details pane below your EC2 instance in the AWS console).

## Spoke

The individual spoke configurations only differ in the local IP address on the tun10 interface. See the above diagram for the individual IP addresses.

### spoke01-spoke04

```

crypto keyring DMVPN
  pre-shared-key address 192.0.2.1 key secret
!
crypto isakmp policy 10
  encr aes 256
  authentication pre-share
  group 2
crypto isakmp invalid-spi-recovery
crypto isakmp keepalive 30 30 periodic
crypto isakmp profile DMVPN
  keyring DMVPN
  match identity address 192.0.2.1 255.255.255.255
!
crypto ipsec transform-set DMVPN-AES256 esp-aes 256 esp-sha-hmac
  mode transport
!
crypto ipsec profile DMVPN
  set security-association idle-time 720
  set transform-set DMVPN-AES256
  set isakmp-profile DMVPN
!

```

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```

interface Tunnel10
! individual spoke tunnel IP must change
ip address 172.16.253.129 255.255.255.248
no ip redirects
ip nhrp authentication secret
ip nhrp map 172.16.253.134 192.0.2.1
ip nhrp map multicast 192.0.2.1
ip nhrp network-id 1
ip nhrp holdtime 600
ip nhrp nhs 172.16.253.134
ip nhrp registration timeout 75
tunnel source FastEthernet0/0
tunnel mode gre multipoint
tunnel protection ipsec profile DMVPN
tunnel key 1
!
interface FastEthernet0/0
ip address dhcp
duplex half

```

### spoke05

VyOS can also run in DMVPN spoke mode.

```

set interfaces ethernet eth0 address 'dhcp'

set interfaces tunnel tun100 address '172.16.253.133/29'
set interfaces tunnel tun100 source-address 0.0.0.0
set interfaces tunnel tun100 encapsulation 'gre'
set interfaces tunnel tun100 enable-multicast
set interfaces tunnel tun100 parameters ip key '1'

set protocols nhrp tunnel tun100 cisco-authentication 'secret'
set protocols nhrp tunnel tun100 holding-time '300'
set protocols nhrp tunnel tun100 map 172.16.253.134/29 nbma-address '192.0.2.1'
set protocols nhrp tunnel tun100 map 172.16.253.134/29 register
set protocols nhrp tunnel tun100 multicast 'nhs'
set protocols nhrp tunnel tun100 redirect
set protocols nhrp tunnel tun100 shortcut

set vpn ipsec esp-group ESP-HUB lifetime '1800'
set vpn ipsec esp-group ESP-HUB mode 'transport'
set vpn ipsec esp-group ESP-HUB pfs 'dh-group2'
set vpn ipsec esp-group ESP-HUB proposal 1 encryption 'aes256'
set vpn ipsec esp-group ESP-HUB proposal 1 hash 'sha1'
set vpn ipsec esp-group ESP-HUB proposal 2 encryption '3des'
set vpn ipsec esp-group ESP-HUB proposal 2 hash 'md5'
set vpn ipsec ike-group IKE-HUB close-action 'none'
set vpn ipsec ike-group IKE-HUB key-exchange 'ikev1'
set vpn ipsec ike-group IKE-HUB lifetime '3600'
set vpn ipsec ike-group IKE-HUB proposal 1 dh-group '2'

```

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```

set vpn ipsec ike-group IKE-HUB proposal 1 encryption 'aes256'
set vpn ipsec ike-group IKE-HUB proposal 1 hash 'sha1'
set vpn ipsec ike-group IKE-HUB proposal 2 dh-group '2'
set vpn ipsec ike-group IKE-HUB proposal 2 encryption 'aes128'
set vpn ipsec ike-group IKE-HUB proposal 2 hash 'sha1'

set vpn ipsec interface 'eth0'

set vpn ipsec profile NHRPVPN authentication mode 'pre-shared-secret'
set vpn ipsec profile NHRPVPN authentication pre-shared-secret 'secret'
set vpn ipsec profile NHRPVPN bind tunnel 'tun100'
set vpn ipsec profile NHRPVPN esp-group 'ESP-HUB'
set vpn ipsec profile NHRPVPN ike-group 'IKE-HUB'

```

### 8.13.8 Site-to-Site

Site-to-site mode provides a way to add remote peers, which could be configured to exchange encrypted information between them and VyOS itself or connected/routed networks.

To configure site-to-site connection you need to add peers with the `set vpn ipsec site-to-site peer <name>` command.

The peer name must be an alphanumeric and can have hyphen or underscore as special characters. It is purely informational.

Each site-to-site peer has the next options:

- `authentication` - configure authentication between VyOS and a remote peer. If `pre-shared-secret` mode is used, the secret key must be defined in `set vpn ipsec authentication` and suboptions:
  - `psk` - Preshared secret key name;
  - `dhcp-interface` - ID for authentication generated from DHCP address dynamically;
  - `id` - static ID's for authentication. In general local and remote address `<x.x.x.x>`, `<h:h:h:h:h:h:h>` or `%any`;
  - `secret` - predefined shared secret. Used if configured mode `pre-shared-secret`;
  - `local-id` - ID for the local VyOS router. If defined, during the authentication it will be send to remote peer;
  - `mode` - mode for authentication between VyOS and remote peer:
  - `pre-shared-secret` - use predefined shared secret phrase;
  - `rsa` - use simple shared RSA key.
  - `x509` - use certificates infrastructure for authentication.
  - `remote-id` - define an ID for remote peer, instead of using peer name or address. Useful in case if the remote peer is behind NAT or if mode `x509` is used;
  - `rsa` - options for RSA authentication mode:
  - `local-key` - name of PKI key-pair with local private key
  - `remote-key` - name of PKI key-pair with remote public key
  - `passphrase` - local private key passphrase

- `use-x509-id` - use local ID from x509 certificate. Cannot be used when `id` is defined;
- `x509` - options for x509 authentication mode:
- `ca-certificate` - CA certificate in PKI configuration. Using for authenticating remote peer;
- `certificate` - certificate file in PKI configuration, which will be used for authenticating local router on remote peer;
- `passphrase` - private key passphrase, if needed.
- `connection-type` - how to handle this connection process. Possible variants:
  - `initiate` - does initial connection to remote peer immediately after configuring and after boot. In this mode the connection will not be restarted in case of disconnection, therefore should be used only together with DPD or another session tracking methods;
  - `respond` - does not try to initiate a connection to a remote peer. In this mode, the IPSec session will be established only after initiation from a remote peer. Could be useful when there is no direct connectivity to the peer due to firewall or NAT in the middle of the local and remote side.
  - `none` - loads the connection only, which then can be manually initiated or used as a responder configuration.
- `default-esp-group` - ESP group to use by default for traffic encryption. Might be overwritten by individual settings for tunnel or VTI interface binding;
- `description` - description for this peer;
- `dhcp-interface` - use an IP address, received from DHCP for IPSec connection with this peer, instead of `local-address`;
- `force-udp-encapsulation` - force encapsulation of ESP into UDP datagrams. Useful in case if between local and remote side is firewall or NAT, which not allows passing plain ESP packets between them;
- `ike-group` - IKE group to use for key exchanges;
- `ikev2-reauth` - reauthenticate remote peer during the rekeying process. Can be used only with IKEv2. Create a new `IKE_SA` from the scratch and try to recreate all IPsec SAs;
- `local-address` - local IP address for IPSec connection with this peer. If defined any, then an IP address which configured on interface with default route will be used;
- `remote-address` - remote IP address or hostname for IPSec connection. IPv4 or IPv6 address is used when a peer has a public static IP address. Hostname is a DNS name which could be used when a peer has a public IP address and DNS name, but an IP address could be changed from time to time.
- `replay-window` - IPsec replay window to configure for this `CHILD_SA` (default: 32), a value of 0 disables IPsec replay protection
- `tunnel` - define criteria for traffic to be matched for encrypting and send it to a peer:
  - `disable` - disable this tunnel;
  - `esp-group` - define ESP group for encrypt traffic, defined by this tunnel;
  - `local` - define a local source for match traffic, which should be encrypted and send to this peer;
  - `port` - define port. Have effect only when used together with `prefix`;
  - `prefix` - IP network at local side.
  - `priority` - Add priority for policy-based IPSec VPN tunnels(lowest value more preferable)
  - `protocol` - define the protocol for match traffic, which should be encrypted and send to this peer;
  - `remote` - define the remote destination for match traffic, which should be encrypted and send to this peer;

- `port` - define port. Have effect only when used together with `prefix`;
- `prefix` - IP network at remote side.
- `vti` - use a VTI interface for traffic encryption. Any traffic, which will be send to VTI interface will be encrypted and send to this peer. Using VTI makes IPSec configuration much flexible and easier in complex situation, and allows to dynamically add/delete remote networks, reachable via a peer, as in this mode router don't need to create additional SA/policy for each remote network:
- `bind` - select a VTI interface to bind to this peer;
- `esp-group` - define ESP group for encrypt traffic, passed this VTI interface.
- `virtual-address` - Defines a virtual IP address which is requested by the initiator and one or several IPv4 and/or IPv6 addresses are assigned from multiple pools by the responder.

## Examples:

### IKEv1

#### Example:

- WAN interface on *eth1*
- left subnet: *192.168.0.0/24* site1, server side (i.e. locality, actually there is no client or server roles)
- left local\_ip: *198.51.100.3* # server side WAN IP
- right subnet: *10.0.0.0/24* site2,remote office side
- right local\_ip: *203.0.113.2* # remote office side WAN IP

```
# server config
set vpn ipsec authentication psk OFFICE-B id '198.51.100.3'
set vpn ipsec authentication psk OFFICE-B id '203.0.113.2'
set vpn ipsec authentication psk OFFICE-B secret 'SomePreSharedKey'
set vpn ipsec esp-group office-srv-esp lifetime '1800'
set vpn ipsec esp-group office-srv-esp mode 'tunnel'
set vpn ipsec esp-group office-srv-esp pfs 'enable'
set vpn ipsec esp-group office-srv-esp proposal 1 encryption 'aes256'
set vpn ipsec esp-group office-srv-esp proposal 1 hash 'sha1'
set vpn ipsec ike-group office-srv-ike key-exchange 'ikev1'
set vpn ipsec ike-group office-srv-ike lifetime '3600'
set vpn ipsec ike-group office-srv-ike proposal 1 encryption 'aes256'
set vpn ipsec ike-group office-srv-ike proposal 1 hash 'sha1'
set vpn ipsec interface 'eth1'
set vpn ipsec site-to-site peer OFFICE-B authentication local-id '198.51.100.3'
set vpn ipsec site-to-site peer OFFICE-B authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer OFFICE-B authentication remote-id '203.0.113.2'
set vpn ipsec site-to-site peer OFFICE-B ike-group 'office-srv-ike'
set vpn ipsec site-to-site peer OFFICE-B local-address '198.51.100.3'
set vpn ipsec site-to-site peer OFFICE-B remote-address '203.0.113.2'
set vpn ipsec site-to-site peer OFFICE-B tunnel 0 esp-group 'office-srv-esp'
set vpn ipsec site-to-site peer OFFICE-B tunnel 0 local prefix '192.168.0.0/24'
set vpn ipsec site-to-site peer OFFICE-B tunnel 0 remote prefix '10.0.0.0/21'

# remote office config
```

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```

set vpn ipsec authentication psk OFFICE-A id '198.51.100.3'
set vpn ipsec authentication psk OFFICE-A id '203.0.113.2'
set vpn ipsec authentication psk OFFICE-A secret 'SomePreSharedKey'
set vpn ipsec esp-group office-srv-esp lifetime '1800'
set vpn ipsec esp-group office-srv-esp mode 'tunnel'
set vpn ipsec esp-group office-srv-esp pfs 'enable'
set vpn ipsec esp-group office-srv-esp proposal 1 encryption 'aes256'
set vpn ipsec esp-group office-srv-esp proposal 1 hash 'sha1'
set vpn ipsec ike-group office-srv-ike key-exchange 'ikev1'
set vpn ipsec ike-group office-srv-ike lifetime '3600'
set vpn ipsec ike-group office-srv-ike proposal 1 encryption 'aes256'
set vpn ipsec ike-group office-srv-ike proposal 1 hash 'sha1'
set vpn ipsec interface 'eth1'
set vpn ipsec site-to-site peer OFFICE-A authentication local-id '203.0.113.2'
set vpn ipsec site-to-site peer OFFICE-A authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer OFFICE-A authentication remote-id '198.51.100.3'
set vpn ipsec site-to-site peer OFFICE-A ike-group 'office-srv-ike'
set vpn ipsec site-to-site peer OFFICE-A local-address '203.0.113.2'
set vpn ipsec site-to-site peer OFFICE-A remote-address '198.51.100.3'
set vpn ipsec site-to-site peer OFFICE-A tunnel 0 esp-group 'office-srv-esp'
set vpn ipsec site-to-site peer OFFICE-A tunnel 0 local prefix '10.0.0.0/21'
set vpn ipsec site-to-site peer OFFICE-A tunnel 0 remote prefix '192.168.0.0/24'

```

Show status of new setup:

```

vyos@srv-gw0:~$ show vpn ike sa
Peer ID / IP                               Local ID / IP
-----
203.0.113.2                               198.51.100.3
  State  Encrypt  Hash   D-H Grp  NAT-T  A-Time  L-Time
  ----  -
  up     aes256   sha1   5         no     734    3600

vyos@srv-gw0:~$ show vpn ipsec sa
Peer ID / IP                               Local ID / IP
-----
203.0.113.2                               198.51.100.3
  Tunnel  State  Bytes Out/In  Encrypt  Hash   NAT-T  A-Time  L-Time  Proto
  ----  -
  0       up     7.5M/230.6K  aes256   sha1   no     567    1800   all

```

If there is SNAT rules on eth1, need to add exclude rule

```

# server side
set nat source rule 10 destination address '10.0.0.0/24'
set nat source rule 10 'exclude'
set nat source rule 10 outbound-interface name 'eth1'
set nat source rule 10 source address '192.168.0.0/24'

# remote office side
set nat source rule 10 destination address '192.168.0.0/24'
set nat source rule 10 'exclude'

```

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```
set nat source rule 10 outbound-interface name 'eth1'
set nat source rule 10 source address '10.0.0.0/24'
```

To allow traffic to pass through to clients, you need to add the following rules. (if you used the default configuration at the top of this page)

```
# server side
set firewall name OUTSIDE-LOCAL rule 32 action 'accept'
set firewall name OUTSIDE-LOCAL rule 32 source address '10.0.0.0/24'

# remote office side
set firewall name OUTSIDE-LOCAL rule 32 action 'accept'
set firewall name OUTSIDE-LOCAL rule 32 source address '192.168.0.0/24'
```

## IPSec

Example:

- left local\_ip: 192.168.0.10 # VPN Gateway, behind NAT device
- left public\_ip: 172.18.201.10
- right local\_ip: 172.18.202.10 # right side WAN IP

Imagine the following topology

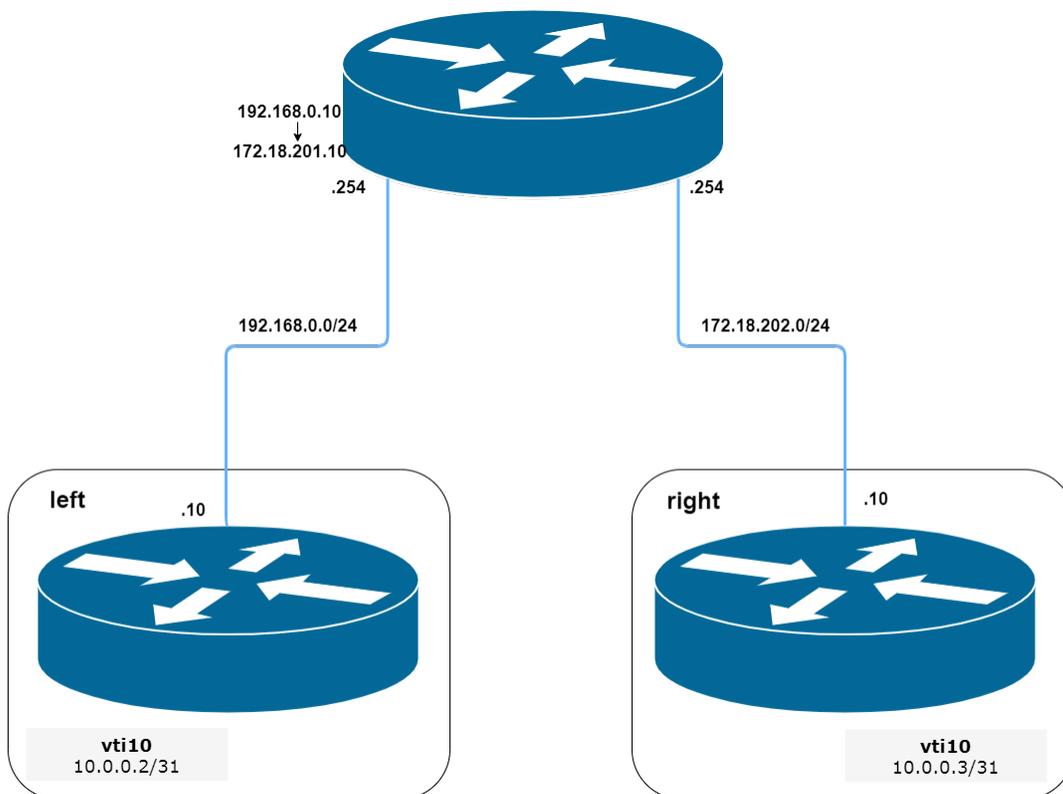


Fig. 8: IPsec IKEv2 site2site VPN (source ./draw.io/vpn\_s2s\_ikev2.drawio)

**LEFT:** \* WAN interface on *eth0.201* \* *eth0.201* interface IP: *172.18.201.10/24* \* *vti10* interface IP: *10.0.0.2/31* \* *dum0* interface IP: *10.0.11.1/24* (for testing purposes)

**RIGHT:** \* WAN interface on *eth0.202* \* *eth0.201* interface IP: *172.18.202.10/24* \* *vti10* interface IP: *10.0.0.3/31* \* *dum0* interface IP: *10.0.12.1/24* (for testing purposes)

**Note:** Don't get confused about the used /31 tunnel subnet. [RFC 3021](#) gives you additional information for using /31 subnets on point-to-point links.

## LEFT

```
set interfaces ethernet eth0 vif 201 address '172.18.201.10/24'
set interfaces dummy dum0 address '10.0.11.1/24'
set interfaces vti vti10 address '10.0.0.2/31'

set vpn ipsec authentication psk peer_172-18-202-10 id '172.18.201.10'
set vpn ipsec authentication psk peer_172-18-202-10 id '172.18.202.10'
set vpn ipsec authentication psk peer_172-18-202-10 secret 'secretkey'
set vpn ipsec esp-group ESP_DEFAULT lifetime '3600'
set vpn ipsec esp-group ESP_DEFAULT mode 'tunnel'
set vpn ipsec esp-group ESP_DEFAULT pfs 'dh-group19'
set vpn ipsec esp-group ESP_DEFAULT proposal 10 encryption 'aes256gcm128'
set vpn ipsec esp-group ESP_DEFAULT proposal 10 hash 'sha256'
set vpn ipsec ike-group IKEv2_DEFAULT close-action 'none'
set vpn ipsec ike-group IKEv2_DEFAULT dead-peer-detection action 'trap'
set vpn ipsec ike-group IKEv2_DEFAULT dead-peer-detection interval '30'
set vpn ipsec ike-group IKEv2_DEFAULT dead-peer-detection timeout '120'
set vpn ipsec ike-group IKEv2_DEFAULT disable-mobike
set vpn ipsec ike-group IKEv2_DEFAULT key-exchange 'ikev2'
set vpn ipsec ike-group IKEv2_DEFAULT lifetime '10800'
set vpn ipsec ike-group IKEv2_DEFAULT proposal 10 dh-group '19'
set vpn ipsec ike-group IKEv2_DEFAULT proposal 10 encryption 'aes256gcm128'
set vpn ipsec ike-group IKEv2_DEFAULT proposal 10 hash 'sha256'
set vpn ipsec interface 'eth0.201'
set vpn ipsec site-to-site peer peer_172-18-202-10 authentication local-id '172.18.201.10'
↪ '
set vpn ipsec site-to-site peer peer_172-18-202-10 authentication mode 'pre-shared-secret'
↪ '
set vpn ipsec site-to-site peer peer_172-18-202-10 authentication remote-id '172.18.202.
↪ 10'
set vpn ipsec site-to-site peer peer_172-18-202-10 connection-type 'initiate'
set vpn ipsec site-to-site peer peer_172-18-202-10 ike-group 'IKEv2_DEFAULT'
set vpn ipsec site-to-site peer peer_172-18-202-10 ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer peer_172-18-202-10 local-address '172.18.201.10'
set vpn ipsec site-to-site peer peer_172-18-202-10 remote-address '172.18.202.10'
set vpn ipsec site-to-site peer peer_172-18-202-10 vti bind 'vti10'
set vpn ipsec site-to-site peer peer_172-18-202-10 vti esp-group 'ESP_DEFAULT'

set protocols static interface-route 10.0.12.0/24 next-hop-interface vti10
```

## RIGHT

```
set interfaces ethernet eth0 vif 202 address '172.18.202.10/24'
```

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```

set interfaces dummy dum0 address '10.0.12.1/24'
set interfaces vti vti10 address '10.0.0.3/31'

set vpn ipsec authentication psk peer_172-18-201-10 id '172.18.202.10'
set vpn ipsec authentication psk peer_172-18-201-10 id '172.18.201.10'
set vpn ipsec authentication psk peer_172-18-201-10 secret 'secretkey'
set vpn ipsec esp-group ESP_DEFAULT lifetime '3600'
set vpn ipsec esp-group ESP_DEFAULT mode 'tunnel'
set vpn ipsec esp-group ESP_DEFAULT pfs 'dh-group19'
set vpn ipsec esp-group ESP_DEFAULT proposal 10 encryption 'aes256gcm128'
set vpn ipsec esp-group ESP_DEFAULT proposal 10 hash 'sha256'
set vpn ipsec ike-group IKEv2_DEFAULT close-action 'none'
set vpn ipsec ike-group IKEv2_DEFAULT dead-peer-detection action 'trap'
set vpn ipsec ike-group IKEv2_DEFAULT dead-peer-detection interval '30'
set vpn ipsec ike-group IKEv2_DEFAULT dead-peer-detection timeout '120'
set vpn ipsec ike-group IKEv2_DEFAULT disable-mobike
set vpn ipsec ike-group IKEv2_DEFAULT key-exchange 'ikev2'
set vpn ipsec ike-group IKEv2_DEFAULT lifetime '10800'
set vpn ipsec ike-group IKEv2_DEFAULT proposal 10 dh-group '19'
set vpn ipsec ike-group IKEv2_DEFAULT proposal 10 encryption 'aes256gcm128'
set vpn ipsec ike-group IKEv2_DEFAULT proposal 10 hash 'sha256'
set vpn ipsec interface 'eth0.202'
set vpn ipsec site-to-site peer peer_172-18-201-10 authentication local-id '172.18.202.10
↳ '
set vpn ipsec site-to-site peer peer_172-18-201-10 authentication mode 'pre-shared-secret
↳ '
set vpn ipsec site-to-site peer peer_172-18-201-10 authentication remote-id '172.18.201.
↳ 10'
set vpn ipsec site-to-site peer peer_172-18-201-10 connection-type 'initiate'
set vpn ipsec site-to-site peer peer_172-18-201-10 ike-group 'IKEv2_DEFAULT'
set vpn ipsec site-to-site peer peer_172-18-201-10 ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer peer_172-18-201-10 local-address '172.18.202.10'
set vpn ipsec site-to-site peer peer_172-18-201-10 remote-address '172.18.201.10'
set vpn ipsec site-to-site peer peer_172-18-201-10 vti bind 'vti10'
set vpn ipsec site-to-site peer peer_172-18-201-10 vti esp-group 'ESP_DEFAULT'

set protocols static interface-route 10.0.11.0/24 next-hop-interface vti10

```

## Key Parameters:

- **authentication local-id/remote-id** - IKE identification is used for validation of VPN peer devices during IKE negotiation. If you do not configure local/remote-identity, the device uses the IPv4 or IPv6 address that corresponds to the local/remote peer by default. In certain network setups (like ipsec interface with dynamic address, or behind the NAT), the IKE ID received from the peer does not match the IKE gateway configured on the device. This can lead to a Phase 1 validation failure. So, make sure to configure the local/remote id explicitly and ensure that the IKE ID is the same as the remote-identity configured on the peer device.
- **disable-route-autoinstall** - This option when configured disables the routes installed in the default table 220 for site-to-site ipsec. It is mostly used with VTI configuration.
- **dead-peer-detection action = clear | trap | restart** - R\_U\_THERE notification messages (IKEv1) or empty INFORMATIONAL messages (IKEv2) are periodically sent in order to check the liveness of the IPsec peer. The values clear, trap, and restart all activate DPD and determine the action to perform on a timeout. With clear the connection is closed with no further actions taken. trap installs a

trap policy, which will catch matching traffic and tries to re-negotiate the connection on demand. restart will immediately trigger an attempt to re-negotiate the connection.

- `close-action = none | clear | trap | start` - defines the action to take if the remote peer unexpectedly closes a CHILD\_SA (see above for meaning of values). A closeaction should not be used if the peer uses reauthentication or uniqueids.

When the close-action option is set on the peers, the connection-type of each peer has to be considered carefully. For example, if the option is set on both peers, then both would attempt to initiate and hold open multiple copies of each child SA. This might lead to instability of the device or cpu/memory utilization.

Below flow-chart could be a quick reference for the close-action combination depending on how the peer is configured.

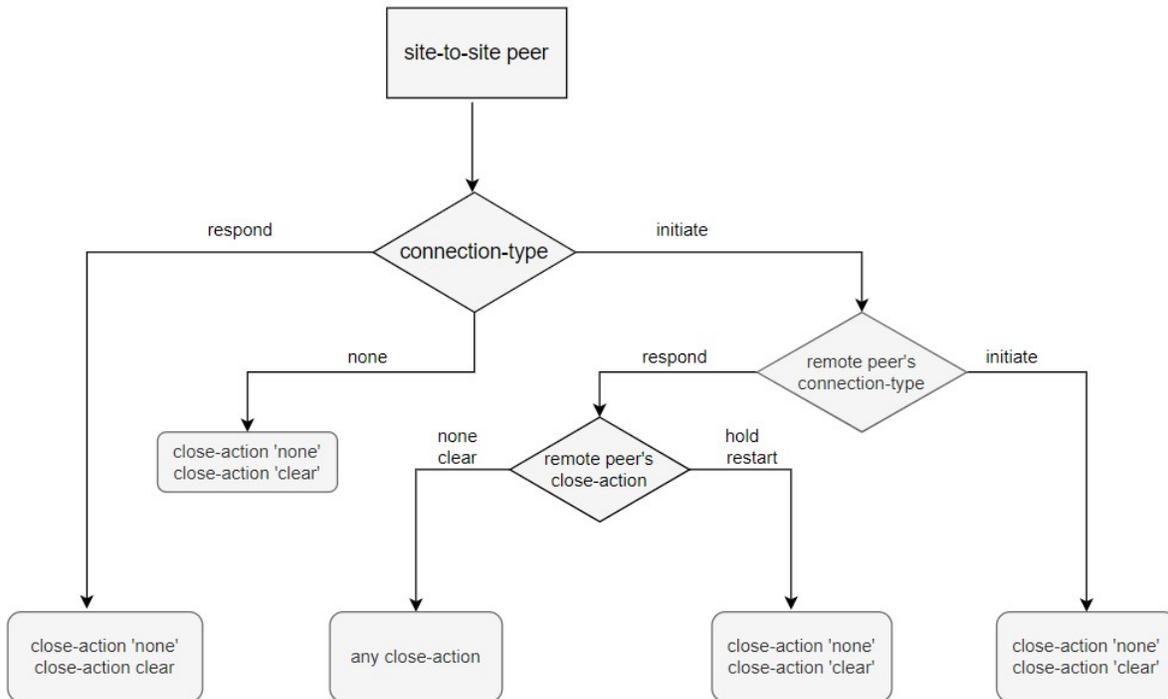


Fig. 9: Similar combinations are applicable for the dead-peer-detection.

### 8.13.9 IPsec IKEv2 Remote Access VPN

Internet Key Exchange version 2 (IKEv2) is a tunneling protocol, based on IPsec, that establishes a secure VPN communication between VPN devices, and defines negotiation and authentication processes for IPsec security associations (SAs). It is often known as IKEv2/IPsec or IPsec IKEv2 remote-access — or road-warriors as others call it.

Key exchange and payload encryption is done using IKE and ESP proposals as known from IKEv1 but the connections are faster to establish, more reliable, and also support roaming from IP to IP (called MOBIKE which makes sure your connection does not drop when changing networks from e.g. WIFI to LTE and back). Authentication can be achieved with X.509 certificates.

## Setting up certificates:

First of all, we need to create a CA root certificate and server certificate on the server side.

```

vyos@vpn.vyos.net# run generate pki ca install ca_root
Enter private key type: [rsa, dsa, ec] (Default: rsa)
Enter private key bits: (Default: 2048)
Enter country code: (Default: GB)
Enter state: (Default: Some-State)
Enter locality: (Default: Some-City)
Enter organization name: (Default: VyOS)
Enter common name: (Default: vyos.io)
Enter how many days certificate will be valid: (Default: 1825)
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] N
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.
[edit]

vyos@vpn.vyos.net# comp
[ pki ca ]
+ ca_root {
+   certificate "MIIDnTCCAoWgAwI...."
+   private {
+     key "MIIEvAIBADANBgkqhkiG9...."

vyos@vpn.vyos.net# run generate pki certificate sign ca_root install server_cert
Do you already have a certificate request? [y/N] N
Enter private key type: [rsa, dsa, ec] (Default: rsa)
Enter private key bits: (Default: 2048)
Enter country code: (Default: GB)
Enter state: (Default: Some-State)
Enter locality: (Default: Some-City)
Enter organization name: (Default: VyOS)
Enter common name: (Default: vyos.io) vpn.vyos.net
Do you want to configure Subject Alternative Names? [y/N] N
Enter how many days certificate will be valid: (Default: 365)
Enter certificate type: (client, server) (Default: server)
Note: If you plan to use the generated key on this router, do not encrypt the private_
↵key.
Do you want to encrypt the private key with a passphrase? [y/N] N
2 value(s) installed. Use "compare" to see the pending changes, and "commit" to apply.

vyos@vpn.vyos.net# comp
[ pki certificate ]
+ server_cert {
+   certificate "MIIDuzCCAqOgAwIBAgIUaSrCPWx....."
+   private {
+     key "MIIEvQIBADANBgkqhkiG9w0BAQEFAASC BK....."
+   }
+ }

```

Once the command is completed, it will add the certificate to the configuration session, to the pki subtree. You can

then review the proposed changes and commit them.

### Setting up IPsec:

After the PKI certs are all set up we can start configuring our IPsec/IKE proposals used for key-exchange end data encryption. The used encryption ciphers and integrity algorithms vary from operating system to operating system. The ones used in this example are validated to work on Windows 10.

```
set vpn ipsec esp-group ESP-RW lifetime '3600'
set vpn ipsec esp-group ESP-RW pfs 'disable'
set vpn ipsec esp-group ESP-RW proposal 10 encryption 'aes128gcm128'
set vpn ipsec esp-group ESP-RW proposal 10 hash 'sha256'

set vpn ipsec ike-group IKE-RW key-exchange 'ikev2'
set vpn ipsec ike-group IKE-RW lifetime '7200'
set vpn ipsec ike-group IKE-RW proposal 10 dh-group '14'
set vpn ipsec ike-group IKE-RW proposal 10 encryption 'aes128gcm128'
set vpn ipsec ike-group IKE-RW proposal 10 hash 'sha256'
```

Every connection/remote-access pool we configure also needs a pool where we can draw our client IP addresses from. We provide one IPv4 and IPv6 pool. Authorized clients will receive an IPv4 address from the configured IPv4 prefix and an IPv6 address from the IPv6 prefix. We can also send some DNS nameservers down to our clients used on their connection.

```
set vpn ipsec remote-access pool ra-rw-ipv4 name-server '192.0.2.1'
set vpn ipsec remote-access pool ra-rw-ipv4 prefix '192.0.2.128/25'

set vpn ipsec remote-access pool ra-rw-ipv6 name-server '2001:db8:1000::1'
set vpn ipsec remote-access pool ra-rw-ipv6 prefix '2001:db8:2000::/64'
```

### Setting up tunnel:

```
set vpn ipsec remote-access connection rw authentication local-id '192.0.2.1'
set vpn ipsec remote-access connection rw authentication server-mode 'x509'
set vpn ipsec remote-access connection rw authentication x509 ca-certificate 'ca_root'
set vpn ipsec remote-access connection rw authentication x509 certificate 'server_cert'
set vpn ipsec remote-access connection rw esp-group 'ESP-RW'
set vpn ipsec remote-access connection rw ike-group 'IKE-RW'
set vpn ipsec remote-access connection rw local-address '192.0.2.1'
set vpn ipsec remote-access connection rw pool 'ra-rw-ipv4'
set vpn ipsec remote-access connection rw pool 'ra-rw-ipv6'
```

VyOS also supports two different modes of authentication, local and RADIUS. To create a new local user named “vyos” with a password of “vyos” use the following commands.

```
set vpn ipsec remote-access connection rw authentication client-mode 'eap-mschapv2'
set vpn ipsec remote-access connection rw authentication local-users username vyos
↪password 'vyos'
```



## 8.14.1 Configuration

A VRF device is created with an associated route table. Network interfaces are then enslaved to a VRF device.

**set vrf name <name>**

Create new VRF instance with <name>. The name is used when placing individual interfaces into the VRF.

**set vrf name <name> table <id>**

Configured routing table <id> is used by VRF <name>.

---

**Note:** A routing table ID can not be modified once it is assigned. It can only be changed by deleting and re-adding the VRF instance.

---

**set vrf bind-to-all**

By default the scope of the port bindings for unbound sockets is limited to the default VRF. That is, it will not be matched by packets arriving on interfaces enslaved to a VRF and processes may bind to the same port if they bind to a VRF.

TCP & UDP services running in the default VRF context (ie., not bound to any VRF device) can work across all VRF domains by enabling this option.

### Zebra/Kernel route filtering

Zebra supports prefix-lists and Route Maps to match routes received from other FRR components. The permit/deny facilities provided by these commands can be used to filter which routes zebra will install in the kernel.

**set vrf <name> ip protocol <protocol> route-map <route-map>**

Apply a route-map filter to routes for the specified protocol.

The following protocols can be used: any, babel, bgp, connected, eigrp, isis, kernel, ospf, rip, static, table

---

**Note:** If you choose any as the option that will cause all protocols that are sending routes to zebra.

---

**set vrf <name> ipv6 protocol <protocol> route-map <route-map>**

Apply a route-map filter to routes for the specified protocol.

The following protocols can be used: any, babel, bgp, connected, isis, kernel, ospfv3, ripng, static, table

---

**Note:** If you choose any as the option that will cause all protocols that are sending routes to zebra.

---

## NextHop Tracking

NextHop tracking resolve nexthops via the default route by default. This is enabled by default for a traditional profile of FRR which we use. It and can be disabled if you do not want to e.g. allow BGP to peer across the default route.

```
set vrf name <name> ip nht no-resolve-via-default
```

Do not allow IPv4 nexthop tracking to resolve via the default route. This parameter is configured per-VRF, so the command is also available in the VRF subnode.

```
set vrf name <name> ipv6 nht no-resolve-via-default
```

Do not allow IPv6 nexthop tracking to resolve via the default route. This parameter is configured per-VRF, so the command is also available in the VRF subnode.

## Interfaces

When VRFs are used it is not only mandatory to create a VRF but also the VRF itself needs to be assigned to an interface.

```
set interfaces <dummy | ethernet | bonding | bridge | pppoe> <interface> vrf <name>
```

Assign interface identified by *<interface>* to VRF named *<name>*.

## Routing

---

**Note:** VyOS 1.4 (sagitta) introduced dynamic routing support for VRFs.

---

Currently dynamic routing is supported for the following protocols:

- *BGP*
- *IS-IS*
- *OSPF*
- *OSPFv3 (IPv6)*
- *Static*

The CLI configuration is same as mentioned in above articles. The only difference is, that each routing protocol used, must be prefixed with the *vrf name <name>* command.

## Example

The following commands would be required to set options for a given dynamic routing protocol inside a given vrf:

- *BGP*: `set vrf name <name> protocols bgp ...`
- *IS-IS*: `set vrf name <name> protocols isis ...`
- *OSPF*: `set vrf name <name> protocols ospf ...`
- *OSPFv3 (IPv6)*: `set vrf name <name> protocols ospfv3 ...`
- *Static*: `set vrf name <name> protocols static ...`

## 8.14.2 Operation

It is not sufficient to only configure a VRF but VRFs must be maintained, too. For VRF maintenance the following operational commands are in place.

### show vrf

Lists VRFs that have been created

```
vyos@vyos:~$ show vrf
VRF name      state      mac address      flags      interfaces
-----      -
blue          up        00:53:12:d8:74:24 noarp, master, up, lower_up dum200,
->eth0.302
red           up        00:53:de:02:df:aa noarp, master, up, lower_up dum100,
->eth0.300, bond0.100, peth0
```

**Note:** Command should probably be extended to list also the real interfaces assigned to this one VRF to get a better overview.

### show vrf <name>

```
vyos@vyos:~$ show vrf name blue
VRF name      state      mac address      flags      interfaces
-----      -
blue          up        00:53:12:d8:74:24 noarp, master, up, lower_up dum200,
->eth0.302
```

### show ip route vrf <name>

Display IPv4 routing table for VRF identified by <name>.

```
vyos@vyos:~$ show ip route vrf blue
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued route, r - rejected route

VRF blue:
K  0.0.0.0/0 [255/8192] unreachable (ICMP unreachable), 00:00:50
S>* 172.16.0.0/16 [1/0] via 192.0.2.1, dum1, 00:00:02
C>* 192.0.2.0/24 is directly connected, dum1, 00:00:06
```

### show ipv6 route vrf <name>

Display IPv6 routing table for VRF identified by <name>.

```
vyos@vyos:~$ show ipv6 route vrf red
Codes: K - kernel route, C - connected, S - static, R - RIPng,
       O - OSPFv3, I - IS-IS, B - BGP, N - NHRP, T - Table,
       v - VNC, V - VNC-Direct, A - Babel, D - SHARP, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued route, r - rejected route
```

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```
VRF red:
K  ::/0 [255/8192] unreachable (ICMP unreachable), 00:43:20
C>* 2001:db8::/64 is directly connected, dum1, 00:02:19
C>* fe80::/64 is directly connected, dum1, 00:43:19
K>* ff00::/8 [0/256] is directly connected, dum1, 00:43:19
```

**ping <host> vrf <name>**

The ping command is used to test whether a network host is reachable or not.

Ping uses ICMP protocol's mandatory ECHO\_REQUEST datagram to elicit an ICMP ECHO\_RESPONSE from a host or gateway. ECHO\_REQUEST datagrams (pings) will have an IP and ICMP header, followed by "struct timeval" and an arbitrary number of pad bytes used to fill out the packet.

When doing fault isolation with ping, you should first run it on the local host, to verify that the local network interface is up and running. Then, continue with hosts and gateways further down the road towards your destination. Round-trip time and packet loss statistics are computed.

Duplicate packets are not included in the packet loss calculation, although the round-trip time of these packets is used in calculating the minimum/ average/maximum round-trip time numbers.

---

**Note:** Ping command can be interrupted at any given time using <Ctrl>+c. A brief statistic is shown afterwards.

---

```
vyos@vyos:~$ ping 192.0.2.1 vrf red
PING 192.0.2.1 (192.0.2.1) 56(84) bytes of data.
64 bytes from 192.0.2.1: icmp_seq=1 ttl=64 time=0.070 ms
64 bytes from 192.0.2.1: icmp_seq=2 ttl=64 time=0.078 ms
^C
--- 192.0.2.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 4ms
rtt min/avg/max/mdev = 0.070/0.074/0.078/0.004 ms
```

**traceroute vrf <name> [ipv4 | ipv6] <host>**

Displays the route packets taken to a network host utilizing VRF instance identified by <name>. When using the IPv4 or IPv6 option, displays the route packets taken to the given hosts IP address family. This option is useful when the host is specified as a hostname rather than an IP address.

**force vrf <name>**

Join a given VRF. This will open a new subshell within the specified VRF.

The prompt is adjusted to reflect this change in both config and op-mode.

```
vyos@vyos:~$ force vrf blue
vyos@vyos(vrf:blue):~$
```

### 8.14.3 Example

#### VRF route leaking

The following example topology was built using EVE-NG.

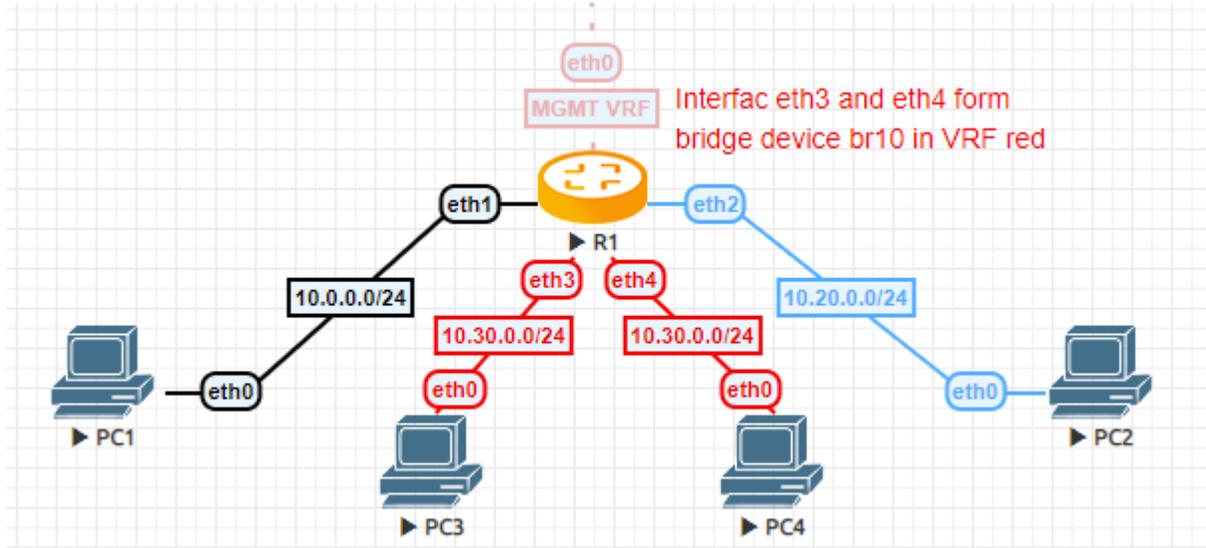


Fig. 10: VRF route leaking

- PC1 is in the default VRF and acting as e.g. a “fileserver”
- PC2 is in VRF blue which is the development department
- PC3 and PC4 are connected to a bridge device on router R1 which is in VRF red. Say this is the HR department.
- R1 is managed through an out-of-band network that resides in VRF mgmt

#### Configuration

```
set interfaces bridge br10 address '10.30.0.254/24'
set interfaces bridge br10 member interface eth3
set interfaces bridge br10 member interface eth4
set interfaces bridge br10 vrf 'red'

set interfaces ethernet eth0 address 'dhcp'
set interfaces ethernet eth0 vrf 'mgmt'
set interfaces ethernet eth1 address '10.0.0.254/24'
set interfaces ethernet eth2 address '10.20.0.254/24'
set interfaces ethernet eth2 vrf 'blue'

set protocols static route 10.20.0.0/24 interface eth2 vrf 'blue'
set protocols static route 10.30.0.0/24 interface br10 vrf 'red'

set service ssh disable-host-validation
set service ssh vrf 'mgmt'
```

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```

set system name-server 'eth0'

set vrf name blue protocols static route 10.0.0.0/24 interface eth1 vrf
↪ 'default'
set vrf name blue table '3000'
set vrf name mgmt table '1000'
set vrf name red protocols static route 10.0.0.0/24 interface eth1 vrf 'default
↪ '
set vrf name red table '2000'

```

## VRF and NAT

### Configuration

```

set interfaces ethernet eth0 address '172.16.50.12/24'
set interfaces ethernet eth0 vrf 'red'

set interfaces ethernet eth1 address '192.168.130.100/24'
set interfaces ethernet eth1 vrf 'blue'

set nat destination rule 110 description 'NAT ssh- INSIDE'
set nat destination rule 110 destination port '2022'
set nat destination rule 110 inbound-interface name 'eth0'
set nat destination rule 110 protocol 'tcp'
set nat destination rule 110 translation address '192.168.130.40'

set nat source rule 100 outbound-interface name 'eth0'
set nat source rule 100 protocol 'all'
set nat source rule 100 source address '192.168.130.0/24'
set nat source rule 100 translation address 'masquerade'

set service ssh vrf 'red'

set vrf bind-to-all
set vrf name blue protocols static route 0.0.0.0/0 next-hop 172.16.50.1 vrf
↪ 'red'
set vrf name blue protocols static route 172.16.50.0/24 interface eth0 vrf 'red
↪ '
set vrf name blue table '1010'

set vrf name red protocols static route 0.0.0.0/0 next-hop 172.16.50.1
set vrf name red protocols static route 192.168.130.0/24 interface eth1 vrf
↪ 'blue'
set vrf name red table '2020'

```

## Operation

After committing the configuration we can verify all leaked routes are installed, and try to ICMP ping PC1 from PC3.

```
PCS> ping 10.0.0.1

84 bytes from 10.0.0.1 icmp_seq=1 ttl=63 time=1.943 ms
84 bytes from 10.0.0.1 icmp_seq=2 ttl=63 time=1.618 ms
84 bytes from 10.0.0.1 icmp_seq=3 ttl=63 time=1.745 ms
```

```
VPCS> show ip

NAME       : VPCS[1]
IP/MASK    : 10.30.0.1/24
GATEWAY    : 10.30.0.254
DNS        :
MAC        : 00:50:79:66:68:0f
```

## VRF default routing table

```
vyos@R1:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

C>* 10.0.0.0/24 is directly connected, eth1, 00:07:44
S>* 10.20.0.0/24 [1/0] is directly connected, eth2 (vrf blue), weight 1,
↪00:07:38
S>* 10.30.0.0/24 [1/0] is directly connected, br10 (vrf red), weight 1,
↪00:07:38
```

## VRF red routing table

```
vyos@R1:~$ show ip route vrf red
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

VRF red:
K>* 0.0.0.0/0 [255/8192] unreachable (ICMP unreachable), 00:07:57
S>* 10.0.0.0/24 [1/0] is directly connected, eth1 (vrf default), weight 1,
↪00:07:40
C>* 10.30.0.0/24 is directly connected, br10, 00:07:54
```

## VRF blue routing table

```
vyos@R1:~$ show ip route vrf blue
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

VRF blue:
K>* 0.0.0.0/0 [255/8192] unreachable (ICMP unreachable), 00:08:00
S>* 10.0.0.0/24 [1/0] is directly connected, eth1 (vrf default), weight 1,
  ↪ 00:07:44
C>* 10.20.0.0/24 is directly connected, eth2, 00:07:53
```

## 8.15 L3VPN VRFs

L3VPN VRFs ( Layer 3 Virtual Private Networks ) bgpd supports for IPv4 RFC 4364 and IPv6 RFC 4659. L3VPN routes, and their associated VRF MPLS labels, can be distributed to VPN SAFI neighbors in the default, i.e., non VRF, BGP instance. VRF MPLS labels are reached using core MPLS labels which are distributed using LDP or BGP labeled unicast. bgpd also supports inter-VRF route leaking.

### 8.15.1 VRF Route Leaking

BGP routes may be leaked (i.e. copied) between a unicast VRF RIB and the VPN SAFI RIB of the default VRF for use in MPLS-based L3VPNs. Unicast routes may also be leaked between any VRFs (including the unicast RIB of the default BGP instance). A shortcut syntax is also available for specifying leaking from one VRF to another VRF using the default instance's VPN RIB as the intermediary . A common application of the VRF-VRF feature is to connect a customer's private routing domain to a provider's VPN service. Leaking is configured from the point of view of an individual VRF: import refers to routes leaked from VPN to a unicast VRF, whereas export refers to routes leaked from a unicast VRF to VPN.

---

**Note:** Routes exported from a unicast VRF to the VPN RIB must be augmented by two parameters:

an RD / RTLIST

Configuration for these exported routes must, at a minimum, specify these two parameters.

---

### 8.15.2 Configuration

Configuration of route leaking between a unicast VRF RIB and the VPN SAFI RIB of the default VRF is accomplished via commands in the context of a VRF address-family.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast> rd vpn
export <asn:nn|address:nn>
```

Specifies the route distinguisher to be added to a route exported from the current unicast VRF to VPN.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast> route-target
vpn <import|export|both> [RTLIST]
```

Specifies the route-target list to be attached to a route (export) or the route-target list to match against (import) when exporting/importing between the current unicast VRF and VPN. The RTLIST is a space-separated list of route-targets, which are BGP extended community values as described in Extended Communities Attribute.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast> label vpn
export <0-1048575|auto>
```

Enables an MPLS label to be attached to a route exported from the current unicast VRF to VPN. If the value specified is auto, the label value is automatically assigned from a pool maintained.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast> label vpn
allocation-mode per-nexthop
```

Select how labels are allocated in the given VRF. By default, the per-vrf mode is selected, and one label is used for all prefixes from the VRF. The per-nexthop will use a unique label for all prefixes that are reachable via the same nexthop.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast> route-map
vpn <import|export> [route-map <name>]
```

Specifies an optional route-map to be applied to routes imported or exported between the current unicast VRF and VPN.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast>
<import|export> vpn
```

Enables import or export of routes between the current unicast VRF and VPN.

```
set vrf name <name> protocols bgp address-family <ipv4-unicast|ipv6-unicast> import vrf
<name>
```

Shortcut syntax for specifying automatic leaking from vrf VRFNAME to the current VRF using the VPN RIB as intermediary. The RD and RT are auto derived and should not be specified explicitly for either the source or destination VRF's.

```
set vrf name <name> protocols bgp interface <interface> mpls forwarding
```

It is possible to permit BGP install VPN prefixes without transport labels. This configuration will install VPN prefixes originated from an e-bgp session, and with the next-hop directly connected.

### 8.15.3 Operation

It is not sufficient to only configure a L3VPN VRFs but L3VPN VRFs must be maintained, too. For L3VPN VRF maintenance the following operational commands are in place.

```
show bgp <ipv4|ipv6> vpn
```

Print active IPV4 or IPV6 routes advertised via the VPN SAFI.

```
BGP table version is 2, local router ID is 10.0.1.1, vrf id 0
Default local pref 100, local AS 65001
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 10.50.50.1:1011
*>i10.50.50.0/24    10.0.0.7          0      100      0 i
```

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```

UN=10.0.0.7 EC{65035:1011} label=80 type=bgp, subtype=0
Route Distinguisher: 10.60.60.1:1011
*>i10.60.60.0/24 10.0.0.10 0 100 0 i
UN=10.0.0.10 EC{65035:1011} label=80 type=bgp, subtype=0
    
```

**show bgp <ipv4|ipv6> vpn summary**

Print a summary of neighbor connections for the specified AFI/SAFI combination.

```

BGP router identifier 10.0.1.1, local AS number 65001 vrf-id 0
BGP table version 0
RIB entries 9, using 1728 bytes of memory
Peers 4, using 85 KiB of memory
Peer groups 1, using 64 bytes of memory

Neighbor      V      AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/
->PfxRcd  PfxSnt
10.0.0.7      4      65001    2860     2870      0     0     0 1d23h34m
->      2      10
    
```

## OPERATION MODE

### 9.1 Information

VyOS features a rich set of operational level commands to retrieve arbitrary information about your running system.

#### 9.1.1 Hardware

##### USB

In the past serial interface have been defined as `ttySx` and `ttyUSBx` where `x` was an instance number of the serial interface. It was discovered that from system boot to system boot the mapping of USB based serial interfaces will differ, depending which driver was loaded first by the operating system. This will become rather painful if you not only have serial interfaces for a console server connected but in addition also a serial backed *WWAN - Wireless Wide-Area-Network*.

To overcome this issue and the fact that in almost 50% of all cheap USB to serial converters there is no serial number programmed, the USB to serial interface is now directly identified by the USB root bridge and bus it connects to. This somehow mimics the new network interface definitions we see in recent Linux distributions.

For additional details you can refer to <https://vyos.dev/T2490>.

##### **show hardware usb**

Retrieve a tree like representation of all connected USB devices.

---

**Note:** If a device is unplugged and re-plugged it will receive a new Port, Dev, If identification.

---

```
vyos@vyos:~$ show hardware usb
/: Bus 03.Port 1: Dev 1, Class=root_hub, Driver=ehci-pci/2p, 480M
  |__ Port 1: Dev 2, If 0, Class=Hub, Driver=hub/4p, 480M
    |__ Port 3: Dev 4, If 0, Class=Vendor Specific Class, Driver=qcserial, 480M
    |__ Port 3: Dev 4, If 2, Class=Vendor Specific Class, Driver=qcserial, 480M
    |__ Port 3: Dev 4, If 3, Class=Vendor Specific Class, Driver=qcserial, 480M
    |__ Port 3: Dev 4, If 8, Class=Vendor Specific Class, Driver=qmi_wwan, 480M
/: Bus 02.Port 1: Dev 1, Class=root_hub, Driver=xhci_hcd/2p, 5000M
/: Bus 01.Port 1: Dev 1, Class=root_hub, Driver=xhci_hcd/2p, 480M
  |__ Port 1: Dev 2, If 0, Class=Vendor Specific Class, Driver=pl2303, 12M
  |__ Port 2: Dev 3, If 0, Class=Hub, Driver=hub/4p, 480M
    |__ Port 4: Dev 5, If 2, Class=Vendor Specific Class, Driver=ftdi_sio, 480M
    |__ Port 4: Dev 5, If 0, Class=Vendor Specific Class, Driver=ftdi_sio, 480M
```

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```

|__ Port 4: Dev 5, If 3, Class=Vendor Specific Class, Driver=ftdi_sio, 480M
|__ Port 4: Dev 5, If 1, Class=Vendor Specific Class, Driver=ftdi_sio, 480M
|__ Port 3: Dev 4, If 0, Class=Hub, Driver=hub/4p, 480M
    |__ Port 3: Dev 6, If 0, Class=Hub, Driver=hub/4p, 480M
        |__ Port 4: Dev 8, If 2, Class=Vendor Specific Class, Driver=ftdi_
→sio, 480M
            |__ Port 4: Dev 8, If 0, Class=Vendor Specific Class, Driver=ftdi_
→sio, 480M
                |__ Port 4: Dev 8, If 3, Class=Vendor Specific Class, Driver=ftdi_
→sio, 480M
                    |__ Port 4: Dev 8, If 1, Class=Vendor Specific Class, Driver=ftdi_
→sio, 480M
                        |__ Port 4: Dev 7, If 3, Class=Vendor Specific Class, Driver=ftdi_sio,
→480M
                            |__ Port 4: Dev 7, If 1, Class=Vendor Specific Class, Driver=ftdi_sio,
→480M
                                |__ Port 4: Dev 7, If 2, Class=Vendor Specific Class, Driver=ftdi_sio,
→480M
                                    |__ Port 4: Dev 7, If 0, Class=Vendor Specific Class, Driver=ftdi_sio,
→480M

```

**show hardware usb serial**

Retrieve a list and description of all connected USB serial devices. The device name displayed, e.g. *usb0b2.4p1.0* can be directly used when accessing the serial console as console-server device.

```

vyos@vyos$ show hardware usb serial
Device          Model          Vendor
-----
usb0b1.3p1.0    MC7710         Sierra Wireless, Inc.
usb0b1.3p1.2    MC7710         Sierra Wireless, Inc.
usb0b1.3p1.3    MC7710         Sierra Wireless, Inc.
usb0b1p1.0      USB-Serial_Controller_D Prolific Technology, Inc.
usb0b2.3.3.4p1.0 Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.3.4p1.1 Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.3.4p1.2 Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.3.4p1.3 Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.4p1.0  Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.4p1.1  Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.4p1.2  Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.3.4p1.3  Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.4p1.0    Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.4p1.1    Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.4p1.2    Quad_RS232-HS Future Technology Devices International, Ltd
usb0b2.4p1.3    Quad_RS232-HS Future Technology Devices International, Ltd

```

## 9.1.2 Version

### show version

Return the current running VyOS version and build information. This includes also the name of the release train which is `crux` on VyOS 1.2, `equuleus` on VyOS 1.3 and `sagitta` on VyOS 1.4.

```
vyos@vyos:~$ show version

Version:           VyOS 1.4-rolling-202106270801
Release Train:     sagitta

Built by:          autobuild@vyos.net
Built on:          Sun 27 Jun 2021 09:50 UTC
Build UUID:        ab43e735-edcb-405a-9f51-f16a1b104e52
Build Commit ID:  f544d75eab758f

Architecture:     x86_64
Boot via:          installed image
System type:       KVM guest

Hardware vendor:   QEMU
Hardware model:    Standard PC (i440FX + PIIX, 1996)
Hardware S/N:      Unknown
Hardware UUID:     Unknown

Copyright:         VyOS maintainers and contributors
```

### show version kernel

Return version number of the Linux Kernel used in this release.

```
vyos@vyos:~$ show version kernel
5.10.46-amd64-vyos
```

### show version frr

Return version number of FRR (Free Range Routing - <https://frrouting.org/>) used in this release. This is the routing control plane and a successor to GNU Zebra and Quagga.

```
vyos@vyos:~$ show version frr
FRRouting 7.5.1-20210625-00-gf07d935a2 (vyos).
Copyright 1996-2005 Kunihiro Ishiguro, et al.
```

## 9.2 Boot Options

**Warning:** This function may be highly disruptive. It may cause major service interruption, so make sure you really need it and verify your input carefully.

VyOS has several kernel command line options to modify the normal boot process. To add an option, select the desired image in GRUB menu at load time, press `e`, edit the first line, and press **Ctrl-x** to boot when ready.

```

GNU GRUB  version 2.02-beta2-22+deb8u1

+-----+
|setparams 'VyOS 1.2.6-epal linux (Serial console)'  

|  

|    linux /boot/1.2.6-epal/vmlinuz boot=live quiet rootdelay=5 vyos-uni\  

|on=/boot/1.2.6-epal console=tty0 console=ttyS0,9600  

|    initrd /boot/1.2.6-epal/initrd.img  

+-----+

Minimum Emacs-like screen editing is supported. TAB lists  

completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for  

a command-line or ESC to discard edits and return to the GRUB menu.

```

### 9.2.1 Specify custom config file

Tells the system to use specified file instead of `/config/config.boot`. If specified file does not exist or is not readable, fall back to default config. No additional verification is performed, so make sure you specify a valid config file.

```
vyos-config=/path/to/file
```

To load the *factory default* config, use:

```
vyos-config=/opt/vyatta/etc/config.boot.default
```

### 9.2.2 Disable specific boot process steps

These options disable some boot steps. Make sure you understand the *boot process* well before using them!

#### **no-vyos-migrate**

Do not perform config migration.

#### **no-vyos-firewall**

Do not initialize default firewall chains, renders any firewall configuration unusable.

## 9.3 Password Recovery

Using the console, restart the VyOS router. The GRUB menu appears. Select the relevant option from the GRUB menu and press Enter. The option must start with “Lost password change.”

The stand-alone user-password recovery tool starts running and prompts you to reset the local system user password.

```

Do you wish to reset the admin password? (y or n)
y
Which admin account do you want to reset?[vyos]
my_username

```

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```

GNU GRUB  version 2.02+dfsg1-20+deb10u4

VyOS 1.3.2 linux (KVM console)
VyOS 1.3.2 linux (Serial console)
VyOS 1.3.2 linux (USB console)
*Lost password change 1.3.2 (KVM console)
Lost password change 1.3.2 (Serial console)
Lost password change 1.3.2 (USB console)

Use the ↑ and ↓ keys to select which entry is highlighted.
Press enter to boot the selected OS, 'e' to edit the commands
before booting or 'c' for a command-line.

```

(continued from previous page)

```

Enter my_username password:
Retype my_username password:
System will reboot in 10 seconds...

```

## 9.4 RAID-1

A Redundant Array of Independent Disks (RAID) uses two or more hard disk drives to improve disk speed, store more data, and/or provide fault tolerance. There are several storage schemes possible in a RAID array, each offering a different combination of storage, reliability, and/or performance. The VyOS system supports a “RAID 1” deployment. RAID 1 allows two or more disks to mirror one another to provide system fault tolerance. In a RAID 1 solution, every sector of one disk is duplicated onto every sector of all disks in the array. Provided even one disk in the RAID 1 set is operational, the system continues to run, even through disk replacement (provided that the hardware supports in-service replacement of drives). RAID 1 can be implemented using special hardware or it can be implemented in software. The VyOS system supports software RAID 1 on two disks. The VyOS implementation of RAID 1 allows the following:

- Detection and reporting of disk failure
- The ability to maintain system operation with one failed disk
- The ability to boot the system with one failed disk
- The ability to replace a failed disk and initiate re-mirroring
- The ability to monitor the status of remirroring

## 9.4.1 Installation Implications

The VyOS systems installation utility provides several options for installing to a RAID 1 set. You can:

- Use the install system to create the RAID 1 set
- Use the underlying Linux commands to create a RAID 1 set before running the install system command.
- Use a previously-created RAID 1 set.

---

**Note:** Before a permanent installation, VyOS runs a live installation

---

## 9.4.2 Configuration

### Single disk, install as normal

When the VyOS system is installed, it automatically detects the presence of two disks not currently part of a RAID array. In these cases, the VyOS installation utility automatically offers you the option of configuring RAID 1 mirroring for the drives, with the following prompt.

```
Would you like to configure RAID 1 mirroring on them?
```

- If you do not want to configure RAID 1 mirroring, enter “No” at the prompt and continue with installation in the normal way.

### Empty 2+ Disk

If VyOS system detect two identical disks that are not currently part of a RAID-1 set, the VyOS installation utility automatically offers you the option of configuring RAID 1 mirroring for the drives, with the following prompt.

```
Would you like to configure RAID 1 mirroring on them?
```

1 - To create a new RAID 1 array, enter “Yes” at the prompt. If the system detects a filesystem on the partitions being used for RAID 1 it will prompt you to indicate whether you want to continue creating the RAID 1 array.

```
Continue creating array?
```

2 - To overwrite the old filesystem, enter “Yes”.

3 - The system informs you that all data on both drives will be erased. You are prompted to confirm that you want to continue

```
Are you sure you want to do this?
```

4 - Enter “Yes” at the prompt to retain the current VyOS configuration once installation is complete. Enter “No” to delete the current VyOS configuration.

```
Would you like me to save the data on it before I delete it?
```

5 - Enter “Yes” at the prompt to retain the current VyOS configuration once installation is complete. Enter “No” to delete the current VyOS configuration.

6 - Continue with installation in the normal way.

## Present RAID-1

When the VyOS software on a system with a RAID 1 set already configured, the installation utility will detect the array and will display the following prompt:

```
Would you like to use this one?
```

1 - To break apart the current RAID 1 set, enter “No” at the prompt. The installation utility detects that there are two identical disks and offers you the option of configuring RAID 1 mirroring on them, displaying the following prompt:

```
Would you like to configure RAID 1 mirroring on them?
```

2 - To decline to set up a new RAID 1 configuration on the disks, enter “No” at the prompt. The system prompts you to indicate which partition you would like the system installed on.

```
Which partition should I install the root on? [sda1]:
```

3 - Enter the partition where you would like the system installed. The system then prompts you to indicate whether you want to save the old configuration data. This represents the current VyOS configuration.

```
Would you like me to save the data on it before I delete it?
```

4 - Enter “Yes” at the prompt to retain the current VyOS configuration once installation is complete. Enter “No” to delete the current VyOS configuration.

5 - Continue with installation in the normal way.

## Detecting and Replacing a Failed RAID 1 Disk

The VyOS system automatically detects a disk failure within a RAID 1 set and reports it to the system console. You can verify the failure by issuing the `show raid` command.

To replace a bad disk within a RAID 1 set, perform the following steps:

1 - Remove the failed disk from the RAID 1 set by issuing the following command:

```
delete raid <RAID-1-device> member <disk-partition>
```

where `RAID-1-device` is the name of the RAID 1 device (for example, `md0`) and `disk-partition` is the name of the failed disk partition (for example, `sdb2`).

2- Physically remove the failed disk from the system. If the drives are not hot-swappable, then you must shut down the system before removing the disk.

3 - Replace the failed drive with a drive of the same size or larger.

4 - Format the new disk for RAID 1 by issuing the following command:

```
format disk <disk-device1> like <disk-device2>
```

where `disk-device1` is the replacement disk (for example, `sdb`) and `disk-device2` is the existing healthy disk (for example, `sda`).

5-Add the replacement disk to the RAID 1 set by issuing the following command:

```
add raid <RAID-1-device> member <disk-partition>
```

where `RAID-1-device` is the name of the RAID 1 device (for example, `md0`) and `disk-partition` is the name of the replacement disk partition (for example, `sdb2`).

### 9.4.3 Operation

This part introduces how to add a disk partition to a RAID-1 set initiates mirror synchronization, check and display information.

**add raid <RAID-1-device> member <disk-partition>**

Use this command to add a member disk partition to the RAID 1 set. Adding a disk partition to a RAID 1 set initiates mirror synchronization, where all data on the existing member partition is copied to the new partition.

**format disk <disk-device1> like <disk-device2>**

This command is typically used to prepare a disk to be added to a preexisting RAID 1 set (of which disk-device2 is already a member).

**show raid <RAID-1-device>**

shows output for show raid md0 as sdb1 is being added to the RAID 1 set and is in the process of being resynchronized.

```
vyos@vyos:~$ show raid md0
/dev/md0:
  Version : 00.90
Creation Time : Wed Oct 29 09:19:09 2008
  Raid Level : raid1
  Array Size : 1044800 (1020.48 MiB 1069.88 MB)
Used Dev Size : 1044800 (1020.48 MiB 1069.88 MB)
  Raid Devices : 2
Total Devices : 2
Preferred Minor : 0
  Persistence : Superblock is persistent
Update Time : Wed Oct 29 19:34:23 2008
  State : active, degraded, recovering
Active Devices : 1
Working Devices : 2
Failed Devices : 0
Spare Devices : 1
Rebuild Status : 17% complete
  UUID : 981abd77:9f8c8dd8:fdbf4de4:3436c70f
  Events : 0.103
  Number  Major  Minor  RaidDevice State
    0      8      1      0      active sync  /dev/sda1
    2      8     17      1      spare rebuilding /dev/sdb1
```

**show raid <RAID-1-device>**

Use this command to display the formatting of a hard disk.

```
vyos@vyos:~$ show disk sda format
Disk /dev/sda: 1073 MB, 1073741824 bytes
85 heads, 9 sectors/track, 2741 cylinders
Units = cylinders of 765 * 512 = 391680 bytes
Disk identifier: 0x000b7179
Device Boot      Start          End      Blocks   Id  System
/dev/sda1                6          2737     1044922+  fd  Linux raid autodetect
```

## VYOS AUTOMATION

### 10.1 VyOS API

For configuration and enabling the API see *HTTP API*

#### 10.1.1 Authentication

All endpoints only listen on HTTP POST requests and the API KEY must set as key in the formdata.

Below see one example for curl and one for python. The rest of the documentation is reduced to curl.

```
curl --location --request POST 'https://vyos/retrieve' \  
--form data='{\"op\": \"showConfig\", \"path\": []}' \  
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

```
import requests  
url = \"https://vyos/retrieve\"  
payload={\"data\": {\"op\": \"showConfig\", \"path\": []},  
         \"key\": 'MY-HTTPS-API-PLAINTEXT-KEY'}  
headers = {}  
response = requests.request(\"POST\", url, headers=headers, data=payload)  
print(response.text)
```

#### 10.1.2 API Endpoints

##### **/retrieve**

With the retrieve endpoint you get parts or the whole configuration.

To get the whole configuration, pass an empty list to the path field

```
curl --location --request POST 'https://vyos/retrieve' \  
--form data='{\"op\": \"showConfig\", \"path\": []}' \  
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

```
response (shorted)  
{
```

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```

"success": true,
"data": {
  "interfaces": {
    "ethernet": {
      "eth0": {
        "address": "dhcp",
        "duplex": "auto",
        "hw-id": "50:00:00:01:00:00",
        "speed": "auto"
      },
      "eth1": {
        "duplex": "auto",
        "hw-id": "50:00:00:01:00:01",
        "speed": "auto"
      }
    }
  },
  "error": null
}

```

To only get a part of the configuration, for example `system syslog`.

```

curl -k --location --request POST 'https://vyos/retrieve' \
--form data='{ "op": "showConfig", "path": ["system", "syslog"] }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": {
    "global": {
      "facility": {
        "all": {
          "level": "info"
        },
        "protocols": {
          "level": "debug"
        }
      }
    }
  },
  "error": null
}

```

if you just want the Value of a multi-valued node, use the `returnValues` operation.

For example, get the addresses of a `dum0` interface.

```

curl -k --location --request POST 'https://vyos/retrieve' \
--form data='{ "op": "returnValues", "path": ["interfaces", "dummy", "dum0", "address"] }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:

```

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```
{
  "success": true,
  "data": [
    "10.10.10.10/24",
    "10.10.10.11/24",
    "10.10.10.12/24"
  ],
  "error": null
}
```

To check existence of a configuration path, use the `exists` operation.

For example, check an existing path:

```
curl -k --location --request POST 'https://vyos/retrieve' \
--form data='{ "op": "exists", "path": ["service", "https", "api"] }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": true,
  "error": null
}
```

versus a non-existent path:

```
curl -k --location --request POST 'https://vyos/retrieve' \
--form data='{ "op": "exists", "path": ["service", "non", "existent", "path"] }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": false,
  "error": null
}
```

## **/reset**

The reset endpoint run a reset command.

```
curl --location --request POST 'https://vyos/reset' \
--form data='{ "op": "reset", "path": ["ip", "bgp", "192.0.2.11"] }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": "",
  "error": null
}
```

## /reboot

To initiate a reboot use the reboot endpoint.

```
curl --location --request POST 'https://vyos/reboot' \
--form data='{ "op": "reboot", "path": ["now"]}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": "",
  "error": null
}
```

## /poweroff

To power off the system use the poweroff endpoint.

```
curl --location --request POST 'https://vyos/poweroff' \
--form data='{ "op": "poweroff", "path": ["now"]}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": "",
  "error": null
}
```

## /image

To add or delete an image, use the /image endpoint.

add an image

```
curl -k --location --request POST 'https://vyos/image' \
--form data='{ "op": "add", "url": "https://downloads.vyos.io/rolling/current/amd64/vyos-
↪rolling-latest.iso"}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response (shorted):
{
  "success": true,
  "data": "Trying to fetch ISO file from https://downloads.vyos.io/rolling-latest.iso\n
  ...
  Setting up grub configuration...\nDone.\n",
  "error": null
}
```

delete an image, for example 1.3-rolling-202006070117

```
curl -k --location --request POST 'https://vyos/image' \
--form data='{ "op": "delete", "name": "1.3-rolling-202006070117"}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": "Deleting the \"1.3-rolling-202006070117\" image...\nDone\n",
  "error": null
}
```

### /show

The /show endpoint is to show everything in the operational mode.

For example, show which images are installed.

```
curl -k --location --request POST 'https://vyos/show' \
--form data='{ "op": "show", "path": ["system", "image"]}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": "The system currently has the following image(s) installed:\n\n
          1: 1.4-rolling-202102280559 (default boot)\n
          2: 1.4-rolling-202102230218\n
          3: 1.3-beta-202102210443\n\n",
  "error": null
}
```

### /generate

The generate endpoint run a generate command.

```
curl -k --location --request POST 'https://vyos/generate' \
--form data='{ "op": "generate", "path": ["pki", "wireguard", "key-pair"]}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'

response:
{
  "success": true,
  "data": "Private key: CFZR2eyhoVZwk4n3JFPMJx3E145f1EYgDM+ubytXYVY=\n
          Public key: jjtpPT8ycI1Q0bNtrWuxAk04k88Xwzg5VHV9xGZ581U=\n\n",
  "error": null
}
```

## /configure

You can pass a `set`, `delete` or `comment` command to the `/configure` endpoint.

set a single command

```
curl -k --location --request POST 'https://vyos/configure' \
--form data='{ "op": "set", "path": ["interfaces", "dummy", "dum1", "address", "10.11.0.1/32"]}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

response:

```
{
  "success": true,
  "data": null,
  "error": null
}
```

delete a single command

```
curl -k --location --request POST 'https://vyos/configure' \
--form data='{ "op": "delete", "path": ["interfaces", "dummy", "dum1", "address", "10.11.0.1/32"]}' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

response:

```
{
  "success": true,
  "data": null,
  "error": null
}
```

The API pushes every request to a session and commit it. But some of VyOS components like DHCP and PPPoE Servers, IPSec, VXLAN, and other tunnels require full configuration for commit. The endpoint will process multiple commands when you pass them as a list to the data field.

```
curl -k --location --request POST 'https://vyos/configure' \
--form data='[{"op": "set", "path": ["interfaces", "vxlan", "vxlan1", "remote", "203.0.113.99"]}, {"op": "set", "path": ["interfaces", "vxlan", "vxlan1", "vni", "1"]}]' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

response:

```
{
  "success": true,
  "data": null,
  "error": null
}
```

## /config-file

The endpoint /config-file is to save or load a configuration.

Save a running configuration to the startup configuration. When you don't specify the file when saving, it saves to /config/config.boot.

```
curl -k --location --request POST 'https://vyos/config-file' \
--form data='{ "op": "save" }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

response:

```
{
  "success": true,
  "data": "Saving configuration to '/config/config.boot'...\nDone\n",
  "error": null
}
```

Save a running configuration to a file.

```
curl -k --location --request POST 'https://vyos/config-file' \
--form data='{ "op": "save", "file": "/config/test.config" }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

response:

```
{
  "success": true,
  "data": "Saving configuration to '/config/test.config'...\nDone\n",
  "error": null
}
```

To Load a configuration file.

```
curl -k --location --request POST 'https://vyos/config-file' \
--form data='{ "op": "load", "file": "/config/test.config" }' \
--form key='MY-HTTPS-API-PLAINTEXT-KEY'
```

response:

```
{
  "success": true,
  "data": null,
  "error": null
}
```

## 10.2 Ansible

VyOS supports configuration via ansible. Need to install ansible and python3-paramiko module

Structure of files

```
.
├── ansible.cfg
├── files
```

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```
├── id_rsa_docker.pub
├── hosts
└── main.yml
```

## 10.2.1 File contents

ansible.cfg

```
[defaults]
host_key_checking = no
retry_files_enabled = False
ANSIBLE_INVENTORY_UNPARSED_FAILED = true
```

id\_rsa\_docker.pub. Needs to declare only public key exactly.

```
AAAAB3NzaC1yc2EAAAADAQABAAQCoDgfhQJuJRFWJijHn7ZinZ3NWp4hWVrt7HFcvn0kgtP/5PeCtMt
```

hosts

```
[vyos_hosts]
r11 ansible_ssh_host=192.0.2.11

[vyos_hosts:vars]
ansible_python_interpreter=/usr/bin/python3
ansible_user=vyos
ansible_ssh_pass=vyos
ansible_network_os=vyos
ansible_connection=network_cli
```

main.yml

```
---
- hosts: r11

  connection: network_cli
  gather_facts: 'no'

  tasks:
    - name: Configure remote r11
      vyos_config:
        lines:
          - set system host-name r11
          - set system name-server 203.0.113.254
          - set service ssh disable-host-validation
          - set system login user vyos authentication public-keys docker@work type ssh-
↪rsa
          - set system login user vyos authentication public-keys docker@work key "{{
↪lookup('file', 'id_rsa_docker.pub') }}"
          - set system time-zone America/Los_Angeles
          - set interfaces ethernet eth0 description WAN
```

## 10.2.2 Run ansible

```
$ ansible-playbook -i hosts main.yml

PLAY [r11]
↳ *****

TASK [Configure remote r11]
↳ *****
changed: [r11]

PLAY RECAP
↳ *****
r11                : ok=1    changed=1    unreachable=0    failed=0
↳skipped=0    rescued=0    ignored=0
```

## 10.3 VyOS Terraform

### 10.3.1 Terraform for VyOS

VyOS supports development infrastructure via Terraform and provisioning via Ansible. Terraform allows you to automate the process of deploying instances on many cloud and virtual platforms. In this article, we will look at using terraforms to deploy VyOS on platforms - AWS, Azure, and vSphere. For more details about Terraform please have a look here [link](#).

Need to [install](#) Terraform

Structure of files in the standard Terraform project:

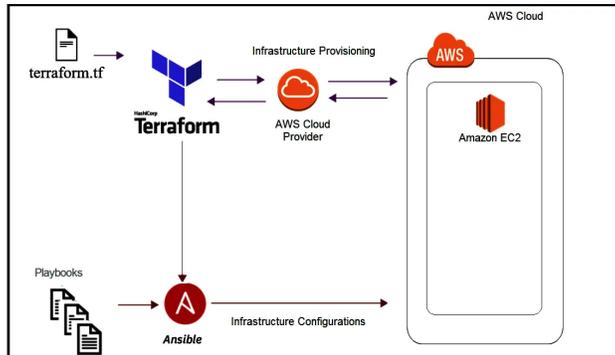
```
.
├── main.tf           # The main script
├── version.tf       # File for the changing version of Terraform.
├── variables.tf     # The file of all variables in "main.tf"
└── terraform.tfvars # The value of all variables (passwords, login, ip addresses and
↳so on)
```

General commands that we will use for running Terraform scripts

```
cd /<your folder> # go to the Terraform project
terraform init     # install all addons and provider (aws az and so on)
terraform plan     # show what is changing
terraform apply    # run script
yes               # apply running
```

### 10.3.2 Deploying VyOS in the AWS cloud

With the help of Terraform, you can quickly deploy VyOS-based infrastructure in the AWS cloud. If necessary, the infrastructure can be removed using terraform. Also we will make provisioning using Ansible.



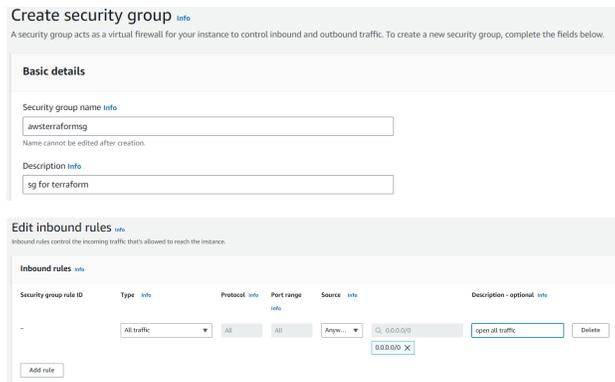
In this case, we'll create the necessary files for Terraform and Ansible next using Terraform we'll create a single instance on the AWS cloud and make provisioning using Ansible.

#### Preparation steps for deploying VyOS on AWS

How to create a single instance and install your configuration using Terraform+Ansible+AWS Step by step:

##### AWS

- 1 Create an account with AWS and get your "access\_key", "secret key"
- 2 Create a key pair and download your .pem key



##### Terraform

- 1 Create an UNIX or Windows instance
- 2 Download and install Terraform
- 3 Create the folder for example /root/awsterraform

```
mkdir /root/awsterraform
```

4 Copy all files into your Terraform project "/root/awsterraform" (vyos.tf, var.tf, terraform.tfvars, version.tf), more detailed see `Structure of files Terraform for AWS`

5 Type the commands :

```
cd /<your folder>
terraform init
```

#### Ansible

- 1 Create an UNIX instance whenever you want (local, cloud, and so on)
- 2 Download and install Ansible
- 3 Create the folder for example /root/aws/
- 4 Copy all files into your Ansible project “/root/aws/” (ansible.cfg, instance.yml, mykey.pem and “all”), more detailed see *Structure of files Ansible for AWS*

mykey.pem you have to get using step 1.2

#### Start

Type the commands on your Terraform instance:

```
cd /<your folder>
terraform plan
terraform apply
yes
```

### Start creating an AWS instance and check the result

```
root@localhost:~/awsterraform# terraform apply
```

Terraform used the selected providers to generate the following execution plan.  
Resource actions are indicated with the following symbols:

+ create

Terraform will perform the following actions:

```
# aws_instance.myVy0Sec2 will be created
+ resource "aws_instance" "myVy0Sec2" {
  + ami                    = "ami-*****62c2d"
  + arn                   = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone      = (known after apply)
  + cpu_core_count         = (known after apply)
  + cpu_threads_per_core   = (known after apply)
  + disable_api_stop       = (known after apply)
  + disable_api_termination = (known after apply)
  + ebs_optimized          = (known after apply)
  + get_password_data      = false
  + host_id                = (known after apply)
  + host_resource_group_arn = (known after apply)
  + iam_instance_profile   = (known after apply)
  + id                     = (known after apply)
  + instance_initiated_shutdown_behavior = (known after apply)
  + instance_lifecycle     = (known after apply)
  + instance_state         = (known after apply)
  + instance_type          = "t2.micro"
```

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```

+ ipv6_address_count      = (known after apply)
+ ipv6_addresses          = (known after apply)
+ key_name                 = "awsterraform"
+ monitoring               = (known after apply)
+ outpost_arn              = (known after apply)
+ password_data            = (known after apply)
+ placement_group          = (known after apply)
+ placement_partition_number = (known after apply)
+ primary_network_interface_id = (known after apply)
+ private_dns              = (known after apply)
+ private_ip               = (known after apply)
+ public_dns               = (known after apply)
+ public_ip                = (known after apply)
+ secondary_private_ips    = (known after apply)
+ security_groups          = [
  + "awsterraformsg",
]
+ source_dest_check        = true
+ spot_instance_request_id = (known after apply)
+ subnet_id                = (known after apply)
+ tags                     = {
  + "name" = "VyOS System"
}
+ tags_all                  = {
  + "name" = "VyOS System"
}
+ tenancy                   = (known after apply)
+ user_data                 = (known after apply)
+ user_data_base64         = (known after apply)
+ user_data_replace_on_change = false
+ vpc_security_group_ids    = (known after apply)
}

# local_file.ip will be created
+ resource "local_file" "ip" {
  + content            = (known after apply)
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5        = (known after apply)
  + content_shal       = (known after apply)
  + content_sha256     = (known after apply)
  + content_sha512     = (known after apply)
  + directory_permission = "0777"
  + file_permission    = "0777"
  + filename           = "ip.txt"
  + id                  = (known after apply)
}

# null_resource.SSHconnection1 will be created
+ resource "null_resource" "SSHconnection1" {
  + id = (known after apply)
}

```

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```
# null_resource.SSHconnection2 will be created
+ resource "null_resource" "SSHconnection2" {
  + id = (known after apply)
}
```

Plan: 4 to add, 0 to change, 0 to destroy.

Changes to Outputs:

```
+ my_IP = (known after apply)
```

Do you want to perform these actions?

Terraform will perform the actions described above.

Only 'yes' will be accepted to approve.

Enter a value: yes

```
aws_instance.myVy0Sec2: Creating...
aws_instance.myVy0Sec2: Still creating... [10s elapsed]
aws_instance.myVy0Sec2: Still creating... [20s elapsed]
aws_instance.myVy0Sec2: Still creating... [30s elapsed]
aws_instance.myVy0Sec2: Still creating... [40s elapsed]
aws_instance.myVy0Sec2: Creation complete after 44s [id=i-09edfca15aac2fe0a]
null_resource.SSHconnection1: Creating...
null_resource.SSHconnection2: Creating...
null_resource.SSHconnection1: Provisioning with 'file'...
null_resource.SSHconnection2: Provisioning with 'remote-exec'...
null_resource.SSHconnection2 (remote-exec): Connecting to remote host via SSH...
null_resource.SSHconnection2 (remote-exec): Host: 10.217.80.104
null_resource.SSHconnection2 (remote-exec): User: root
null_resource.SSHconnection2 (remote-exec): Password: true
null_resource.SSHconnection2 (remote-exec): Private key: false
null_resource.SSHconnection2 (remote-exec): Certificate: false
null_resource.SSHconnection2 (remote-exec): SSH Agent: false
null_resource.SSHconnection2 (remote-exec): Checking Host Key: false
null_resource.SSHconnection2 (remote-exec): Target Platform: unix
local_file.ip: Creating...
local_file.ip: Creation complete after 0s [id=e8e91f2e24579cd28b92e2d152c0c24c3bf4b52c]
null_resource.SSHconnection2 (remote-exec): Connected!
null_resource.SSHconnection1: Creation complete after 0s [id=7070868940858935600]

null_resource.SSHconnection2 (remote-exec): PLAY [integration of terraform and ansible]
↳*****

null_resource.SSHconnection2 (remote-exec): TASK [Wait 300 seconds, but only start
↳checking after 60 seconds] *****
null_resource.SSHconnection2: Still creating... [10s elapsed]
null_resource.SSHconnection2: Still creating... [20s elapsed]
null_resource.SSHconnection2: Still creating... [30s elapsed]
null_resource.SSHconnection2: Still creating... [40s elapsed]
null_resource.SSHconnection2: Still creating... [50s elapsed]
null_resource.SSHconnection2: Still creating... [1m0s elapsed]
```

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```

null_resource.SSHconnection2 (remote-exec): ok: [54.xxx.xxx.xxx]

null_resource.SSHconnection2 (remote-exec): TASK [Configure general settings for the
↳vyos hosts group] *****
null_resource.SSHconnection2: Still creating... [1m10s elapsed]
null_resource.SSHconnection2 (remote-exec): changed: [54.xxx.xxx.xxx]

null_resource.SSHconnection2 (remote-exec): PLAY RECAP
↳*****
null_resource.SSHconnection2 (remote-exec): 54.xxx.xxx.xxx           : ok=2   ↳
↳changed=1   unreachable=0   failed=0   skipped=0   rescued=0   ignored=0

null_resource.SSHconnection2: Creation complete after 1m16s [id=4902256962410024771]

Apply complete! Resources: 4 added, 0 changed, 0 destroyed.

Outputs:

my_IP = "54.xxx.xxx.xxx"
    
```

After executing all the commands you will have your VyOS instance on the AWS cloud with your configuration, it's a very convenient desition. If you need to delete the instance please type the command:

```
terraform destroy
```

## Troubleshooting

1 Ansible doesn't connect via SSH to your AWS instance: you have to check that your SSH key has copied into the path /root/aws/.

Also, increase the time in the file instance.yml from 300 sec to 500 sec or more. (It depends on your location). Make sure that you have opened access to the instance in the security group.

2 Terraform doesn't connect via SSH to your Ansible instance: you have to check the correct login and password in the part of the file VyOS.tf

```

connection {
  type      = "ssh"
  user      = "root"           # open root access using login and password on your
↳Ansible
  password  = var.password    # check password in the file terraform.tfvars isn't empty
  host      = var.host        # check the correct IP address of your Ansible host
}
    
```

Make sure that Ansible is pinging from Terraform.

## Structure of files Terraform for AWS

```

.
├── vyos.tf           # The main script
├── var.tf            # The file of all variables in "vyos.tf"
├── versions.tf      # File for the changing version of Terraform.
└── terraform.tfvars # The value of all variables (passwords, login, ip,
↳adresses and so on)

```

## File contents of Terraform for AWS

vyos.tf

```

#####
# Build an VyOS VM from the Marketplace
# To finde nessesery AMI image_ in AWS
#
# In the script vyos.tf we'll use default values (you can chang it as you need)
# AWS Region = "us-east-1"
# AMI          = "standard AMI of VyOS from AWS Marketplace"
# Size of VM = "t2.micro"
# AWS Region = "us-east-1"
# After deploying the AWS instance and getting an IP address, the IP address is copied_
↳into the file
#"ip.txt" and copied to the Ansible node for provisioning.
#####

provider "aws" {
  access_key = var.access
  secret_key = var.secret
  region     = var.region
}

variable "region" {
  default     = "us-east-1"
  description = "AWS Region"
}

variable "ami" {
  default     = "ami-*****3b3" # ami image please enter your_
↳details
  description = "Amazon Machine Image ID for VyOS"
}

variable "type" {
  default     = "t2.micro"
  description = "Size of VM"
}

# my resource for VyOS
resource "aws_instance" "myVyOSec2" {

```

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```

ami = var.ami
key_name = "awsterraform" # Please enter your ↵
↵details from 1.2 of Preparation steps for deploying VyOS on AWS
security_groups = ["awsterraformsg"] # Please enter your ↵
↵details from 1.3 of Preparation steps for deploying VyOS on AWS
instance_type = var.type
tags = {
    name = "VyOS System"
}
}

#####
# specific variable (to getting type "terraform plan"):
# aws_instance.myVy0Sec2.public_ip - the information about public IP address
# of our instance, needs for provisioning and ssh connection from Ansible
#####

output "my_IP"{
value = aws_instance.myVy0Sec2.public_ip
}

#####
#
# IP of aws instance copied to a file ip.txt in local system Terraform
# ip.txt looks like:
# cat ./ip.txt
# ...
#####

resource "local_file" "ip" {
    content = aws_instance.myVy0Sec2.public_ip
    filename = "ip.txt"
}

#connecting to the Ansible control node using SSH connection

#####
# Steps "SSHconnection1" and "SSHconnection2" need to get file ip.txt from the terraform ↵
↵node and start remotely the playbook of Ansible.
#####

resource "null_resource" "SSHconnection1" {
depends_on = [aws_instance.myVy0Sec2]
connection {
    type = "ssh"
    user = "root"
    password = var.password
    host = var.host
}
}

#copying the ip.txt file to the Ansible control node from local system

```

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```

provisioner "file" {
  source      = "ip.txt"
  destination = "/root/aws/ip.txt"           # The folder of your
↪ Ansible project
}
}

resource "null_resource" "SSHconnection2" {
depends_on = [aws_instance.myVyOSec2]
connection {
  type      = "ssh"
  user      = "root"
  password  = var.password
  host      = var.host
}
#command to run Ansible playbook on remote Linux OS
provisioner "remote-exec" {
  inline = [
    "cd /root/aws/",
    "ansible-playbook instance.yml"         # more detailed in
↪ "File contents of Ansible for AWS"
  ]
}
}
}

```

var.tf

```

variable "password" {
  description = "pass for Ansible"
  type = string
  sensitive = true
}
variable "host"{
  description = "The IP of my Ansible"
  type = string
}
variable "access" {
  description = "my access_key for AWS"
  type = string
  sensitive = true
}
variable "secret" {
  description = "my secret_key for AWS"
  type = string
  sensitive = true
}
}

```

versions.tf

```

terraform {
  required_providers {
    aws = {

```

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```

    source = "hashicorp/aws"
    version = "~> 5.0"
  }
}
}

```

terraform.tfvars

```

password = "" # password for Ansible SSH
host      = "" # IP of my Ansible
access   = "" # access_key for AWS
secret   = "" # secret_key for AWS

```

### Structure of files Ansible for AWS

```

.
├── group_vars
│   └── all
├── ansible.cfg
├── mykey.pem
└── instance.yml

```

### File contents of Ansible for AWS

ansible.cfg

```

[defaults]
inventory = /root/aws/ip.txt
host_key_checking= False
private_key_file = /root/aws/awsterraform.pem          # check the name
remote_user=vyos

```

mykey.pem

Copy your key.pem from AWS

instance.yml

```

#####
# About tasks:
# "Wait 300 seconds, but only start checking after 60 seconds" - try to make ssh
↳ connection every 60 seconds until 300 seconds
# "Configure general settings for the VyOS hosts group" - make provisioning into AWS
↳ VyOS node
# You have to add all necessary cammans of VyOS under the block "lines:"
#####

- name: integration of terraform and ansible
  hosts: all

```

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```
gather_facts: 'no'

tasks:
  - name: "Wait 300 seconds, but only start checking after 60 seconds"
    wait_for_connection:
      delay: 60
      timeout: 300

  - name: "Configure general settings for the VyOS hosts group"
    vyos_config:
      lines:
        - set system name-server xxx.xxx.xxx.xxx
      save:
        true
```

group\_vars/all

```
ansible_connection: ansible.netcommon.network_cli
ansible_network_os: vyos.vyos.vyos
ansible_user: vyos
```

### Source files for AWS from GIT

All files about the article can be found [here](#)

### 10.3.3 Deploying VyOS in the Azure cloud

With the help of Terraform, you can quickly deploy VyOS-based infrastructure in the Azure cloud. If necessary, the infrastructure can be removed using terraform. Also we will make provisioning using Ansible.

In this case, we'll create the necessary files for Terraform and Ansible next using Terraform we'll create a single instance on the Azure cloud and make provisioning using Ansible.

#### Preparation steps for deploying VyOS on Azure

How to create a single instance and install your configuration using Terraform+Ansible+Azure Step by step:

Azure

- 1 Create an account with Azure

Terraform

- 1 Create an UNIX or Windows instance
- 2 Download and install Terraform
- 3 Create the folder for example /root/azvyos/

```
mkdir /root/azvyos
```

- 4 Copy all files into your Terraform project "/root/azvyos" (vyos.tf, var.tf, terraform.

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↪tfvars), more detailed see `Structure of files Terraform for Azure`\_

5 Login with Azure using the command

```
az login
```

2.6 Type the commands :

```
cd /<your folder>
terraform init
```

Ansible

- 1 Create an UNIX instance whenever you want (local, cloud, and so on)
- 2 Download and install Ansible
- 3 Create the folder for example /root/az/
- 4 Copy all files into your Ansible project “/root/az/” (ansible.cfg, instance.yml,”all”), more detailed see *Structure of files Ansible for Azure*

Start

Type the commands on your Terraform instance:

```
cd /<your folder>
terraform plan
terraform apply
yes
```

After executing all the commands you will have your VyOS instance on the Azure cloud with your configuration, it's a very convenient desition. If you need to delete the instance please type the command:

```
terraform destroy
```

### Structure of files Terraform for Azure

```
.
├── vyos.tf                # The main script
├── var.tf                 # File for the changing version of_
├── Terraform.
├── terraform.tfvars      # The value of all variables (passwords, login, ip_
├── ↪adresses and so on)
```

## File contents of Terraform for Azure

vyos.tf

```
#####
# HashiCorp Guide to Using Terraform on Azure
# This Terraform configuration will create the following:
# Resource group with a virtual network and subnet
# An VyOS server without ssh key (only login+password)
#####

# Chouse a provider

provider "azurerm" {
  features {}
}

# Create a resource group. In Azure every resource belongs to a
# resource group.

resource "azurerm_resource_group" "azure_vyos" {
  name     = "${var.resource_group}"
  location = "${var.location}"
}

# The next resource is a Virtual Network.

resource "azurerm_virtual_network" "vnet" {
  name                = "${var.virtual_network_name}"
  location            = "${var.location}"
  address_space       = ["${var.address_space}"]
  resource_group_name = "${var.resource_group}"
}

# Build a subnet to run our VMs in.

resource "azurerm_subnet" "subnet" {
  name                = "${var.prefix}subnet"
  virtual_network_name = "${azurerm_virtual_network.vnet.name}"
  resource_group_name = "${var.resource_group}"
  address_prefixes     = ["${var.subnet_prefix}"]
}

#####
# Build an VyOS VM from the Marketplace
# To finde nessesery image use the command:
#
# az vm image list --offer vyos --all
#
# Now that we have a network, we'll deploy an VyOS server.
# An Azure Virtual Machine has several components. In this example we'll build
# a security group, a network interface, a public ip address, a storage
# account and finally the VM itself. Terraform handles all the dependencies
```

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```

# automatically, and each resource is named with user-defined variables.
#####

# Security group to allow inbound access on port 22 (ssh)

resource "azurerm_network_security_group" "vyos-sg" {
  name           = "${var.prefix}-sg"
  location       = "${var.location}"
  resource_group_name = "${var.resource_group}"

  security_rule {
    name           = "SSH"
    priority       = 100
    direction     = "Inbound"
    access         = "Allow"
    protocol       = "Tcp"
    source_port_range = "*"
    destination_port_range = "22"
    source_address_prefix = "${var.source_network}"
    destination_address_prefix = "*"
  }
}

# A network interface.

resource "azurerm_network_interface" "vyos-nic" {
  name           = "${var.prefix}vyos-nic"
  location       = "${var.location}"
  resource_group_name = "${var.resource_group}"

  ip_configuration {
    name           = "${var.prefix}ipconfig"
    subnet_id      = "${azurerm_subnet.subnet.id}"
    private_ip_address_allocation = "Dynamic"
    public_ip_address_id = "${azurerm_public_ip.vyos-pip.id}"
  }
}

# Add a public IP address.

resource "azurerm_public_ip" "vyos-pip" {
  name           = "${var.prefix}-ip"
  location       = "${var.location}"
  resource_group_name = "${var.resource_group}"
  allocation_method = "Dynamic"
}

# Build a virtual machine. This is a standard VyOS instance from Marketplace.

resource "azurerm_virtual_machine" "vyos" {
  name           = "${var.hostname}-vyos"

```

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```

location          = "${var.location}"
resource_group_name = "${var.resource_group}"
vm_size           = "${var.vm_size}"

network_interface_ids = ["${azurerm_network_interface.vyos-nic.id}"]
delete_os_disk_on_termination = "true"

# To finde an information about the plan use the command:
# az vm image list --offer vyos --all

plan {
  publisher = "sentrionssl"
  name      = "vyos-1-3"
  product   = "vyos-1-2-lts-on-azure"
}

storage_image_reference {
  publisher = "${var.image_publisher}"
  offer     = "${var.image_offer}"
  sku       = "${var.image_sku}"
  version   = "${var.image_version}"
}

storage_os_disk {
  name          = "${var.hostname}-osdisk"
  managed_disk_type = "Standard_LRS"
  caching       = "ReadWrite"
  create_option = "FromImage"
}

os_profile {
  computer_name = "${var.hostname}"
  admin_username = "${var.admin_username}"
  admin_password = "${var.admin_password}"
}

os_profile_linux_config {
  disable_password_authentication = false
}
}

data "azurerm_public_ip" "example" {
  depends_on = ["azurerm_virtual_machine.vyos"]
  name       = "vyos-ip"
  resource_group_name = "${var.resource_group}"
}

output "public_ip_address" {
  value = data.azurerm_public_ip.example.ip_address
}

# IP of AZ instance copied to a file ip.txt in local system

```

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```

resource "local_file" "ip" {
  content = data.azure_erm_public_ip.example.ip_address
  filename = "ip.txt"
}

#Connecting to the Ansible control node using SSH connection

resource "null_resource" "nullremote1" {
  depends_on = ["azure_erm_virtual_machine.vyos"]
  connection {
    type      = "ssh"
    user      = "root"
    password  = var.password
    host      = var.host
  }
}

# Copying the ip.txt file to the Ansible control node from local system

provisioner "file" {
  source      = "ip.txt"
  destination = "/root/az/ip.txt"
}

resource "null_resource" "nullremote2" {
  depends_on = ["azure_erm_virtual_machine.vyos"]
  connection {
    type      = "ssh"
    user      = "root"
    password  = var.password
    host      = var.host
  }
}

# Command to run ansible playbook on remote Linux OS

provisioner "remote-exec" {

  inline = [
    "cd /root/az/",
    "ansible-playbook instance.yml"
  ]
}

```

var.tf

```

#####
# Variables File
#
# Here is where we store the default values for all the variables used in our
# Terraform code.
#####

```

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```
variable "resource_group" {
  description = "The name of your Azure Resource Group."
  default     = "my_resource_group"
}

variable "prefix" {
  description = "This prefix will be included in the name of some resources."
  default     = "vyos"
}

variable "hostname" {
  description = "Virtual machine hostname. Used for local hostname, DNS, and storage-
↪related names."
  default     = "vyos_terraform"
}

variable "location" {
  description = "The region where the virtual network is created."
  default     = "centralus"
}

variable "virtual_network_name" {
  description = "The name for your virtual network."
  default     = "vnet"
}

variable "address_space" {
  description = "The address space that is used by the virtual network. You can supply
↪more than one address space. Changing this forces a new resource to be created."
  default     = "10.0.0.0/16"
}

variable "subnet_prefix" {
  description = "The address prefix to use for the subnet."
  default     = "10.0.10.0/24"
}

variable "storage_account_tier" {
  description = "Defines the storage tier. Valid options are Standard and Premium."
  default     = "Standard"
}

variable "storage_replication_type" {
  description = "Defines the replication type to use for this storage account. Valid
↪options include LRS, GRS etc."
  default     = "LRS"
}

# The most chippers size

variable "vm_size" {
```

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```
description = "Specifies the size of the virtual machine."
default     = "Standard_B1s"
}

variable "image_publisher" {
  description = "Name of the publisher of the image (az vm image list)"
  default     = "sentrionmsl"
}

variable "image_offer" {
  description = "Name of the offer (az vm image list)"
  default     = "vyos-1-2-lts-on-azure"
}

variable "image_sku" {
  description = "Image SKU to apply (az vm image list)"
  default     = "vyos-1-3"
}

variable "image_version" {
  description = "Version of the image to apply (az vm image list)"
  default     = "1.3.3"
}

variable "admin_username" {
  description = "Administrator user name"
  default     = "vyos"
}

variable "admin_password" {
  description = "Administrator password"
  default     = "Vyos0!"
}

variable "source_network" {
  description = "Allow access from this network prefix. Defaults to '*'."
  default     = "*"
}

variable "password" {
  description = "pass for Ansible"
  type       = string
  sensitive  = true
}

variable "host" {
  description = "IP of my Ansible"
}
```

terraform.tfvars

```
password = "" # password for Ansible SSH
host     = "" # IP of my Ansible
```

## Structure of files Ansible for Azure

```

.
├── group_vars
│   └── all
├── ansible.cfg
└── instance.yml

```

## File contents of Ansible for Azure

ansible.cfg

```

[defaults]
inventory = /root/az/ip.txt
host_key_checking= False
remote_user=vyos

```

instance.yml

```

#####
# About tasks:
# "Wait 300 seconds, but only start checking after 60 seconds" - try to make ssh
↳ connection every 60 seconds until 300 seconds
# "Configure general settings for the VyOS hosts group" - make provisioning into Azure
↳ VyOS node
# You have to add all necessary cammans of VyOS under the block "lines:"
#####

- name: integration of terraform and ansible
  hosts: all
  gather_facts: 'no'

  tasks:

    - name: "Wait 300 seconds, but only start checking after 60 seconds"
      wait_for_connection:
        delay: 60
        timeout: 300

    - name: "Configure general settings for the VyOS hosts group"
      vyos_config:
        lines:
          - set system name-server xxx.xxx.xxx.xxx
        save:
          true

```

group\_vars/all

```

ansible_connection: ansible.netcommon.network_cli
ansible_network_os: vyos.vyos.vyos

```

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```
# user and password gets from terraform variables "admin_username" and "admin_password"
↳ in the file /root/azvyos/var.tf
ansible_user: vyos
ansible_ssh_pass: Vynos!
```

### Source files for Azure from GIT

All files about the article can be found [here](#)

## 10.3.4 Deploying VyOS in the vSphere infrastructure

With the help of Terraform, you can quickly deploy VyOS-based infrastructure in the vSphere. Also we will make provisioning using Ansible.

In this case, we'll create the necessary files for Terraform and Ansible next using Terraform we'll create a single instance on the vSphere cloud and make provisioning using Ansible.

### Preparation steps for deploying VyOS on vSphere

How to create a single instance and install your configuration using Terraform+Ansible+vSphere Step by step:

vSphere

- 1 Collect all data in to file "terraform.tfvars" and create resources for example "terraform"

Terraform

- 1 Create an UNIX or Windows instance
- 2 Download and install Terraform
- 3 Create the folder for example /root/vsphereterraform

```
mkdir /root/vsphereterraform
```

```
4 Copy all files into your Terraform project "/root/vsphereterraform" (vyos.tf, var.tf,
↳ terraform.tfvars, version.tf), more detailed see `Structure of files Terraform for
↳ vSphere` _
```

- 5 Type the commands :

```
cd /<your folder>
terraform init
```

Ansible

- 1 Create an UNIX instance whenever you want (local, cloud, and so on)
- 2 Download and install Ansible
- 3 Create the folder for example /root/vsphereterraform/
- 4 Copy all files into your Ansible project "/root/vsphereterraform/" (ansible.cfg, instance.yml,"all"), more detailed see *Structure of files Ansible for vSphere*

Start

Type the commands on your Terraform instance:

```
cd /<your folder>
terraform plan
terraform apply
yes
```

After executing all the commands you will have your VyOS instance on the vSphere with your configuration, it's a very convenient decision. If you need to delete the instance please type the command:

```
terraform destroy
```

### Structure of files Terraform for vSphere

```
.
├── vyos.tf                # The main script
├── versions.tf           # File for the changing version of Terraform.
├── var.tf                # File for the changing version of
└─> Terraform.
├── terraform.tfvars     # The value of all variables (passwords, login, ip
└─> addresses and so on)
```

### File contents of Terraform for vSphere

vyos.tf

```
provider "vsphere" {
  user          = var.vsphere_user
  password      = var.vsphere_password
  vsphere_server = var.vsphere_server
  allow_unverified_ssl = true
}

data "vsphere_datacenter" "datacenter" {
  name = var.datacenter
}

data "vsphere_datastore" "datastore" {
  name          = var.datastore
  datacenter_id = data.vsphere_datacenter.datacenter.id
}

data "vsphere_compute_cluster" "cluster" {
  name          = var.cluster
  datacenter_id = data.vsphere_datacenter.datacenter.id
}

data "vsphere_resource_pool" "default" {
  name          = format("%s%s", data.vsphere_compute_cluster.cluster.name, "/Resources/
└─> terraform") # set as you need
```

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```

    datacenter_id = data.vsphere_datacenter.datacenter.id
  }

data "vsphere_host" "host" {
  name          = var.host
  datacenter_id = data.vsphere_datacenter.datacenter.id
}

data "vsphere_network" "network" {
  name          = var.network_name
  datacenter_id = data.vsphere_datacenter.datacenter.id
}

# Deployment of VM from Remote OVF
resource "vsphere_virtual_machine" "vmFromRemoteOvf" {
  name                = var.remotename
  datacenter_id       = data.vsphere_datacenter.datacenter.id
  datastore_id        = data.vsphere_datastore.datastore.id
  host_system_id      = data.vsphere_host.host.id
  resource_pool_id    = data.vsphere_resource_pool.default.id
  network_interface {
    network_id = data.vsphere_network.network.id
  }
  wait_for_guest_net_timeout = 2
  wait_for_guest_ip_timeout  = 2

  ovf_deploy {
    allow_unverified_ssl_cert = true
    remote_ovf_url            = var.url_ova
    disk_provisioning         = "thin"
    ip_protocol               = "IPv4"
    ip_allocation_policy      = "dhcpPolicy"
    ovf_network_map = {
      "Network 1" = data.vsphere_network.network.id
      "Network 2" = data.vsphere_network.network.id
    }
  }
}

vapp {
  properties = {
    "password"          = "12345678",
    "local-hostname"    = "terraform_vyos"
  }
}

output "ip" {
  description = "default ip address of the deployed VM"
  value       = vsphere_virtual_machine.vmFromRemoteOvf.default_ip_address
}

# IP of vSphere instance copied to a file ip.txt in local system

```

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```

resource "local_file" "ip" {
  content = vsphere_virtual_machine.vmFromRemoteOvf.default_ip_address
  filename = "ip.txt"
}

#Connecting to the Ansible control node using SSH connection

resource "null_resource" "nullremote1" {
depends_on = ["vsphere_virtual_machine.vmFromRemoteOvf"]
connection {
  type      = "ssh"
  user      = "root"
  password  = var.ansiblepassword
  host      = var.ansiblehost
}

# Copying the ip.txt file to the Ansible control node from local system

provisioner "file" {
  source      = "ip.txt"
  destination = "/root/vsphere/ip.txt"
}

resource "null_resource" "nullremote2" {
depends_on = ["vsphere_virtual_machine.vmFromRemoteOvf"]
connection {
  type      = "ssh"
  user      = "root"
  password  = var.ansiblepassword
  host      = var.ansiblehost
}

# Command to run ansible playbook on remote Linux OS

provisioner "remote-exec" {

  inline = [
    "cd /root/vsphere/",
    "ansible-playbook instance.yml"
  ]
}
}

```

versions.tf

```

# Copyright (c) HashiCorp, Inc.
# SPDX-License-Identifier: MPL-2.0

terraform {
  required_providers {

```

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```
vsphere = {
  source = "hashicorp/vsphere"
  version = "2.4.0"
}
}
```

var.tf

```
# Copyright (c) HashiCorp, Inc.
# SPDX-License-Identifier: MPL-2.0

variable "vsphere_server" {
  description = "vSphere server"
  type        = string
}

variable "vsphere_user" {
  description = "vSphere username"
  type        = string
}

variable "vsphere_password" {
  description = "vSphere password"
  type        = string
  sensitive   = true
}

variable "datacenter" {
  description = "vSphere data center"
  type        = string
}

variable "cluster" {
  description = "vSphere cluster"
  type        = string
}

variable "datastore" {
  description = "vSphere datastore"
  type        = string
}

variable "network_name" {
  description = "vSphere network name"
  type        = string
}

variable "host" {
  description = "name of host"
  type        = string
}
```

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```
variable "remotename" {
  description = "the name of you VM"
  type        = string
}

variable "url_ova" {
  description = "the URL to .OVA file or cloude store"
  type        = string
}

variable "ansiblepassword" {
  description = "Ansible password"
  type        = string
}

variable "ansiblehost" {
  description = "Ansible host name or IP"
  type        = string
}
```

terraform.tfvars

```
vsphere_user      = ""
vsphere_password  = ""
vsphere_server    = ""
datacenter        = ""
datastore         = ""
cluster          = ""
network_name     = ""
host              = ""
url_ova           = ""
ansiblepassword   = ""
ansiblehost       = ""
remotename        = ""
```

### Structure of files Ansible for vSphere

```
.
├── group_vars
│   └── all
├── ansible.cfg
└── instance.yml
```

## File contents of Ansible for vSphere

ansible.cfg

```
[defaults]
inventory = /root/vsphere/ip.txt
host_key_checking= False
remote_user=vyos
```

instance.yml

```
#####
# About tasks:
# "Wait 300 seconds, but only start checking after 60 seconds" - try to make ssh
↳ connection every 60 seconds until 300 seconds
# "Configure general settings for the VyOS hosts group" - make provisioning into vSphere
↳ VyOS node
# You have to add all necessary cammans of VyOS under the block "lines:"
#####

- name: integration of terraform and ansible
  hosts: all
  gather_facts: 'no'

  tasks:

    - name: "Wait 300 seconds, but only start checking after 60 seconds"
      wait_for_connection:
        delay: 60
        timeout: 300

    - name: "Configure general settings for the VyOS hosts group"
      vyos_config:
        lines:
          - set system name-server 8.8.8.8
        save:
          true
```

group\_vars/all

```
ansible_connection: ansible.netcommon.network_cli
ansible_network_os: vyos.vyos.vyos

# user and password gets from terraform variables "admin_username" and "admin_password"
ansible_user: vyos
# get from vyos.tf "vapp"
ansible_ssh_pass: 12345678
```

## Source files for vSphere from GIT

All files about the article can be found [here](#)

## 10.3.5 Deploying VyOS in the google cloud

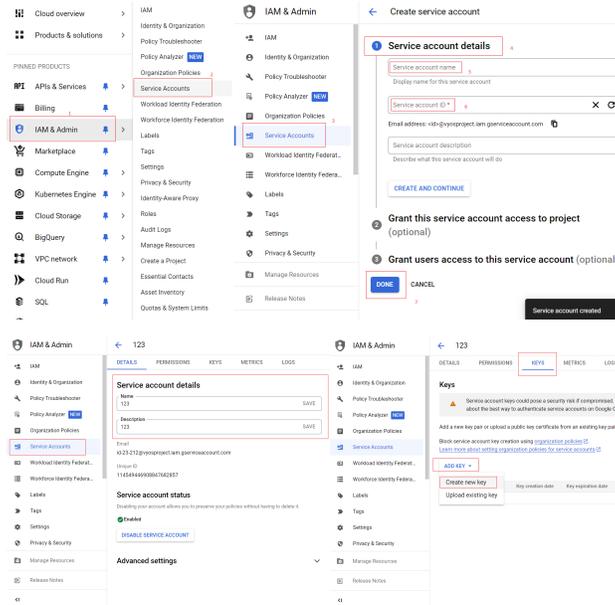
With the help of Terraform, you can quickly deploy VyOS-based infrastructure in the google cloud. If necessary, the infrastructure can be removed using terraform. Also we will make provisioning using Ansible.

In this case, we'll create the necessary files for Terraform and Ansible next using Terraform we'll create a single instance on the google cloud and make provisioning using Ansible.

### Preparation steps for deploying VyOS on google

How to create a single instance and install your configuration using Terraform+Ansible+google Step by step:  
google cloud

#### 1 Create an account with google cloud and a new project



The .JSON file download automatically after creating and will look like:

```
{
  "type": "service_account",
  "project_id": "██████████",
  "private_key_id": "██████████",
  "private_key": "-----BEGIN PRIVATE KEY
  "client_email": "██████████",
  "client_id": "██████████",
  "auth_uri": "https://accounts.google.c
  "token_uri": "https://oauth2.googleapi
  "auth_provider_x509_cert_url": "https:
  "client_x509_cert_url": "https://www.g
  "universe_domain": "googleapis.com"
}
```

Terraform

- 1 Create an UNIX or Windows instance
- 2 Download and install Terraform
- 3 Create the folder for example /root/google

```
mkdir /root/google
```

4 Copy all files into your Terraform project "/root/google" (vyos.tf, var.tf, terraform.tfvars, .JSON), more detailed see `Structure of files Terraform for google cloud`

5 Type the commands :

```
cd /<your folder>
terraform init
```

#### Ansible

- 1 Create an UNIX instance whenever you want (local, cloud, and so on)
- 2 Download and install Ansible
- 3 Create the folder for example /root/google/
- 4 Copy all files into your Ansible project "/root/google/" (ansible.cfg, instance.yml, mykey.json and "all"), more detailed see *Structure of files Ansible for google cloud*

mykey.json you have to get using step 2 of the google cloud

Start

Type the commands on your Terraform instance:

```
cd /<your folder>
terraform plan
terraform apply
yes
```

### Start creating a google cloud instance and check the result

```
# terraform apply
```

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:

```
+ create
```

Terraform will perform the following actions:

```
# google_compute_firewall.tcp_22[0] will be created
+ resource "google_compute_firewall" "tcp_22" {
  + creation_timestamp = (known after apply)
  + destination_ranges = (known after apply)
  + direction          = (known after apply)
  + enable_logging     = (known after apply)
  + id                 = (known after apply)
  + name               = "vyos-tcp-22"
```

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```
+ network          = "default"
+ priority         = 1000
+ project          = "vyosproject"
+ self_link        = (known after apply)
+ source_ranges    = [
  + "0.0.0.0/0",
]
+ target_tags      = [
  + "vyos-deployment",
]

+ allow {
  + ports          = [
    + "22",
  ]
  + protocol       = "tcp"
}
}

# google_compute_firewall.udp_500_4500[0] will be created
+ resource "google_compute_firewall" "udp_500_4500" {
  + creation_timestamp = (known after apply)
  + destination_ranges = (known after apply)
  + direction          = (known after apply)
  + enable_logging     = (known after apply)
  + id                 = (known after apply)
+ name                 = "vyos-udp-500-4500"
  + network            = "default"
  + priority           = 1000
  + project            = "vyosproject"
  + self_link          = (known after apply)
  + source_ranges      = [
    + "0.0.0.0/0",
  ]
  + target_tags        = [
    + "vyos-deployment",
  ]

  + allow {
    + ports          = [
      + "500",
      + "4500",
    ]
    + protocol       = "udp"
  }
}

# google_compute_instance.default will be created
+ resource "google_compute_instance" "default" {
  + can_ip_forward     = true
  + cpu_platform       = (known after apply)
  + current_status     = (known after apply)
```

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```

+ deletion_protection = false
+ effective_labels    = (known after apply)
+ guest_accelerator  = (known after apply)
+ id                  = (known after apply)
+ instance_id        = (known after apply)
+ label_fingerprint  = (known after apply)
+ machine_type        = "n2-highcpu-4"
+ metadata            = {
  + "enable-oslogin" = "FALSE"
  + "serial-port-enable" = "TRUE"
  + "user-data"       = ""
}
+ metadata_fingerprint = (known after apply)
+ min_cpu_platform     = (known after apply)
+ name                  = "vyos"
+ project               = "vyosproject"
+ self_link             = (known after apply)
+ tags_fingerprint     = (known after apply)
+ terraform_labels     = (known after apply)
+ zone                  = "us-west1-a"

+ boot_disk {
  + auto_delete          = true
  + device_name          = (known after apply)
  + disk_encryption_key_sha256 = (known after apply)
  + kms_key_self_link    = (known after apply)
  + mode                  = "READ_WRITE"
  + source                = (known after apply)

  + initialize_params {
    + image              = "projects/sentrium-public/global/images/vyos-1-
↪3-5-20231222143039"
    + labels              = (known after apply)
    + provisioned_iops    = (known after apply)
    + provisioned_throughput = (known after apply)
    + size                = (known after apply)
    + type                = (known after apply)
  }
}

+ network_interface {
  + internal_ipv6_prefix_length = (known after apply)
  + ipv6_access_type            = (known after apply)
  + ipv6_address                 = (known after apply)
  + name                         = (known after apply)
  + network                      = "default"
  + network_ip                   = (known after apply)
  + nic_type                      = "GVNIC"
  + stack_type                    = (known after apply)
  + subnetwork                    = "default"
  + subnetwork_project            = (known after apply)
}

```

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```

    + access_config {
      + nat_ip      = (known after apply)
      + network_tier = (known after apply)
    }
  }
}

# local_file.ip will be created
+ resource "local_file" "ip" {
  + content          = (known after apply)
  + content_base64sha256 = (known after apply)
  + content_base64sha512 = (known after apply)
  + content_md5       = (known after apply)
  + content_shal      = (known after apply)
  + content_sha256    = (known after apply)
  + content_sha512    = (known after apply)
  + directory_permission = "0777"
  + file_permission    = "0777"
  + filename           = "ip.txt"
  + id                  = (known after apply)
}

# null_resource.SSHconnection1 will be created
+ resource "null_resource" "SSHconnection1" {
  + id = (known after apply)
}

# null_resource.SSHconnection2 will be created
+ resource "null_resource" "SSHconnection2" {
  + id = (known after apply)
}

```

Plan: 6 to add, 0 to change, 0 to destroy.

Changes to Outputs:

```
+ public_ip_address = (known after apply)
```

Warning: Quoted references are deprecated

```

  on vyos.tf line 126, in resource "null_resource" "SSHconnection1":
  126:   depends_on = ["google_compute_instance.default"]

```

In this context, references are expected literally rather than in quotes. Terraform 0.11 and earlier required quotes, but quoted references are now deprecated and will be removed in a future version of Terraform. Remove the quotes surrounding this reference to silence this warning.

(and one more similar warning elsewhere)

Do you want to perform these actions?

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```

Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

google_compute_firewall.udp_500_4500[0]: Creating...
google_compute_firewall.tcp_22[0]: Creating...
google_compute_instance.default: Creating...
google_compute_firewall.udp_500_4500[0]: Still creating... [10s elapsed]
google_compute_firewall.tcp_22[0]: Still creating... [10s elapsed]
google_compute_instance.default: Still creating... [10s elapsed]
google_compute_firewall.tcp_22[0]: Creation complete after 16s [id=projects/vyosproject/
↳global/firewalls/vyos-tcp-22]
google_compute_firewall.udp_500_4500[0]: Creation complete after 16s [id=projects/
↳vyosproject/global/firewalls/vyos-udp-500-4500]
google_compute_instance.default: Creation complete after 20s [id=projects/vyosproject/
↳zones/us-west1-a/instances/vyos]
null_resource.SSHconnection1: Creating...
null_resource.SSHconnection2: Creating...
null_resource.SSHconnection1: Provisioning with 'file'...
null_resource.SSHconnection2: Provisioning with 'remote-exec'...
null_resource.SSHconnection2 (remote-exec): Connecting to remote host via SSH...
null_resource.SSHconnection2 (remote-exec):   Host: 10.***.***.104
null_resource.SSHconnection2 (remote-exec):   User: root
null_resource.SSHconnection2 (remote-exec):   Password: true
null_resource.SSHconnection2 (remote-exec):   Private key: false
null_resource.SSHconnection2 (remote-exec):   Certificate: false
null_resource.SSHconnection2 (remote-exec):   SSH Agent: false
null_resource.SSHconnection2 (remote-exec):   Checking Host Key: false
null_resource.SSHconnection2 (remote-exec):   Target Platform: unix
local_file.ip: Creating...
local_file.ip: Creation complete after 0s [id=7d568c3b994a018c942a3cdb952ccb3c729d0ca]
null_resource.SSHconnection2 (remote-exec): Connected!
null_resource.SSHconnection1: Creation complete after 4s [id=5175298735911137161]

null_resource.SSHconnection2 (remote-exec): PLAY [integration of terraform and ansible]_
↳*****

null_resource.SSHconnection2 (remote-exec): TASK [Wait 300 seconds, but only start_
↳checking after 60 seconds] *****

null_resource.SSHconnection2: Still creating... [10s elapsed]
null_resource.SSHconnection2: Still creating... [20s elapsed]
null_resource.SSHconnection2: Still creating... [30s elapsed]
null_resource.SSHconnection2: Still creating... [40s elapsed]
null_resource.SSHconnection2: Still creating... [50s elapsed]
null_resource.SSHconnection2: Still creating... [1m0s elapsed]
null_resource.SSHconnection2: Still creating... [1m10s elapsed]
null_resource.SSHconnection2 (remote-exec): ok: [104.***.***.158]

null_resource.SSHconnection2 (remote-exec): TASK [Configure general settings for the_
↳vyos hosts group] *****

null_resource.SSHconnection2: Still creating... [1m20s elapsed]

```

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```

null_resource.SSHconnection2 (remote-exec): changed: [104.***.***.158]

null_resource.SSHconnection2 (remote-exec): PLAY RECAP
↳*****
null_resource.SSHconnection2 (remote-exec): 104.***.***.158      : ok=2
↳changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

null_resource.SSHconnection2: Creation complete after 1m22s [id=3355727070503709742]

Apply complete! Resources: 6 added, 0 changed, 0 destroyed.

Outputs:

public_ip_address = "104.***.***.158"

```

After executing all the commands you will have your VyOS instance on the google cloud with your configuration, it's a very convenient desition. If you need to delete the instance please type the command:

```
terraform destroy
```

### Troubleshooting

1 Increase the time in the file instance.yml from 300 sec to 500 sec or more. (It depends on your location).

Make sure that you have opened access to the instance in the security group.

2 Terraform doesn't connect via SSH to your Ansible instance: you have to check the correct login and password in the part of the file VyOS.tf

```

connection {
  type      = "ssh"
  user      = "root"          # open root access using login and password on your
↳Ansible
  password  = var.password   # check password in the file terraform.tfvars isn't empty
  host     = var.host        # check the correct IP address of your Ansible host
}

```

Make sure that Ansible is pinging from Terraform.

### Structure of files Terraform for google cloud

```

.
├── vyos.tf                # The main script
├── ***.JSON               # The credential file from google cloud
├── var.tf                 # The file of all variables in "vyos.tf"
├── terraform.tfvars      # The value of all variables (passwords, login, ip
↳addresses and so on)

```

## File contents of Terraform for google cloud

vyos.tf

```
#####
# Build an VyOS VM from the Marketplace
#
# After deploying the GCP instance and getting an IP address, the IP address is copied
↳ into the file
#"ip.txt" and copied to the Ansible node for provisioning.
#####

terraform {
  required_providers {
    google = {
      source = "hashicorp/google"
    }
  }
}

provider "google" {
  project          = var.project_id
  request_timeout = "60s"
  credentials      = file(var.gcp_auth_file)
}

locals {
  network_interfaces = [for i, n in var.networks : {
    network      = n,
    subnetwork   = length(var.sub_networks) > i ? element(var.sub_networks, i) : null
    external_ip  = length(var.external_ips) > i ? element(var.external_ips, i) : "NONE"
  }
]
}

resource "google_compute_instance" "default" {
  name          = var.goog_cm_deployment_name
  machine_type = var.machine_type
  zone          = var.zone

  metadata = {
    enable-oslogin      = "FALSE"
    serial-port-enable = "TRUE"
    user-data           = var.vyos_user_data
  }
  boot_disk {
    initialize_params {
      image = var.image
    }
  }
}

can_ip_forward = true
```

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```

dynamic "network_interface" {
  for_each = local.network_interfaces
  content {
    network      = network_interface.value.network
    subnetwork   = network_interface.value.subnetwork
    nic_type     = "GVNIC"
    dynamic "access_config" {
      for_each = network_interface.value.external_ip == "NONE" ? [] : [1]
      content {
        nat_ip = network_interface.value.external_ip == "EPHEMERAL" ? null : network_
↪interface.value.external_ip
      }
    }
  }
}

resource "google_compute_firewall" "tcp_22" {
  count = var.enable_tcp_22 ? 1 : 0

  name      = "${var.goog_cm_deployment_name}-tcp-22"
  network  = element(var.networks, 0)

  allow {
    ports    = ["22"]
    protocol = "tcp"
  }

  source_ranges = ["0.0.0.0/0"]

  target_tags = ["${var.goog_cm_deployment_name}-deployment"]
}

resource "google_compute_firewall" "udp_500_4500" {
  count = var.enable_udp_500_4500 ? 1 : 0

  name      = "${var.goog_cm_deployment_name}-udp-500-4500"
  network  = element(var.networks, 0)

  allow {
    ports    = ["500", "4500"]
    protocol = "udp"
  }

  source_ranges = ["0.0.0.0/0"]

  target_tags = ["${var.goog_cm_deployment_name}-deployment"]
}

output "public_ip_address" {
  value = google_compute_instance.default.network_interface[0].access_config[0].nat_ip
}

```

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```
#####
#
# IP of google instance copied to a file ip.txt in local system Terraform
# ip.txt looks like:
# cat ./ip.txt
# ...
#####

resource "local_file" "ip" {
  content = google_compute_instance.default.network_interface[0].access_config[0].nat_
↪ip
  filename = "ip.txt"
}

#connecting to the Ansible control node using SSH connection

#####
# Steps "SSHconnection1" and "SSHconnection2" need to get file ip.txt from the terraform_
↪node and start remotely the playbook of Ansible.
#####

resource "null_resource" "SSHconnection1" {
depends_on = ["google_compute_instance.default"]
connection {
  type      = "ssh"
  user      = "root"
  password  = var.password
  host      = var.host
}

#copying the ip.txt file to the Ansible control node from local system

provisioner "file" {
  source      = "ip.txt"
  destination = "/root/google/ip.txt"           # The folder of your_
↪Ansible project
}

resource "null_resource" "SSHconnection2" {
depends_on = ["google_compute_instance.default"]
connection {
  type      = "ssh"
  user      = "root"
  password  = var.password
  host      = var.host
}

#command to run Ansible playbook on remote Linux OS

provisioner "remote-exec" {
```

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```

inline = [
  "cd /root/google/",
  "ansible-playbook instance.yml"
↪ "File contents of Ansible for google cloud"
]
}
}

```

var.tf

```

variable "image" {
  type    = string
  default = "projects/sentrium-public/global/images/vyos-1-3-5-20231222143039"
}

variable "project_id" {
  type = string
}

variable "zone" {
  type = string
}

#####
# You can choose more chipper type than n2-highcpu-4
#####

variable "machine_type" {
  type    = string
  default = "n2-highcpu-4"
}

variable "networks" {
  description = "The network name to attach the VM instance."
  type        = list(string)
  default     = ["default"]
}

variable "sub_networks" {
  description = "The sub network name to attach the VM instance."
  type        = list(string)
  default     = ["default"]
}

variable "external_ips" {
  description = "The external IPs assigned to the VM for public access."
  type        = list(string)
  default     = ["EPHEMERAL"]
}

variable "enable_tcp_22" {
  description = "Allow SSH traffic from the Internet"
}

```

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```

    type      = bool
    default   = true
}

variable "enable_udp_500_4500" {
    description = "Allow IKE/IPSec traffic from the Internet"
    type        = bool
    default     = true
}

variable "vyos_user_data" {
    type      = string
    default   = ""
}

// Marketplace requires this variable name to be declared
variable "goog_cm_deployment_name" {
    description = "VyOS Universal Router Deployment"
    type        = string
    default     = "vyos"
}

# GCP authentication file
variable "gcp_auth_file" {
    type        = string
    description = "GCP authentication file"
}

variable "password" {
    description = "pass for Ansible"
    type        = string
    sensitive   = true
}

variable "host" {
    description = "The IP of my Ansible"
    type        = string
}

```

terraform.tfvars

```

#####
# Must be filled in
#####

zone = "us-west1-a"
gcp_auth_file = "/root/***/**/*.json" # path of your .json file
project_id    = ""                    # the google project
password      = ""                    # password for Ansible SSH
host          = ""                    # IP of my Ansible

```

## Structure of files Ansible for google cloud

```

.
├── group_vars
│   └── all
├── ansible.cfg
└── instance.yml

```

## File contents of Ansible for google cloud

ansible.cfg

```

[defaults]
inventory = /root/google/ip.txt
host_key_checking= False
remote_user=vyos

```

instance.yml

```

#####
# About tasks:
# "Wait 300 seconds, but only start checking after 60 seconds" - try to make ssh_
↳connection every 60 seconds until 300 seconds
# "Configure general settings for the VyOS hosts group" - make provisioning into google_
↳cloud VyOS node
# You have to add all necessary cammans of VyOS under the block "lines:"
#####

- name: integration of terraform and ansible
  hosts: all
  gather_facts: 'no'

  tasks:

    - name: "Wait 300 seconds, but only start checking after 60 seconds"
      wait_for_connection:
        delay: 60
        timeout: 300

    - name: "Configure general settings for the VyOS hosts group"
      vyos_config:
        lines:
          - set system name-server xxx.xxx.xxx.xxx
        save:
          true

```

group\_vars/all

```

ansible_connection: ansible.netcommon.network_cli
ansible_network_os: vyos.vyos.vyos
ansible_user: vyos
ansible_ssh_pass: vyos

```

## Source files for google cloud from GIT

All files about the article can be found [here](#)

## 10.4 Napalm

VyOS supports some [napalm](#) functions for configuration and op-mode. It requires more tests.

Install `napalm-vyos` module

```
apt install python3-pip
pip3 install napalm
pip3 install napalm-vyos
```

### 10.4.1 Op-mode

```
#!/usr/bin/env python3

import json
from napalm import get_network_driver

driver = get_network_driver('vyos')

vyos_router = driver(
    hostname="192.0.2.1",
    username="vyos",
    password="vyospass",
    optional_args={"port": 22},
)

vyos_router.open()
output = vyos_router.get_facts()
print(json.dumps(output, indent=4))

output = vyos_router.get_arp_table()
print(json.dumps(output, indent=4))

vyos_router.close()
```

Output op-mode

```
$ ./vyos-napalm.py
{
  "uptime": 7185,
  "vendor": "VyOS",
  "os_version": "1.3.0-rc5",
  "serial_number": "",
  "model": "Standard PC (Q35 + ICH9, 2009)",
  "hostname": "r4-1.3",
  "fqdn": "vyos.local",
  "interface_list": [
```

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```

    "eth0",
    "eth1",
    "eth2",
    "lo",
    "vtun10"
  ]
}
[
  {
    "interface": "eth1",
    "mac": "52:54:00:b2:38:2c",
    "ip": "192.0.2.2",
    "age": 0.0
  },
  {
    "interface": "eth0",
    "mac": "52:54:00:a2:b9:5b",
    "ip": "203.0.113.11",
    "age": 0.0
  }
]

```

## 10.4.2 Configuration

We need 2 files, commands.conf and script itself.

Content of commands.conf

```

set service ssh disable-host-validation
set service ssh port '2222'
set system name-server '192.0.2.8'
set system name-server '203.0.113.8'
set interfaces ethernet eth1 description 'F00'

```

Script vyos-napalm.py

```

#!/usr/bin/env python3

from napalm import get_network_driver

driver = get_network_driver('vyos')

vyos_router = driver(
    hostname="192.0.2.1",
    username="vyos",
    password="vyospass",
    optional_args={"port": 22},
)

vyos_router.open()
vyos_router.load_merge_candidate(filename='commands.conf')
diffs = vyos_router.compare_config()

```

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```

if bool(diffs) == True:
    print(diffs)
    vyos_router.commit_config()
else:
    print('No configuration changes to commit')
    vyos_router.discard_config()

vyos_router.close()

```

### Output

```

$./vyos-napalm.py
[edit interfaces ethernet eth1]
+description F00
[edit service ssh]
+disable-host-validation
+port 2222
[edit system]
+name-server 192.0.2.8
+name-server 203.0.113.8
[edit]

```

## 10.5 Netmiko

VyOS supports configuration via [netmiko](#). It requires to install `python3-netmiko` module.

### 10.5.1 Example

```

#!/usr/bin/env python3

from netmiko import ConnectHandler

vyos_router = {
    "device_type": "vyos",
    "host": "192.0.2.1",
    "username": "vyos",
    "password": "vyospass",
    "port": 22,
}

net_connect = ConnectHandler(**vyos_router)

config_commands = [
    'set interfaces ethernet eth0 description WAN',
    'set interfaces ethernet eth1 description LAN',
]

# set configuration

```

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```

output = net_connect.send_config_set(config_commands, exit_config_mode=False)
print(output)

# commit configuration
output = net_connect.commit()
print(output)

# op-mode commands
output = net_connect.send_command("run show interfaces")
print(output)

```

### Output

```

$ ./vyos-netmiko.py
configure
set interfaces ethernet eth0 description WAN
[edit]
vyos@r4-1.3# set interfaces ethernet eth1 description LAN
[edit]
vyos@r4-1.3#
commit
[edit]
vyos@r4-1.3#
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address          S/L  Description
-----
eth0           203.0.113.1/24     u/u  WAN
eth1           192.0.2.1/30       u/u  LAN
eth2           -                   u/u
lo             127.0.0.1/8
               ::1/128
vtun10        10.10.0.1/24       u/u
[edit]

```

## 10.6 Salt

VyOS supports op-mode and configuration via [salt](#).

Without proxy it requires VyOS minion configuration and supports op-mode data:

```

set service salt-minion id 'r14'
set service salt-minion master '192.0.2.250'

```

Check salt-keys on the salt master

```

/ # salt-key --list-all
Accepted Keys:
r11
Denied Keys:
Unaccepted Keys:

```

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```
r14
Rejected Keys:
```

Accept minion key

```
/ # salt-key --accept r14
The following keys are going to be accepted:
Unaccepted Keys:
r14
Proceed? [n/Y] y
Key for minion r14 accepted.
```

Check that salt master can communicate with minions

```
/ # salt '*' test.ping
r14:
  True
r11:
  True
```

At this step we can get some op-mode information from VyOS nodes:

```
/ # salt '*' network.interface eth0
r11:
  |_
  -----
  address:
    192.0.2.11
  broadcast:
    192.0.2.255
  label:
    eth0
  netmask:
    255.255.255.0
r14:
  |_
  -----
  address:
    192.0.2.14
  broadcast:
    192.0.2.255
  label:
    eth0
  netmask:
    255.255.255.0

/ # salt r14 network.arp
r14:
  -----
  aa:bb:cc:dd:f3:db:
    192.0.2.1
  aa:bb:cc:dd:2e:80:
```

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203.0.113.1

## 10.6.1 Netmiko-proxy

It is possible to configure VyOS via `netmiko` proxy module. It requires a minion with installed `packet python3-netmiko` module who has a connection to VyOS nodes. Salt-minion have to communicate with salt master

### Configuration

Salt master configuration:

```
/ # cat /etc/salt/master
file_roots:
  base:
    - /srv/salt/states

pillar_roots:
  base:
    - /srv/salt/pillars
```

Structure of `/srv/salt`:

```
/ # tree /srv/salt/
/srv/salt/
|___ pillars
|   |__ r11-proxy.sls
|   |__ top.sls
|___ states
|   |__ commands.txt
```

`top.sls`

```
/ # cat /srv/salt/pillars/top.sls
base:
  r11-proxy:
    - r11-proxy
```

`r11-proxy.sls` Includes parameters for connecting to salt-proxy minion

```
/ # cat /srv/salt/pillars/r11-proxy.sls
proxy:
  proxytype: netmiko # how to connect to proxy minion, change it
  device_type: vyos #
  host: 192.0.2.250
  username: user
  password: secret_passwd
```

`commands.txt`

```
/ # cat /srv/salt/states/commands.txt
set interfaces ethernet eth0 description 'WAN'
set interfaces ethernet eth1 description 'LAN'
```

Check that proxy minion is alive:

```
/ # salt r11-proxy test.ping
r11-proxy:
  True
/ #
```

## Examples

Example of op-mode:

```
/ # salt r11-proxy netmiko.send_command 'show interfaces ethernet eth0 brief' host=192.0.
↪2.14 device_type=vyos username=vyos password=vyos
r11-proxy:
  Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
  Interface      IP Address      S/L Description
  -----
  eth0           192.0.2.14/24  u/u Upstream
/ #
```

Example of configuration:

```
/ # salt r11-proxy netmiko.send_config config_commands=['set interfaces ethernet eth0
↪description Link_to_WAN'] commit=True host=192.0.2.14 device_type=vyos username=vyos
↪password=vyos
r11-proxy:
  configure
  set interfaces ethernet eth0 description Link_to_WAN
  [edit]
  vyos@r14# commit
  [edit]
  vyos@r14#
/ #
```

Example of configuration commands from the file “/srv/salt/states/commands.txt”

```
/ # salt r11-proxy netmiko.send_config config_file=salt://commands.txt commit=True
↪host=192.0.2.11 device_type=vyos username=vyos password=vyos
r11-proxy:
  configure
  set interfaces ethernet eth0 description 'WAN'
  [edit]
  vyos@r1# set interfaces ethernet eth1 description 'LAN'
  [edit]
  vyos@r1# commit
  [edit]
  vyos@r1#
/ #
```

## 10.7 Command Scripting

VyOS supports executing configuration and operational commands non-interactively from shell scripts.

To include VyOS specific functions and aliases you need to source `/opt/vyatta/etc/functions/script-template` files at the top of your script.

```
#!/bin/vbash
source /opt/vyatta/etc/functions/script-template
exit
```

### 10.7.1 Run configuration commands

Configuration commands are executed just like from a normal config session. For example, if you want to disable a BGP peer on VRRP transition to backup:

```
#!/bin/vbash
source /opt/vyatta/etc/functions/script-template
configure
set protocols bgp system-as 65536
set protocols bgp neighbor 192.168.2.1 shutdown
commit
exit
```

### 10.7.2 Run operational commands

Unlike a normal configuration session, all operational commands must be prepended with `run`, even if you haven't created a session with `configure`.

```
#!/bin/vbash
source /opt/vyatta/etc/functions/script-template
run show interfaces
exit
```

### 10.7.3 Run commands remotely

Sometimes you simply want to execute a bunch of op-mode commands via SSH on a remote VyOS system.

```
ssh 192.0.2.1 'vbash -s' <<EOF
source /opt/vyatta/etc/functions/script-template
run show interfaces
exit
EOF
```

Will return:

```
Welcome to VyOS
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
```

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eth0	192.0.2.1/24	u/u
lo	127.0.0.1/8	u/u
	:::1/128	

## 10.7.4 Other script languages

If you want to script the configs in a language other than bash you can have your script output commands and then source them in a bash script.

Here is a simple example:

```
#!/usr/bin/env python3
print("delete firewall group address-group somehosts")
print("set firewall group address-group somehosts address '192.0.2.3'")
print("set firewall group address-group somehosts address '203.0.113.55'")
```

```
#!/bin/vbash
source /opt/vyatta/etc/functions/script-template
configure
source <(/config/scripts/setfirewallgroup.py)
commit
```

## 10.7.5 Executing Configuration Scripts

There is a pitfall when working with configuration scripts. It is tempting to call configuration scripts with “sudo” (i.e., temporary root permissions), because that’s the common way on most Linux platforms to call system commands.

On VyOS this will cause the following problem: After modifying the configuration via script like this once, it is not possible to manually modify the config anymore:

```
sudo ./myscript.sh # Modifies config
configure
set ... # Any configuration parameter
```

This will result in the following error message: `Set failed` If this happens, a reboot is required to be able to edit the config manually again.

To avoid these problems, the proper way is to call a script with the `vyattacfg` group, e.g., by using the `sg` (switch group) command:

```
sg vyattacfg -c ./myscript.sh
```

To make sure that a script is not accidentally called without the `vyattacfg` group, the script can be safeguarded like this:

```
if [ "$(id -g -n)" != 'vyattacfg' ] ; then
    exec sg vyattacfg -c "/bin/vbash $(readlink -f $0) @$@"
fi
```

## 10.7.6 Executing pre-hooks/post-hooks Scripts

VyOS has the ability to run custom scripts before and after each commit

The default directories where your custom Scripts should be located are:

```
/config/scripts/commit/pre-hooks.d - Directory with scripts that run before
each commit.

/config/scripts/commit/post-hooks.d - Directory with scripts that run after
each commit.
```

Scripts are run in alphabetical order. Their names must consist entirely of ASCII upper- and lower-case letters, ASCII digits, ASCII underscores, and ASCII minus-hyphens. No other characters are allowed.

---

**Note:** Custom scripts are not executed with root privileges (Use sudo inside if this is necessary).

---

A simple example is shown below, where the ops command executed in the post-hook script is “show interfaces”.

```
vyos@vyos# set interfaces ethernet eth1 address 192.0.2.3/24
vyos@vyos# commit
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           198.51.100.10/24  u/u
eth1           192.0.2.3/24     u/u
eth2           -                 u/u
eth3           -                 u/u
lo             203.0.113.5/24   u/u
```

## 10.7.7 Preconfig on boot

The `/config/scripts/vyos-preconfig-bootup.script` script is called on boot before the VyOS configuration during boot process.

Any modifications were done to work around unfixed bugs and implement enhancements that are not complete in the VyOS system can be placed here.

The default file looks like this:

```
#!/bin/sh
# This script is executed at boot time before VyOS configuration is applied.
# Any modifications required to work around unfixed bugs or use
# services not available through the VyOS CLI system can be placed here.
```

## 10.7.8 Postconfig on boot

The `/config/scripts/vyos-postconfig-bootup.script` script is called on boot after the VyOS configuration is fully applied.

Any modifications were done to work around unfixed bugs and implement enhancements that are not complete in the VyOS system can be placed here.

The default file looks like this:

```
#!/bin/sh
# This script is executed at boot time after VyOS configuration is fully
# applied. Any modifications required to work around unfixed bugs or use
# services not available through the VyOS CLI system can be placed here.
```

---

**Hint:** For configuration/upgrade management issues, modification of this script should be the last option. Always try to find solutions based on CLI commands first.

---

## 10.8 VyOS cloud-init

Cloud and virtualized instances of VyOS are initialized using the industry-standard cloud-init. Via cloud-init, the system performs tasks such as injecting SSH keys and configuring the network. In addition, the user can supply a custom configuration at the time of instance launch.

### 10.8.1 Config Sources

VyOS support three types of config sources.

- Metadata - Metadata is sourced by the cloud platform or hypervisor. In some clouds, there is implemented as an HTTP endpoint at `http://169.254.169.254`.
- Network configuration - This config source informs the system about the network settings like IP addresses, routes, DNS. Available only in several cloud and virtualization platforms.
- User-data - User-data is specified by the user. This config source offers the ability to insert any CLI configuration commands into the configuration before the first boot.

### 10.8.2 User-data

Major cloud providers offer a means of providing user-data at the time of instance launch. It can be provided as plain text or as base64-encoded text, depending on cloud provider. Also, it can be compressed using `gzip`, which makes sense with a long configuration commands list, because of the hard limit to ~16384 bytes for the whole user-data.

The easiest way to configure the system via user-data is the Cloud-config syntax described below.

### 10.8.3 Cloud-config modules

In VyOS, by default, enables only two modules:

- `write_files` - this module allows to insert any files into the filesystem before the first boot, for example, pre-generated encryption keys, certificates, or even a whole `config.boot` file. The format is described in the cloud-init documentation [Cloud-init-write\\_files](#).
- `vyos_userdata` - the module accepts a list of CLI configuration commands in a `vyos_config_commands` section, which gives an easy way to configure the system during deployment.

### 10.8.4 cloud-config file format

A cloud-config document is written in YAML. The file must begin with `#cloud-config` line. The only supported top-level keys are `vyos_config_commands` and `write_files`. The use of these keys is described in the following two sections.

### 10.8.5 Initial Configuration

The key used to designate a VyOS configuration is `vyos_config_commands`. What follows is VyOS configuration using the “set-style” syntax. Both “set” and “delete” commands are supported.

Commands requirements:

- One command per line.
- If command ends in a value, it must be inside single quotes.
- A single-quote symbol is not allowed inside command or value.

The commands list produced by the `show configuration commands` command on a VyOS router should comply with all the requirements, so it is easy to get a proper commands list by copying it from another router.

The configuration specified in the cloud-config document overwrites default configuration values and values configured via Metadata.

After the `vyos_config_commands` are executed, cloud-init will automatically perform a `commit` and `save` operation.

Here is an example cloud-config that appends configuration at the time of first boot.

```
#cloud-config
vyos_config_commands:
- set system host-name 'vyos-prod-ashburn'
- set service ntp server 1.pool.ntp.org
- set service ntp server 2.pool.ntp.org
- delete interfaces ethernet eth1 address 'dhcp'
- set interfaces ethernet eth1 address '192.0.2.247/24'
- set protocols static route 198.51.100.0/24 next-hop '192.0.2.1'
```

## System Defaults/Fallbacks

These are the VyOS defaults and fallbacks.

- SSH is configured on port 22.
- vyos/vyos credentials if no others specified by data source.
- DHCP on first Ethernet interface if no network configuration is provided.

All of these can be overridden using the configuration in user-data.

### 10.8.6 Command Execution at Initial Boot

VyOS supports the execution of operational commands and linux commands at initial boot. This is accomplished using `write_files` to certain files in the `/opt/vyatta/etc/config/scripts` directory. Commands specified in `opt/vyatta/etc/config/scripts/vyos-preconfig-bootup.script` are executed prior to configuration. The `/opt/vyatta/etc/config/scripts/vyos-postconfig-bootup.script` file contains commands to be executed after configuration. In both cases, commands are executed as the root user.

Note that the `/opt/vyatta/etc/config` is used instead of the `/config/scripts` directory referenced in the *Command Scripting* section of the documentation because the `/config/script` directory isn't mounted when the `write_files` module executes.

The following example shows how to execute commands after the initial configuration.

```
#cloud-config
write_files:
- path: /opt/vyatta/etc/config/scripts/vyos-postconfig-bootup.script
  owner: root:vyattacfg
  permissions: '0775'
  content: |
    #!/bin/vbash
    source /opt/vyatta/etc/functions/script-template
    filename=/tmp/bgp_status_`date +%Y_%m_%d_%I_%M_%p`.log
    run show ip bgp summary >> $filename
```

If you need to gather information from linux commands to configure VyOS, you can execute commands and then configure VyOS in the same script.

The following example sets the hostname based on the instance identifier obtained from the EC2 metadata service.

```
#cloud-config
write_files:
- path: /opt/vyatta/etc/config/scripts/vyos-postconfig-bootup.script
  owner: root:vyattacfg
  permissions: '0775'
  content: |
    #!/bin/vbash
    source /opt/vyatta/etc/functions/script-template
    hostname=`curl -s http://169.254.169.254/latest/meta-data/instance-id`
    configure
    set system host-name $hostname
    commit
    exit
```

## 10.8.7 NoCloud

Injecting configuration data is not limited to cloud platforms. Users can employ the NoCloud data source to inject user-data and meta-data on virtualization platforms such as VMware, Hyper-V and KVM.

While other methods exist, the most straightforward method for using the NoCloud data source is creating a seed ISO and attaching it to the virtual machine as a CD drive. The volume must be formatted as a vfat or ISO 9660 file system with the label “cidata” or “CIDATA”.

Create text files named user-data and meta-data. On linux-based systems, the mkisofs utility can be used to create the seed ISO. The following syntax will add these files to the ISO 9660 file system.

```
mkisofs -joliet -rock -volid "cidata" -output seed.iso meta-data user-data
```

The seed.iso file can be attached to the virtual machine. As an example, the method with KVM to attach the ISO as a CD drive follows.

```
$ virt-install -n vyos_r1 \
  --ram 4096 \
  --vcpus 2 \
  --cdrom seed.iso \
  --os-type linux \
  --os-variant debian10 \
  --network network=default \
  --graphics vnc \
  --hvm \
  --virt-type kvm \
  --disk path=/var/lib/libvirt/images/vyos_kvm.qcow2,bus=virtio \
  --import \
  --noautoconsole
```

For more information on the NoCloud data source, visit its page [nocloud](#) in the cloud-init documentation.

## 10.8.8 Troubleshooting

If you encounter problems, verify that the cloud-config document contains valid YAML. Online resources such as <https://www.yamllint.com/> provide a simple tool for validating YAML.

cloud-init logs to `/var/log/cloud-init.log`. This file can be helpful in determining why the configuration varies from what you expect. You can fetch the most important data filtering output for vyos keyword:

```
sudo grep vyos /var/log/cloud-init.log
```

## 10.8.9 Cloud-init on Proxmox

Before starting, please refer to cloud-init [network-config-docs](#) in order to know how to import user and network configurations.

Most important keys that needs to be considered:

- VyOS configuration commands are defined in user-data file.
- Networking configurations shouldn't be passed in user-data file.

- If no networking configuration is provided, then dhcp client is going to be enabled on first interface. Bare in mind that this configuration will be injected at an OS level, so don't expect to find dhcp client configuration on vyos cli. Because of this behavior, in next example lab we will disable dhcp-client configuration on eth0.

Also, this lab considers:

- Proxmox IP address: **192.168.0.253/24**
- Storage used: volume local, which is mounted on directory **/var/lib/vz**, and contains all type of content, including snippets.
- Remove default dhcp client on first interface, and load other configuration during first boot, using cloud-init.

## Generate qcow image

A VyOS qcow image with cloud-init options is needed. This can be obtained using [vyos-vm-images](#) repo. After cloning the repo, edit the file **qemu.yml** and comment the **download-iso** role.

In this lab, we are using 1.3.0 VyOS version and setting a disk of 10G. Download VyOS .iso file and save it as **/tmp/vyos.iso**. Command used for generating qcow image:

```
sudo ansible-playbook qemu.yml -e disk_size=10 \
-e iso_local=/tmp/vyos.iso -e grub_console=serial -e vyos_version=1.3.0 \
-e cloud_init=true -e cloud_init_ds=NoCloud
```

File generated with previous command: **/tmp/vyos-1.3.0-cloud-init-10G-qemu.qcow2**

Now, that file needs to be copied to proxmox server:

```
sudo scp /tmp/vyos-1.3.0-cloud-init-10G-qemu.qcow2 root@192.168.0.253:/tmp/
```

## Prepare cloud-init files

In Proxmox server three files are going to be used for this setup:

- **network-config**: file that will indicate to avoid dhcp client on first interface.
- **user-data**: includes vyos-commands.
- **meta-data**: empty file (required).

In this lab, all files are located in **/tmp/**. So, before going on, lets move to that directory:

```
cd /tmp/
```

**user-data** file must start with **#cloud-config** and contains vyos-commands. For example:

```
#cloud-config
vyos_config_commands:
- set system host-name 'vyos-BRAS'
- set service ntp server 1.pool.ntp.org
- set service ntp server 2.pool.ntp.org
- delete interfaces ethernet eth0 address 'dhcp'
- set interfaces ethernet eth0 address '198.51.100.2/30'
- set interfaces ethernet eth0 description 'WAN - ISP01'
- set interfaces ethernet eth1 address '192.168.25.1/24'
- set interfaces ethernet eth1 description 'Comming through VLAN 25'
```

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```
- set interfaces ethernet eth2 address '192.168.26.1/24'
- set interfaces ethernet eth2 description 'Comming through VLAN 26'
- set protocols static route 0.0.0.0/0 next-hop '198.51.100.1'
```

**network-config** file only has configuration that disables the automatic dhcp client on first interface.

Content of network-config file:

```
version: 2
ethernets:
  eth0:
    dhcp4: false
    dhcp6: false
```

Finally, file **meta-data** has no content, but it's required.

### Create seed.iso

Once the three files were created, it's time to generate the `seed.iso` image, which needs to be mounted to the new VM as a cd.

Command for generating `seed.iso`

```
mkisofs -joliect -rock -volid "cidata" -output seed.iso meta-data \
user-data network-config
```

**NOTE:** be careful while copying and pasting previous commands. Double quotes may need to be corrected.

### Creating the VM

Notes for this particular example, that may need to be modified in other setups:

- VM ID: in this example, VM ID used is 555.
- VM Storage: local volume is used.
- ISO files storage: local volume is used for `.iso` file storage. In this scenario local volume type is set to **directory**, abd attached to `/var/lib/vz`.
- VM Resources: these parameters can be modified as needed.

`seed.iso` was previously created in directory `/tmp/`. It's necessary to move it to `/var/lib/vz/template/iso`

```
mv /tmp/seed.iso /var/lib/vz/template/iso/
```

On proxmox server:

```
## Create VM, import disk and define boot order
qm create 555 --name vyos-1.3.0-cloudinit --memory 1024 --net0 virtio,bridge=vbr0
qm importdisk 555 vyos-1.3.0-cloud-init-10G-qemu.qcow2 local
qm set 555 --virtio0 local:555/vm-555-disk-0.raw
qm set 555 --boot order=virtio0

## Import seed.iso for cloud init
qm set 555 --ide2 media=cdrom,file=local:iso/seed.iso
```

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```
## Since this server has 1 nic, lets add network interfaces (vlan 25 and 26)
qm set 555 --net1 virtio,bridge=vmbr0,firewall=1,tag=25
qm set 555 --net2 virtio,bridge=vmbr0,firewall=1,tag=26
```

## Power on VM and verifications

From cli or GUI, power on VM, and after it boots, verify configuration

## References

- [VyOS cloud-init-docs](#).
- [Cloud-init network-config-docs](#).
- [Proxmox Cloud-init-Support](#).

## 10.9 pyvyos

pyvyos is a Python library designed for interacting with VyOS devices through their API. This documentation is intended to guide you in using pyvyos for programmatic management of your VyOS devices.

- [pyvyos Documentation on Read the Docs](#) provides detailed instructions on the installation, configuration, and operation of the pyvyos library.
- [pyvyos Source Code on GitHub](#) allows you to access and contribute to the library's code.
- [pyvyos on PyPI](#) for easy installation via pip, the Python package installer. Execute `pip install pyvyos` in your terminal to install.

### 10.9.1 Installation

You can install pyvyos using pip:

```
pip install pyvyos
```

### 10.9.2 Getting Started

### 10.9.3 Importing and Disabling Warnings for verify=False

```
import urllib3
urllib3.disable_warnings()
```

## 10.9.4 Using API Response Class

```
@dataclass
class ApiResponse:
    status: int
    request: dict
    result: dict
    error: str
```

## 10.9.5 Initializing a VyDevice Object

```
from dotenv import load_dotenv
load_dotenv()

hostname = os.getenv('VYDEVICE_HOSTNAME')
apikey = os.getenv('VYDEVICE_APIKEY')
port = os.getenv('VYDEVICE_PORT')
protocol = os.getenv('VYDEVICE_PROTOCOL')
verify_ssl = os.getenv('VYDEVICE_VERIFY_SSL')

verify = verify_ssl.lower() == "true" if verify_ssl else True

device = VyDevice(hostname=hostname, apikey=apikey, port=port, protocol=protocol,
↪verify=verify)
```

## 10.9.6 Using pyvyos

### Configure, then Set

```
response = device.configure_set(path=["interfaces", "ethernet", "eth0", "address", "192.
↪168.1.1/24"])
if not response.error:
    print(response.result)
```

### Configure, then Show a Single Object Value

```
response = device.retrieve_return_values(path=["interfaces", "dummy", "dum1", "address"])
print(response.result)
```

### Configure, then Show Object

```
response = device.retrieve_show_config(path=[])
if not response.error:
    print(response.result)
```

### Configure, then Delete Object

```
response = device.configure_delete(path=["interfaces", "dummy", "dum1"])
```

### Configure, then Save

```
response = device.config_file_save()
```

## 10.9.7 Configure, then Save File

```
response = device.config_file_save(file="/config/test300.config")
```

### Show Object

```
response = device.show(path=["system", "image"])
print(response.result)
```

### Generate Object

```
randstring = ''.join(random.choice(string.ascii_letters + string.digits) for _ in
↳range(20))
keyrand = f'/tmp/key_{randstring}'
response = device.generate(path=["ssh", "client-key", keyrand])
```

### Reset Object

```
response = device.reset(path=["conntrack-sync", "internal-cache"])
if not response.error:
    print(response.result)
```

### Configure, then Load File

```
response = device.config_file_load(file="/config/test300.config")
```

## TROUBLESHOOTING

Sometimes things break or don't work as expected. This section describes several troubleshooting tools provided by VyOS that can help when something goes wrong.

### 11.1 Connectivity Tests

#### 11.1.1 Basic Connectivity Tests

Verifying connectivity can be done with the familiar *ping* and *traceroute* commands. The options for each are shown (the options for each command were displayed using the built-in help as described in the *Command Line Interface* section and are omitted from the output here):

##### **ping <destination>**

Send ICMP echo requests to destination host. There are multiple options to ping, inkl. VRF support.

```
vyos@vyos:~$ ping 10.1.1.1
Possible completions:
<Enter>      Execute the current command
adaptive     Ping options
allow-broadcast
audible
bypass-route
count
deadline
do-not-fragment
flood
interface
interval
mark
no-loopback
numeric
pattern
quiet
record-route
size
timestamp
tos
ttl
verbose
vrf
```

### traceroute <destination>

Trace path to target.

```
vyos@vyos:~$ traceroute
Possible completions:
<hostname>    Track network path to specified node
<x.x.x.x>
<h:h:h:h:h:h:h>
ipv4          Track network path to <hostname|IPv4 address>
ipv6          Track network path to <hostname|IPv6 address>
```

## 11.1.2 Advanced Connectivity Tests

### monitor traceroute <destination>

However, another helper is available which combines ping and traceroute into a single tool. An example of its output is shown:

```
vyos@vyos:~$ mtr 10.62.212.12

                My traceroute  [v0.85]
vyos (0.0.0.0)
Keys:  Help   Display mode   Restart statistics   Order of fields   quit
      Packets
Host      Loss%  Snt   Last   Avg   Best  Wrst  StDev
1. 10.11.110.4      0.0%  34    0.5    0.5   0.4   0.8   0.1
2. 10.62.255.184    0.0%  34    1.1    1.0   0.9   1.4   0.1
3. 10.62.255.71     0.0%  34    1.4    1.4   1.3   2.0   0.1
4. 10.62.212.12     0.0%  34    1.6    1.6   1.6   1.7   0.0
```

---

**Note:** The output consumes the screen and will replace your command prompt.

---

Several options are available for changing the display output. Press *h* to invoke the built in help system. To quit, just press *q* and you'll be returned to the VyOS command prompt.

## 11.1.3 IPv6 Topology Discovery

IPv6 uses different techniques to discover its Neighbors/topology.

### Router Discovery

#### force ipv6-rd interface <interface> [address <ipv6-address>]

Discover routers via eth0.

Example:

```
vyos@vyos:~$ force ipv6-rd interface eth0
Soliciting ff02::2 (ff02::2) on eth0...
```

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```

Hop limit          :          60 (    0x3c)
Stateful address conf. :          No
Stateful other conf. :          No
Mobile home agent  :          No
Router preference  :          high
Neighbor discovery proxy :          No
Router lifetime    :          1800 (0x00000708) seconds
Reachable time     :  unspecified (0x00000000)
Retransmit time    :  unspecified (0x00000000)
Prefix             :  240e:fe:8ca7:ea01::/64
  On-link          :          Yes
  Autonomous address conf.:        Yes
  Valid time       :          2592000 (0x00278d00) seconds
  Pref. time       :          14400 (0x00003840) seconds
Prefix             :  fc00:470:f1cd:101::/64
  On-link          :          Yes
  Autonomous address conf.:        Yes
  Valid time       :          2592000 (0x00278d00) seconds
  Pref. time       :          14400 (0x00003840) seconds
Recursive DNS server :  fc00:470:f1cd::ff00
  DNS server lifetime :          600 (0x00000258) seconds
Source link-layer address: 00:98:2B:F8:3F:11
from fe80::298:2bff:fe8:3f11
    
```

## Neighbor Discovery

**force ipv6-nd interface <interface> address <ipv6-address>**

Example:

```

vyos@vyos:~$ force ipv6-nd interface eth0 address fc00:470:f1cd:101::1

Soliciting fc00:470:f1cd:101::1 (fc00:470:f1cd:101::1) on eth0...
Target link-layer address: 00:98:2B:F8:3F:11 from fc00:470:f1cd:101::1
    
```

## 11.2 Interface names

If you find the names of your interfaces have changed, this could be because your MAC addresses have changed.

- For example, you have a VyOS VM with 4 Ethernet interfaces named eth0, eth1, eth2 and eth3. Then, you migrate your VyOS VM to a different host and find your interfaces now are eth4, eth5, eth6 and eth7.

One way to fix this issue **taking control of the MAC addresses** is:

Log into VyOS and run this command to display your interface settings.

```
show interfaces detail
```

Take note of MAC addresses.

Now, in order to update a MAC address in the configuration, run this command specifying the interface name and MAC address you want.

```
set interfaces eth0 hw-id 00:0c:29:da:a4:fe
```

If it is a VM, go into the settings of the host and set the MAC address to the settings found in the config.boot file. You can also set the MAC to static if the host allows so.

- Another example could be when cloning VyOS VMs in GNS3 and you get into the same issue: interface names have changed.

And a **more generic way to fix it** is just deleting every MAC address at the configuration file of the cloned machine. They will be correctly regenerated automatically.

## 11.3 Monitoring

VyOS features several monitoring tools.

```
vyos@vyos:~$ monitor
Possible completions:
bandwidth      Monitor interface bandwidth in real time
bandwidth-test
                Initiate or wait for bandwidth test
cluster        Monitor clustering service
command        Monitor an operational mode command (refreshes every 2 seconds)
contrack-sync
                Monitor contrack-sync
content-inspection
                Monitor Content-Inspection
dhcp           Monitor Dynamic Host Control Protocol (DHCP)
dns            Monitor a Domain Name Service (DNS) daemon
firewall       Monitor Firewall
https          Monitor the Secure Hypertext Transfer Protocol (HTTPS) service
lldp           Monitor Link Layer Discovery Protocol (LLDP) daemon
log            Monitor last lines of messages file
nat            Monitor network address translation (NAT)
ndp            Monitor the NDP information received by the router through the device
openvpn        Monitor OpenVPN
protocol        Monitor routing protocols
snmp           Monitor Simple Network Management Protocol (SNMP) daemon
stop-all      Stop all current background monitoring processes
traceroute     Monitor the path to a destination in realtime
traffic        Monitor traffic dumps
vpn            Monitor VPN
vrrp           Monitor Virtual Router Redundancy Protocol (VRRP)
webproxy       Monitor Webproxy service
```

### 11.3.1 Traffic Dumps

To monitor interface traffic, issue the `monitor traffic interface <name>` command, replacing `<name>` with your chosen interface.

```
vyos@vyos:~$ monitor traffic interface eth0
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth0, link-type EN10MB (Ethernet), capture size 262144 bytes
15:54:28.581601 IP 192.168.0.1 > vyos: ICMP echo request, id 1870, seq 3848, length 64
15:54:28.581660 IP vyos > 192.168.0.1: ICMP echo reply, id 1870, seq 3848, length 64
15:54:29.583399 IP 192.168.0.1 > vyos: ICMP echo request, id 1870, seq 3849, length 64
15:54:29.583454 IP vyos > 192.168.0.1: ICMP echo reply, id 1870, seq 3849, length 64
^C
4 packets captured
4 packets received by filter
0 packets dropped by kernel
vyos@vyos:~$
```

To quit monitoring, press `Ctrl-c` and you'll be returned to the VyOS command prompt.

Traffic can be filtered and saved.

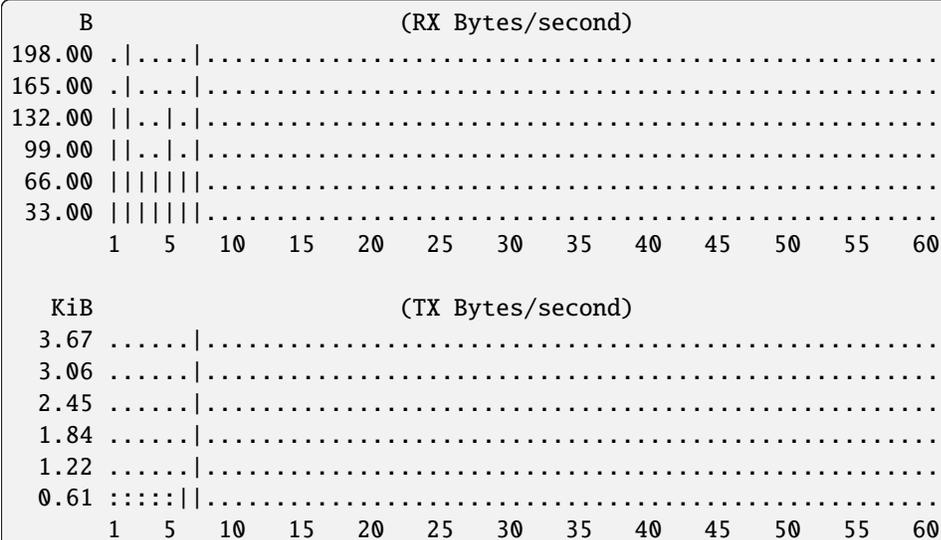
```
vyos@vyos:~$ monitor traffic interface eth0
Possible completions:
<Enter>      Execute the current command
filter       Monitor traffic matching filter conditions
save         Save traffic dump from an interface to a file
```

### 11.3.2 Interface Bandwidth Usage

to take a quick view on the used bandwidth of an interface use the `monitor bandwidth` command

```
vyos@vyos:~$ monitor bandwidth interface eth0
```

show the following:



### 11.3.3 Interface Performance

To take a look on the network bandwidth between two nodes, the `monitor bandwidth-test` command is used to run `iperf`.

```
vyos@vyos:~$ monitor bandwidth-test
Possible completions:
  accept      Wait for bandwidth test connections (port TCP/5001)
  initiate    Initiate a bandwidth test
```

- The `accept` command opens a listening `iperf` server on TCP Port 5001
- The `initiate` command connects to that server to perform the test.

```
vyos@vyos:~$ monitor bandwidth-test initiate
Possible completions:
<hostname>  Initiate a bandwidth test to specified host (port TCP/5001)
<x.x.x.x>
<h:h:h:h:h:h:h>
```

### 11.3.4 Monitor command

The `monitor command` command allows you to repeatedly run a command to view a continuously refreshed output. The command is run and output every 2 seconds, allowing you to monitor the output continuously without having to re-run the command. This can be useful to follow routing adjacency formation.

```
vyos@router:~$ monitor command "show interfaces"
```

Will clear the screen and show you the output of `show interfaces` every 2 seconds.

```
Every 2.0s: /opt/vyatta/bin/vyatta-op-cmd-wrapper    Sun Mar 26 02:49:46 2019

Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           192.168.1.1/24  u/u
eth0.5        198.51.100.4/24 u/u  WAN
lo            127.0.0.1/8    u/u
              ::1/128
vti0          172.25.254.2/30 u/u
vti1          172.25.254.9/30 u/u
```

## 11.4 Terminal/Console

Sometimes you need to clear counters or statistics to troubleshoot better.

To do this use the `clear` command in Operational mode.

to clear the console output

```
vyos@vyos:~$ clear console
```

to clear interface counters

```
# clear all interfaces
vyos@vyos:~$ clear interface ethernet counters
# clear specific interface
vyos@vyos:~$ clear interface ethernet eth0 counters
```

The command follow the same logic as the set command in configuration mode.

```
# clear all counters of a interface type
vyos@vyos:~$ clear interface <interface_type> counters
# clear counter of a interface in interface_type
vyos@vyos:~$ clear interface <interface_type> <interace_name> counters
```

to clear counters on firewall rulesets or single rules

```
vyos@vyos:~$ clear firewall name <ipv4 ruleset name> counters
vyos@vyos:~$ clear firewall name <ipv4 ruleset name> rule <rule#> counters

vyos@vyos:~$ clear firewall ipv6-name <ipv6 ruleset name> counters
vyos@vyos:~$ clear firewall ipv6-name <ipv6 ruleset name> rule <rule#> counters
```

## 11.5 System Information

### 11.5.1 Boot Steps

VyOS 1.2 uses [Debian Jessie](#) as the base Linux operating system. Jessie was the first version of Debian that uses [systemd](#) as the default init system.

These are the boot steps for VyOS 1.2

1. The BIOS loads Grub (or isolinux for the Live CD)
2. Grub then starts the Linux boot and loads the Linux Kernel `/boot/vmlinuz`
3. Kernel Launches Systemd `/lib/systemd/systemd`
4. Systemd loads the VyOS service file `/lib/systemd/system/vyos-router.service`
5. The service file launches the VyOS router init script `/usr/libexec/vyos/init/vyos-router` - this is part of the `vyatta-cfg` Debian package
  1. Starts `FRR` - successor to `GNU Zebra` and `Quagga`
  2. Initialises the boot configuration file - copies over `config.boot.default` if there is no configuration
  3. Runs the configuration migration, if the configuration is for an older version of VyOS
  4. Runs The pre-config script, if there is one `/config/scripts/vyos-preconfig-bootstrap.script`
  5. If the config file was upgraded, runs any post upgrade scripts `/config/scripts/post-upgrade.d`
  6. Starts `rl-system` and `firewall`
  7. Mounts the `/boot` partition
  8. The boot configuration file is then applied by `/opt/vyatta/sbin/vyatta-boot-config-loader/opt/vyatta/etc/config/config.boot`
    1. The config loader script writes log entries to `/var/log/vyatta-config-loader.log`

9. Runs `telinit q` to tell the init system to reload `/etc/inittab`
10. Finally it runs the post-config script `/config/scripts/vyos-postconfig-bootup.script`

## CONFIGURATION BLUEPRINTS

This chapter contains various configuration examples:

### 12.1 Zone-Policy example

---

**Note:** Starting from VyOS 1.4-rolling-202308040557, a new firewall structure can be found on all vyos instalations, and zone based firewall is no longer supported. Documentation for most of the new firewall CLI can be found in the [firewall](#) chapter. The legacy firewall is still available for versions before 1.4-rolling-202308040557 and can be found in the [firewall-legacy](#) chapter. The examples in this section use the legacy firewall configuration commands, since this feature has been removed in earlier releases.

---

**Note:** In T2199 the syntax of the zone configuration was changed. The zone configuration moved from `zone-policy zone <name>` to `firewall zone <name>`.

---

#### 12.1.1 Native IPv4 and IPv6

We have three networks.

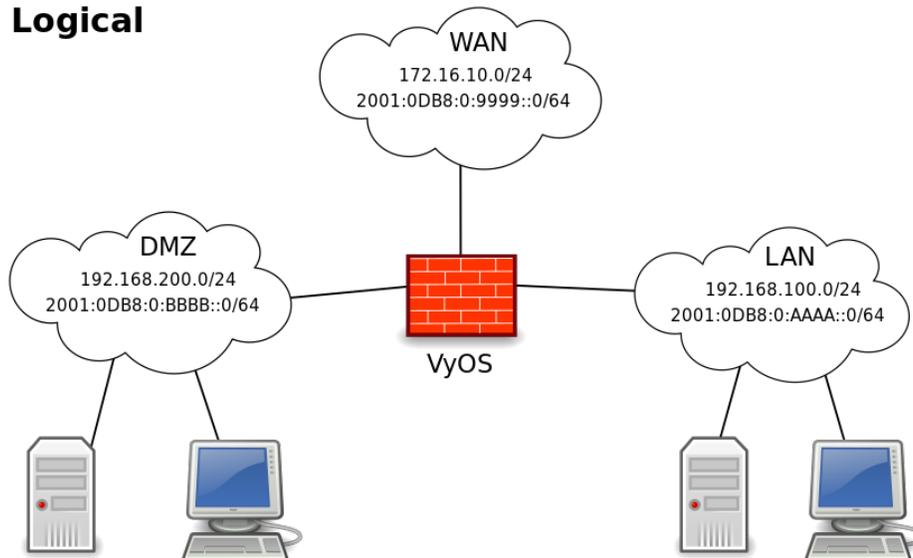
```
WAN - 172.16.10.0/24, 2001:0DB8:0:9999::0/64
LAN - 192.168.100.0/24, 2001:0DB8:0:AAAA::0/64
DMZ - 192.168.200.0/24, 2001:0DB8:0:BBBB::0/64
```

**This specific example is for a router on a stick, but is very easily adapted for however many NICs you have:**

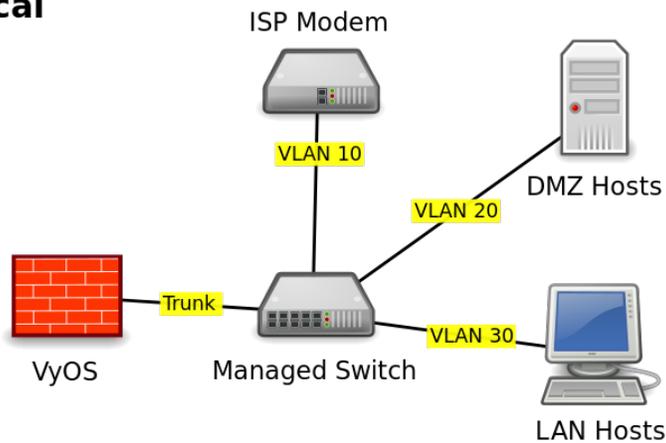
- Internet - 192.168.200.100 - TCP/80
- Internet - 192.168.200.100 - TCP/443
- Internet - 192.168.200.100 - TCP/25
- Internet - 192.168.200.100 - TCP/53
- VyOS acts as DHCP, DNS forwarder, NAT, router and firewall.
- 192.168.200.200/2001:0DB8:0:BBBB::200 is an internal/external DNS, web and mail (SMTP/IMAP) server.
- 192.168.100.10/2001:0DB8:0:AAAA::10 is the administrator's console. It can SSH to VyOS.
- LAN and DMZ hosts have basic outbound access: Web, FTP, SSH.
- LAN can access DMZ resources.

- DMZ cannot access LAN resources.
- Inbound WAN connect to DMZ host.

### Logical



### Physical



The VyOS interface is assigned the .1/:1 address of their respective networks. WAN is on VLAN 10, LAN on VLAN 20, and DMZ on VLAN 30.

It will look something like this:

```

interfaces {
  ethernet eth0 {
    duplex auto
    hw-id 00:53:ed:6e:2a:92
    smp_affinity auto
    speed auto
    vif 10 {
      address 172.16.10.1/24
      address 2001:db8:0:9999::1/64
    }
  }
}

```

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```

    }
    vif 20 {
        address 192.168.100.1/24
        address 2001:db8:0:AAAA::1/64
    }
    vif 30 {
        address 192.168.200.1/24
        address 2001:db8:0:BBBB::1/64
    }
}
loopback lo {
}
}

```

## 12.1.2 Zones Basics

Each interface is assigned to a zone. The interface can be physical or virtual such as tunnels (VPN, PPTP, GRE, etc) and are treated exactly the same.

Traffic flows from zone A to zone B. That flow is what I refer to as a zone-pair-direction. eg. A->B and B->A are two zone-pair-destinations.

Rulesets are created per zone-pair-direction.

I name rule sets to indicate which zone-pair-direction they represent. eg. ZoneA-ZoneB or ZoneB-ZoneA. LAN-DMZ, DMZ-LAN.

In VyOS, you have to have unique Ruleset names. In the event of overlap, I add a “-6” to the end of v6 rulesets. eg. LAN-DMZ, LAN-DMZ-6. This allows for each auto-completion and uniqueness.

In this example we have 4 zones. LAN, WAN, DMZ, Local. The local zone is the firewall itself.

If your computer is on the LAN and you need to SSH into your VyOS box, you would need a rule to allow it in the LAN-Local ruleset. If you want to access a webpage from your VyOS box, you need a rule to allow it in the Local-LAN ruleset.

In rules, it is good to keep them named consistently. As the number of rules you have grows, the more consistency you have, the easier your life will be.

```

Rule 1 - State Established, Related
Rule 2 - State Invalid
Rule 100 - ICMP
Rule 200 - Web
Rule 300 - FTP
Rule 400 - NTP
Rule 500 - SMTP
Rule 600 - DNS
Rule 700 - DHCP
Rule 800 - SSH
Rule 900 - IMAPS

```

The first two rules are to deal with the idiosyncrasies of VyOS and iptables.

Zones and Rulesets both have a default action statement. When using Zone-Policies, the default action is set by the zone-policy statement and is represented by rule 10000.

It is good practice to log both accepted and denied traffic. It can save you significant headaches when trying to troubleshoot a connectivity issue.

To add logging to the default rule, do:

```
set firewall name <ruleSet> enable-default-log
```

By default, iptables does not allow traffic for established sessions to return, so you must explicitly allow this. I do this by adding two rules to every ruleset. 1 allows established and related state packets through and rule 2 drops and logs invalid state packets. We place the established/related rule at the top because the vast majority of traffic on a network is established and the invalid rule to prevent invalid state packets from mistakenly being matched against other rules. Having the most matched rule listed first reduces CPU load in high volume environments. Note: I have filed a bug to have this added as a default action as well.

“It is important to note, that you do not want to add logging to the established state rule as you will be logging both the inbound and outbound packets for each session instead of just the initiation of the session. Your logs will be massive in a very short period of time.”

In VyOS you must have the interfaces created before you can apply it to the zone and the rulesets must be created prior to applying it to a zone-policy.

I create/configure the interfaces first. Build out the rulesets for each zone-pair-direction which includes at least the three state rules. Then I setup the zone-policies.

Zones do not allow for a default action of accept; either drop or reject. It is important to remember this because if you apply an interface to a zone and commit, any active connections will be dropped. Specifically, if you are SSH'd into VyOS and add local or the interface you are connecting through to a zone and do not have rulesets in place to allow SSH and established sessions, you will not be able to connect.

The following are the rules that were created for this example (may not be complete), both in IPv4 and IPv6. If there is no IP specified, then the source/destination address is not explicit.

```
WAN - DMZ:192.168.200.200 - tcp/80
WAN - DMZ:192.168.200.200 - tcp/443
WAN - DMZ:192.168.200.200 - tcp/25
WAN - DMZ:192.168.200.200 - tcp/53
WAN - DMZ:2001:0DB8:0:BBBB::200 - tcp/80
WAN - DMZ:2001:0DB8:0:BBBB::200 - tcp/443
WAN - DMZ:2001:0DB8:0:BBBB::200 - tcp/25
WAN - DMZ:2001:0DB8:0:BBBB::200 - tcp/53

DMZ - Local - tcp/53
DMZ - Local - tcp/123
DMZ - Local - tcp/67,68

LAN - Local - tcp/53
LAN - Local - tcp/123
LAN - Local - tcp/67,68
LAN:192.168.100.10 - Local - tcp/22
LAN:2001:0DB8:0:AAAA::10 - Local - tcp/22

LAN - WAN - tcp/80
LAN - WAN - tcp/443
LAN - WAN - tcp/22
LAN - WAN - tcp/20,21

DMZ - WAN - tcp/80
```

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```

DMZ - WAN - tcp/443
DMZ - WAN - tcp/22
DMZ - WAN - tcp/20,21
DMZ - WAN - tcp/53
DMZ - WAN - udp/53

Local - WAN - tcp/80
Local - WAN - tcp/443
Local - WAN - tcp/20,21

Local - DMZ - tcp/25
Local - DMZ - tcp/67,68
Local - DMZ - tcp/53
Local - DMZ - udp/53

Local - LAN - tcp/67,68

LAN - DMZ - tcp/80
LAN - DMZ - tcp/443
LAN - DMZ - tcp/993
LAN:2001:0DB8:0:AAAA::10 - DMZ:2001:0DB8:0:BBBB::200 - tcp/22
LAN:192.168.100.10 - DMZ:192.168.200.200 - tcp/22

```

Since we have 4 zones, we need to setup the following rulesets.

```

Lan-wan
Lan-local
Lan-dmz
Wan-lan
Wan-local
Wan-dmz
Local-lan
Local-wan
Local-dmz
Dmz-lan
Dmz-wan
Dmz-local

```

Even if the two zones will never communicate, it is a good idea to create the zone-pair-direction rulesets and set enable-default-log. This will allow you to log attempts to access the networks. Without it, you will never see the connection attempts.

This is an example of the three base rules.

```

name wan-lan {
  default-action drop
  enable-default-log
  rule 1 {
    action accept
    state {
      established enable
      related enable
    }
  }
}

```

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```
}  
rule 2 {  
  action drop  
  log enable  
  state {  
    invalid enable  
  }  
}  
}
```

Here is an example of an IPv6 DMZ-WAN ruleset.

```
ipv6-name dmz-wan-6 {  
  default-action drop  
  enable-default-log  
  rule 1 {  
    action accept  
    state {  
      established enable  
      related enable  
    }  
  }  
  rule 2 {  
    action drop  
    log enable  
    state {  
      invalid enable  
    }  
  }  
  rule 100 {  
    action accept  
    log enable  
    protocol ipv6-icmp  
  }  
  rule 200 {  
    action accept  
    destination {  
      port 80,443  
    }  
    log enable  
    protocol tcp  
  }  
  rule 300 {  
    action accept  
    destination {  
      port 20,21  
    }  
    log enable  
    protocol tcp  
  }  
  rule 500 {  
    action accept  
    destination {
```

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```
    port 25
  }
  log enable
  protocol tcp
  source {
    address 2001:db8:0:BBBB::200
  }
}
rule 600 {
  action accept
  destination {
    port 53
  }
  log enable
  protocol tcp_udp
  source {
    address 2001:db8:0:BBBB::200
  }
}
rule 800 {
  action accept
  destination {
    port 22
  }
  log enable
  protocol tcp
}
}
```

Once you have all of your rulesets built, then you need to create your zone-policy.

Start by setting the interface and default action for each zone.

```
set firewall zone dmz default-action drop
set firewall zone dmz interface eth0.30
```

In this case, we are setting the v6 ruleset that represents traffic sourced from the LAN, destined for the DMZ. Because the zone-policy firewall syntax is a little awkward, I keep it straight by thinking of it backwards.

```
set firewall zone dmz from lan firewall ipv6-name lan-dmz-6
```

DMZ-LAN policy is LAN-DMZ. You can get a rhythm to it when you build out a bunch at one time.

In the end, you will end up with something like this config. I took out everything but the Firewall, Interfaces, and zone-policy sections. It is long enough as is.

### 12.1.3 IPv6 Tunnel

If you are using a IPv6 tunnel from HE.net or someone else, the basis is the same except you have two WAN interfaces. One for v4 and one for v6.

You would have 5 zones instead of just 4 and you would configure your v6 ruleset between your tunnel interface and your LAN/DMZ zones instead of to the WAN.

LAN, WAN, DMZ, local and TUN (tunnel)

v6 pairs would be:

```
lan-tun
lan-local
lan-dmz
tun-lan
tun-local
tun-dmz
local-lan
local-tun
local-dmz
dmz-lan
dmz-tun
dmz-local
```

Notice, none go to WAN since WAN wouldn't have a v6 address on it.

You would have to add a couple of rules on your wan-local ruleset to allow protocol 41 in.

Something like:

```
rule 400 {
  action accept
  destination {
    address 172.16.10.1
  }
  log enable
  protocol 41
  source {
    address ip.of.tunnel.broker
  }
}
```

## 12.2 BGP IPv6 unnumbered with extended nexthop

General information can be found in the *BGP* chapter.

## 12.2.1 Configuration

- Router A:

```
set protocols bgp system-as 64496
set protocols bgp address-family ipv4-unicast redistribute connected
set protocols bgp address-family ipv6-unicast redistribute connected
set protocols bgp neighbor eth1 interface v6only
set protocols bgp neighbor eth1 interface v6only peer-group 'fabric'
set protocols bgp neighbor eth2 interface v6only
set protocols bgp neighbor eth2 interface v6only peer-group 'fabric'
set protocols bgp parameters bestpath as-path multipath-relax
set protocols bgp parameters bestpath compare-routerid
set protocols bgp parameters default no-ipv4-unicast
set protocols bgp parameters router-id '192.168.0.1'
set protocols bgp peer-group fabric address-family ipv4-unicast
set protocols bgp peer-group fabric address-family ipv6-unicast
set protocols bgp peer-group fabric capability extended-nexthop
set protocols bgp peer-group fabric remote-as 'external'
```

- Router B:

```
set protocols bgp system-as 64499
set protocols bgp address-family ipv4-unicast redistribute connected
set protocols bgp address-family ipv6-unicast redistribute connected
set protocols bgp neighbor eth1 interface v6only
set protocols bgp neighbor eth1 interface v6only peer-group 'fabric'
set protocols bgp neighbor eth2 interface v6only
set protocols bgp neighbor eth2 interface v6only peer-group 'fabric'
set protocols bgp parameters bestpath as-path multipath-relax
set protocols bgp parameters bestpath compare-routerid
set protocols bgp parameters default no-ipv4-unicast
set protocols bgp parameters router-id '192.168.0.2'
set protocols bgp peer-group fabric address-family ipv4-unicast
set protocols bgp peer-group fabric address-family ipv6-unicast
set protocols bgp peer-group fabric capability extended-nexthop
set protocols bgp peer-group fabric remote-as 'external'
```

## 12.2.2 Results

- Router A:

```
vyos@vyos:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           198.51.100.34/24  u/u
eth1           -                u/u
eth2           -                u/u
lo             127.0.0.1/8      u/u
              192.168.0.1/32
              ::1/128
```

```
vyos@vyos:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route

S>* 0.0.0.0/0 [210/0] via 198.51.100.34, eth0, 03:21:53
C>* 198.51.100.0/24 is directly connected, eth0, 03:21:53
C>* 192.168.0.1/32 is directly connected, lo, 03:21:56
B>* 192.168.0.2/32 [20/0] via fe80::a00:27ff:fe3b:7ed2, eth2, 00:05:07
   *                               via fe80::a00:27ff:fe7b:4000, eth1, 00:05:07
```

```
vyos@vyos:~$ ping 192.168.0.2
PING 192.168.0.2 (192.168.0.2) 56(84) bytes of data.
64 bytes from 192.168.0.2: icmp_seq=1 ttl=64 time=0.575 ms
64 bytes from 192.168.0.2: icmp_seq=2 ttl=64 time=0.628 ms
64 bytes from 192.168.0.2: icmp_seq=3 ttl=64 time=0.581 ms
64 bytes from 192.168.0.2: icmp_seq=4 ttl=64 time=0.682 ms
64 bytes from 192.168.0.2: icmp_seq=5 ttl=64 time=0.597 ms

--- 192.168.0.2 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4086ms
rtt min/avg/max/mdev = 0.575/0.612/0.682/0.047 ms
```

```
vyos@vyos:~$ show ip bgp summary

IPv4 Unicast Summary:
BGP router identifier 192.168.0.1, local AS number 65020 vrf-id 0
BGP table version 4
RIB entries 5, using 800 bytes of memory
Peers 2, using 41 KiB of memory
Peer groups 1, using 64 bytes of memory

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ OutQ  Up/Down State/PfxRcd
eth1          4      64499    13     13      0     0   0 00:05:33         2
eth2          4      64499    13     14      0     0   0 00:05:29         2

Total number of neighbors 2
```

- Router B:

```
vyos@vyos:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           198.51.100.33/24  u/u
eth1           -                u/u
eth2           -                u/u
lo             127.0.0.1/8      u/u
              192.168.0.2/32
              ::1/128
```

```
vyos@vyos:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route

S>* 0.0.0.0/0 [210/0] via 198.51.100.33, eth0, 00:44:08
C>* 198.51.100.0/24 is directly connected, eth0, 00:44:09
B>* 192.168.0.1/32 [20/0] via fe80::a00:27ff:fe2d:205d, eth1, 00:06:18
   *                       via fe80::a00:27ff:fe93:e142, eth2, 00:06:18
C>* 192.168.0.2/32 is directly connected, lo, 00:44:11
```

```
vyos@vyos:~$ ping 192.168.0.1
PING 192.168.0.1 (192.168.0.1) 56(84) bytes of data.
64 bytes from 192.168.0.1: icmp_seq=1 ttl=64 time=0.427 ms
64 bytes from 192.168.0.1: icmp_seq=2 ttl=64 time=0.471 ms
64 bytes from 192.168.0.1: icmp_seq=3 ttl=64 time=0.782 ms
64 bytes from 192.168.0.1: icmp_seq=4 ttl=64 time=0.715 ms

--- 192.168.0.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3051ms
rtt min/avg/max/mdev = 0.427/0.598/0.782/0.155 ms
```

```
vyos@vyos:~$ show ip bgp summary
IPv4 Unicast Summary:
BGP router identifier 192.168.0.2, local AS number 65021 vrf-id 0
BGP table version 4
RIB entries 5, using 800 bytes of memory
Peers 2, using 41 KiB of memory
Peer groups 1, using 64 bytes of memory

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ  OutQ  Up/Down State/PfxRcd
eth1          4      64496    14     14       0    0    0 00:06:40      2
eth2          4      64496    14     14       0    0    0 00:06:37      2

Total number of neighbors 2
```

## 12.3 OSPF unnumbered with ECMP

General information can be found in the *OSPF* chapter.

## 12.3.1 Configuration

- Router A:

```
set interfaces ethernet eth0 address '10.0.0.1/24'
set interfaces ethernet eth1 address '192.168.0.1/32'
set interfaces ethernet eth1 ip ospf authentication md5 key-id 1 md5-key 'yourpassword'
set interfaces ethernet eth1 ip ospf network 'point-to-point'
set interfaces ethernet eth2 address '192.168.0.1/32'
set interfaces ethernet eth2 ip ospf authentication md5 key-id 1 md5-key 'yourpassword'
set interfaces ethernet eth2 ip ospf network 'point-to-point'
set interfaces loopback lo address '192.168.0.1/32'
set protocols ospf area 0.0.0.0 authentication 'md5'
set protocols ospf area 0.0.0.0 network '192.168.0.1/32'
set protocols ospf parameters router-id '192.168.0.1'
set protocols ospf redistribute connected
```

- Router B:

```
set interfaces ethernet eth0 address '10.0.0.2/24'
set interfaces ethernet eth1 address '192.168.0.2/32'
set interfaces ethernet eth1 ip ospf authentication md5 key-id 1 md5-key 'yourpassword'
set interfaces ethernet eth1 ip ospf network 'point-to-point'
set interfaces ethernet eth2 address '192.168.0.2/32'
set interfaces ethernet eth2 ip ospf authentication md5 key-id 1 md5-key 'yourpassword'
set interfaces ethernet eth2 ip ospf network 'point-to-point'
set interfaces loopback lo address '192.168.0.2/32'
set protocols ospf area 0.0.0.0 authentication 'md5'
set protocols ospf area 0.0.0.0 network '192.168.0.2/32'
set protocols ospf parameters router-id '192.168.0.2'
set protocols ospf redistribute connected
```

## 12.3.2 Results

- Router A:

```
vyos@vyos:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           10.0.0.1/24    u/u
eth1           192.168.0.1/32 u/u
eth2           192.168.0.1/32 u/u
lo             127.0.0.1/8    u/u
              192.168.0.1/32
              ::1/128
```

```
vyos@vyos:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
```

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```

> - selected route, * - FIB route, q - queued route, r - rejected route

S>* 0.0.0.0/0 [210/0] via 10.0.0.254, eth0, 00:57:34
O 10.0.0.0/24 [110/20] via 192.168.0.2, eth1 onlink, 00:13:21
    via 192.168.0.2, eth2 onlink, 00:13:21
C>* 10.0.0.0/24 is directly connected, eth0, 00:57:35
O 192.168.0.1/32 [110/0] is directly connected, lo, 00:48:53
C * 192.168.0.1/32 is directly connected, eth2, 00:56:31
C * 192.168.0.1/32 is directly connected, eth1, 00:56:31
C>* 192.168.0.1/32 is directly connected, lo, 00:57:36
O>* 192.168.0.2/32 [110/1] via 192.168.0.2, eth1 onlink, 00:29:03
    * via 192.168.0.2, eth2 onlink, 00:29:03

```

• Router B:

```

vyos@vyos:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L Description
-----
eth0           10.0.0.2/24    u/u
eth1           192.168.0.2/32 u/u
eth2           192.168.0.2/32 u/u
lo             127.0.0.1/8   u/u
              192.168.0.2/32
              ::1/128

```

```

vyos@vyos:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
> - selected route, * - FIB route, q - queued route, r - rejected route

S>* 0.0.0.0/0 [210/0] via 10.0.0.254, eth0, 00:57:34
O 10.0.0.0/24 [110/20] via 192.168.0.1, eth1 onlink, 00:13:21
    via 192.168.0.1, eth2 onlink, 00:13:21
C>* 10.0.0.0/24 is directly connected, eth0, 00:57:35
O 192.168.0.2/32 [110/0] is directly connected, lo, 00:48:53
C * 192.168.0.2/32 is directly connected, eth2, 00:56:31
C * 192.168.0.2/32 is directly connected, eth1, 00:56:31
C>* 192.168.0.2/32 is directly connected, lo, 00:57:36
O>* 192.168.0.1/32 [110/1] via 192.168.0.1, eth1 onlink, 00:29:03
    * via 192.168.0.1, eth2 onlink, 00:29:03

```

## 12.4 Route-Based Site-to-Site VPN to Azure (BGP over IKEv2/IPsec)

This guide shows an example of a route-based IKEv2 site-to-site VPN to Azure using VTI and BGP for dynamic routing updates.

For redundant / active-active configurations see *Route-Based Redundant Site-to-Site VPN to Azure (BGP over IKEv2/IPsec)*

### 12.4.1 Prerequisites

- A pair of Azure VNet Gateways deployed in active-passive configuration with BGP enabled.
- A local network gateway deployed in Azure representing the Vyos device, matching the below Vyos settings except for address space, which only requires the Vyos private IP, in this example 10.10.0.5/32
- A connection resource deployed in Azure linking the Azure VNet gateway and the local network gateway representing the Vyos device.

### 12.4.2 Example

WAN Interface	eth0
On-premises address space	10.10.0.0/16
Azure address space	10.0.0.0/16
Vyos public IP	198.51.100.3
Vyos private IP	10.10.0.5
Azure VNet Gateway public IP	203.0.113.2
Azure VNet Gateway BGP IP	10.0.0.4
Pre-shared key	ch00s3-4-s3cur3-psk
Vyos ASN	64499
Azure ASN	65540

### 12.4.3 Vyos configuration

- Configure the IKE and ESP settings to match a subset of those supported by Azure:

```
set vpn ipsec esp-group AZURE lifetime '3600'
set vpn ipsec esp-group AZURE mode 'tunnel'
set vpn ipsec esp-group AZURE pfs 'dh-group2'
set vpn ipsec esp-group AZURE proposal 1 encryption 'aes256'
set vpn ipsec esp-group AZURE proposal 1 hash 'sha1'

set vpn ipsec ike-group AZURE dead-peer-detection action 'restart'
set vpn ipsec ike-group AZURE dead-peer-detection interval '15'
set vpn ipsec ike-group AZURE dead-peer-detection timeout '30'
set vpn ipsec ike-group AZURE ikev2-reauth
set vpn ipsec ike-group AZURE key-exchange 'ikev2'
set vpn ipsec ike-group AZURE lifetime '28800'
set vpn ipsec ike-group AZURE proposal 1 dh-group '2'
set vpn ipsec ike-group AZURE proposal 1 encryption 'aes256'
set vpn ipsec ike-group AZURE proposal 1 hash 'sha1'
```

- Enable IPsec on eth0

```
set vpn ipsec interface 'eth0'
```

- Configure a VTI with a dummy IP address

```
set interfaces vti vti1 address '10.10.1.5/32'
set interfaces vti vti1 description 'Azure Tunnel'
```

- Clamp the VTI's MSS to 1350 to avoid PMTU blackholes.

```
set interfaces vti vti1 ip adjust-mss 1350
```

- Configure the VPN tunnel

```
set vpn ipsec authentication psk azure id '198.51.100.3'
set vpn ipsec authentication psk azure id '203.0.113.2'
set vpn ipsec authentication psk azure secret 'ch00s3-4-s3cur3-psk'
set vpn ipsec site-to-site peer azure authentication local-id '198.51.100.3'
set vpn ipsec site-to-site peer 203.0.113.2 authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer 203.0.113.2 authentication remote-id '203.0.113.2'
set vpn ipsec site-to-site peer 203.0.113.2 connection-type 'respond'
set vpn ipsec site-to-site peer 203.0.113.2 description 'AZURE PRIMARY TUNNEL'
set vpn ipsec site-to-site peer 203.0.113.2 ike-group 'AZURE'
set vpn ipsec site-to-site peer 203.0.113.2 ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer 203.0.113.2 local-address '10.10.0.5'
set vpn ipsec site-to-site peer azure remote-address '203.0.113.2'
set vpn ipsec site-to-site peer 203.0.113.2 vti bind 'vti1'
set vpn ipsec site-to-site peer 203.0.113.2 vti esp-group 'AZURE'
```

- **Important:** Add an interface route to reach Azure's BGP listener

```
set protocols static route 10.0.0.4/32 interface vti1
```

- Configure your BGP settings

```
set protocols bgp system-as 64499
set protocols bgp neighbor 10.0.0.4 remote-as '65540'
set protocols bgp neighbor 10.0.0.4 address-family ipv4-unicast soft-reconfiguration
↔ 'inbound'
set protocols bgp neighbor 10.0.0.4 timers holdtime '30'
set protocols bgp neighbor 10.0.0.4 timers keepalive '10'
```

- **Important:** Disable connected check

```
set protocols bgp neighbor 10.0.0.4 disable-connected-check
```

## 12.5 Route-Based Redundant Site-to-Site VPN to Azure (BGP over IKEv2/IPsec)

This guide shows an example of a redundant (active-active) route-based IKEv2 site-to-site VPN to Azure using VTI and BGP for dynamic routing updates.

### 12.5.1 Prerequisites

- A pair of Azure VNet Gateways deployed in active-active configuration with BGP enabled.
- A local network gateway deployed in Azure representing the Vyos device, matching the below Vyos settings except for address space, which only requires the Vyos private IP, in this example 10.10.0.5/32
- A connection resource deployed in Azure linking the Azure VNet gateway and the local network gateway representing the Vyos device.

### 12.5.2 Example

WAN Interface	eth0
On-premises address space	10.10.0.0/16
Azure address space	10.0.0.0/16
Vyos public IP	198.51.100.3
Vyos private IP	10.10.0.5
Azure VNet Gateway 1 public IP	203.0.113.2
Azure VNet Gateway 2 public IP	203.0.113.3
Azure VNet Gateway BGP IP	10.0.0.4,10.0.0.5
Pre-shared key	ch00s3-4-s3cur3-psk
Vyos ASN	64499
Azure ASN	65540

### 12.5.3 Vyos configuration

- Configure the IKE and ESP settings to match a subset of those supported by Azure:

```
set vpn ipsec esp-group AZURE lifetime '3600'
set vpn ipsec esp-group AZURE mode 'tunnel'
set vpn ipsec esp-group AZURE pfs 'dh-group2'
set vpn ipsec esp-group AZURE proposal 1 encryption 'aes256'
set vpn ipsec esp-group AZURE proposal 1 hash 'sha1'

set vpn ipsec ike-group AZURE dead-peer-detection action 'restart'
set vpn ipsec ike-group AZURE dead-peer-detection interval '15'
set vpn ipsec ike-group AZURE dead-peer-detection timeout '30'
set vpn ipsec ike-group AZURE ikev2-reauth
set vpn ipsec ike-group AZURE key-exchange 'ikev2'
set vpn ipsec ike-group AZURE lifetime '28800'
set vpn ipsec ike-group AZURE proposal 1 dh-group '2'
set vpn ipsec ike-group AZURE proposal 1 encryption 'aes256'
set vpn ipsec ike-group AZURE proposal 1 hash 'sha1'
```

- Enable IPsec on eth0

```
set vpn ipsec interface 'eth0'
```

- Configure two VTIs with a dummy IP address each

```
set interfaces vti vti1 address '10.10.1.5/32'
set interfaces vti vti1 description 'Azure Primary Tunnel'

set interfaces vti vti2 address '10.10.1.6/32'
set interfaces vti vti2 description 'Azure Secondary Tunnel'
```

- Clamp the VTI's MSS to 1350 to avoid PMTU blackholes.

```
set interfaces vti vti1 ip adjust-mss 1350
set interfaces vti vti2 ip adjust-mss 1350
```

- Configure the VPN tunnels

```
set vpn ipsec authentication psk azure id '198.51.100.3'
set vpn ipsec authentication psk azure id '203.0.113.2'
set vpn ipsec authentication psk azure id '203.0.113.3'
set vpn ipsec authentication psk azure secret 'ch00s3-4-s3cur3-psk'

set vpn ipsec site-to-site peer azure-primary authentication local-id '198.51.100.3'
set vpn ipsec site-to-site peer azure-primary authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer azure-primary authentication remote-id '203.0.113.2'
set vpn ipsec site-to-site peer azure-primary connection-type 'respond'
set vpn ipsec site-to-site peer azure-primary description 'AZURE PRIMARY TUNNEL'
set vpn ipsec site-to-site peer azure-primary ike-group 'AZURE'
set vpn ipsec site-to-site peer azure-primary ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer azure-primary local-address '10.10.0.5'
set vpn ipsec site-to-site peer azure-primary remote-address '203.0.113.2'
set vpn ipsec site-to-site peer azure-primary vti bind 'vti1'
set vpn ipsec site-to-site peer azure-primary vti esp-group 'AZURE'

set vpn ipsec site-to-site peer azure-secondary authentication local-id '198.51.100.3'
set vpn ipsec site-to-site peer azure-secondary authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer azure-secondary authentication remote-id '203.0.113.3'
set vpn ipsec site-to-site peer azure-secondary connection-type 'respond'
set vpn ipsec site-to-site peer azure-secondary description 'AZURE secondary TUNNEL'
set vpn ipsec site-to-site peer azure-secondary ike-group 'AZURE'
set vpn ipsec site-to-site peer azure-secondary ikev2-reauth 'inherit'
set vpn ipsec site-to-site peer azure-secondary local-address '10.10.0.5'
set vpn ipsec site-to-site peer azure-secondary remote-address '203.0.113.3'
set vpn ipsec site-to-site peer azure-secondary vti bind 'vti2'
set vpn ipsec site-to-site peer azure-secondary vti esp-group 'AZURE'
```

- **Important:** Add an interface route to reach both Azure's BGP listeners

```
set protocols static route 10.0.0.4/32 interface vti1
set protocols static route 10.0.0.5/32 interface vti2
```

- Configure your BGP settings

```

set protocols bgp system-as 64499
set protocols bgp neighbor 10.0.0.4 remote-as '65540'
set protocols bgp neighbor 10.0.0.4 address-family ipv4-unicast soft-reconfiguration
↳ 'inbound'
set protocols bgp neighbor 10.0.0.4 timers holdtime '30'
set protocols bgp neighbor 10.0.0.4 timers keepalive '10'

set protocols bgp neighbor 10.0.0.5 remote-as '65540'
set protocols bgp neighbor 10.0.0.5 address-family ipv4-unicast soft-reconfiguration
↳ 'inbound'
set protocols bgp neighbor 10.0.0.5 timers holdtime '30'
set protocols bgp neighbor 10.0.0.5 timers keepalive '10'

```

- **Important:** Disable connected check, otherwise the routes learned from Azure will not be imported into the routing table.

```

set protocols bgp neighbor 10.0.0.4 disable-connected-check
set protocols bgp neighbor 10.0.0.5 disable-connected-check

```

## 12.6 High Availability Walkthrough

This document walks you through a complete HA setup of two VyOS machines. This design is based on a VM as the primary router and a physical machine as a backup, using VRRP, BGP, OSPF, and contrack sharing.

This document aims to walk you through setting everything up, so at a point where you can reboot any machine and not lose more than a few seconds worth of connectivity.

### 12.6.1 Design

This is based on a real-life production design. One of the complex issues is ensuring you have redundant data INTO your network. We do this with a pair of Cisco Nexus switches and using Virtual PortChannels that are spanned across them. As a bonus, this also allows for complete switch failure without an outage. How you achieve this yourself is left as an exercise to the reader. But our setup is documented here.

#### Walkthrough suggestion

The `commit` command is implied after every section. If you make an error, `commit` will warn you and you can fix it before getting too far into things. Please ensure you commit early and commit often.

If you are following through this document, it is strongly suggested you complete the entire document, **ONLY** doing the virtual router1 steps, and then come back and walk through it **AGAIN** on the backup hardware router.

This ensures you don't go too fast or miss a step. However, it will make your life easier to configure the fixed IP address and default route now on the hardware router.

## Example Network

In this document, we have been allocated 203.0.113.0/24 by our upstream provider, which we are publishing on VLAN100.

They want us to establish a BGP session to their routers on 192.0.2.11 and 192.0.2.12 from our routers 192.0.2.21 and 192.0.2.22. They are AS 65550 and we are AS 65551.

Our routers are going to have a floating IP address of 203.0.113.1, and use .2 and .3 as their fixed IPs.

We are going to use 10.200.201.0/24 for an 'internal' network on VLAN201.

When traffic is originated from the 10.200.201.0/24 network, it will be masqueraded to 203.0.113.1

For connection between sites, we are running a WireGuard link to two REMOTE routers and using OSPF over those links to distribute routes. That remote site is expected to send traffic from anything in 10.201.0.0/16

## VLANs

These are the vlans we will be using:

- 50: Upstream, using the 192.0.2.0/24 network allocated by them.
- 100: 'Public' network, using our 203.0.113.0/24 network.
- 201: 'Internal' network, using 10.200.201.0/24

## Hardware

- switch1 (Nexus 10gb Switch)
- switch2 (Nexus 10gb Switch)
- compute1 (VMware ESXi 6.5)
- compute2 (VMware ESXi 6.5)
- compute3 (VMware ESXi 6.5)
- router2 (Random 1RU machine with 4 NICs)

Note that router1 is a VM that runs on one of the compute nodes.

## Network Cabling

- From Datacenter - This connects into port 1 on both switches, and is tagged as VLAN 50
- Cisco VPC Crossconnect - Ports 39 and 40 bonded between each switch
- Hardware Router - Port 8 of each switch
- compute1 - Port 9 of each switch
- compute2 - Port 10 of each switch
- compute3 - Port 11 of each switch

This is ignoring the extra Out-of-band management networking, which should be on totally different switches, and a different feed into the rack, and is out of scope of this.

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**Note:** Our implementation uses VMware's Distributed Port Groups, which allows VMware to use LACP. This is a part of the ENTERPRISE licence, and is not available on a free licence. If you are implementing this and do not have access to DPGs, you should not use VMware, and use some other virtualization platform instead.

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## 12.6.2 Basic Setup (via console)

Create your router1 VM. So it can withstand a VM Host failing or a network link failing. Using VMware, this is achieved by enabling vSphere DRS, vSphere Availability, and creating a Distributed Port Group that uses LACP.

Many other Hypervisors do this, and I'm hoping that this document will be expanded to document how to do this for others.

Create an 'All VLANs' network group, that passes all trunked traffic through to the VM. Attach this network group to router1 as eth0.

---

**Note:** VMware: You must DISABLE SECURITY on this Port group. Make sure that Promiscuous Mode, MAC address changes and Forged transmits are enabled. All of these will be done as part of failover.

---

### Bonding on Hardware Router

Create a LACP bond on the hardware router. We are assuming that eth0 and eth1 are connected to port 8 on both switches, and that those ports are configured as a Port-Channel.

```
set interfaces bonding bond0 description 'Switch Port-Channel'
set interfaces bonding bond0 hash-policy 'layer2'
set interfaces bonding bond0 member interface 'eth0'
set interfaces bonding bond0 member interface 'eth1'
set interfaces bonding bond0 mode '802.3ad'
```

### Assign external IP addresses

VLAN 100 and 201 will have floating IP addresses, but VLAN50 does not, as this is talking directly to upstream. Create our IP address on vlan50.

For the hardware router, replace eth0 with bond0. As (almost) every command is identical, this will not be specified unless different things need to be performed on different hosts.

```
set interfaces ethernet eth0 vif 50 address '192.0.2.21/24'
```

In this case, the hardware router has a different IP, so it would be

```
set interfaces ethernet bond0 vif 50 address '192.0.2.22/24'
```

### Add (temporary) default route

It is assumed that the routers provided by upstream are capable of acting as a default router, add that as a static route.

```
set protocols static route 0.0.0.0/0 next-hop 192.0.2.11
commit
save
```

### Enable SSH

Enable SSH so you can now SSH into the routers, rather than using the console.

```
set service ssh
commit
save
```

At this point, you should be able to SSH into both of them, and will no longer need access to the console (unless you break something!)

## 12.6.3 VRRP Configuration

We are setting up VRRP so that it does NOT fail back when a machine returns into service, and it prioritizes router1 over router2.

### Internal Network

This has a floating IP address of 10.200.201.1/24, using virtual router ID 201. The difference between them is the interface name, hello-source-address, and peer-address.

#### router1

```
set interfaces ethernet eth0 vif 201 address 10.200.201.2/24
set high-availability vrrp group int hello-source-address '10.200.201.2'
set high-availability vrrp group int interface 'eth0.201'
set high-availability vrrp group int peer-address '10.200.201.3'
set high-availability vrrp group int no-preempt
set high-availability vrrp group int priority '200'
set high-availability vrrp group int address '10.200.201.1/24'
set high-availability vrrp group int vrid '201'
```

#### router2

```
set interfaces ethernet bond0 vif 201 address 10.200.201.3/24
set high-availability vrrp group int hello-source-address '10.200.201.3'
set high-availability vrrp group int interface 'bond0.201'
set high-availability vrrp group int peer-address '10.200.201.2'
set high-availability vrrp group int no-preempt
set high-availability vrrp group int priority '100'
set high-availability vrrp group int address '10.200.201.1/24'
set high-availability vrrp group int vrid '201'
```

## Public Network

This has a floating IP address of 203.0.113.1/24, using virtual router ID 113. The virtual router ID is just a random number between 1 and 254, and can be set to whatever you want. Best practices suggest you try to keep them unique enterprise-wide.

### router1

```
set interfaces ethernet eth0 vif 100 address 203.0.113.2/24
set high-availability vrrp group public hello-source-address '203.0.113.2'
set high-availability vrrp group public interface 'eth0.100'
set high-availability vrrp group public peer-address '203.0.113.3'
set high-availability vrrp group public no-preempt
set high-availability vrrp group public priority '200'
set high-availability vrrp group public address '203.0.113.1/24'
set high-availability vrrp group public vrid '113'
```

### router2

```
set interfaces ethernet bond0 vif 100 address 203.0.113.3/24
set high-availability vrrp group public hello-source-address '203.0.113.3'
set high-availability vrrp group public interface 'bond0.100'
set high-availability vrrp group public peer-address '203.0.113.2'
set high-availability vrrp group public no-preempt
set high-availability vrrp group public priority '100'
set high-availability vrrp group public address '203.0.113.1/24'
set high-availability vrrp group public vrid '113'
```

## Create VRRP sync-group

The sync group is used to replicate connection tracking. It needs to be assigned to a random VRRP group, and we are creating a sync group called sync using the vrrp group int.

```
set high-availability vrrp sync-group sync member 'int'
```

## Testing

At this point, you should be able to see both IP addresses when you run `show interfaces`, and `show vrrp` should show both interfaces in MASTER state (and SLAVE state on router2).

```
vyos@router1:~$ show vrrp
Name      Interface      VRID  State    Last Transition
-----
int       eth0.201       201   MASTER   100s
public    eth0.100       113   MASTER   200s
vyos@router1:~$
```

You should be able to ping to and from all the IPs you have allocated.

## 12.6.4 NAT and contrack-sync

Masquerade Traffic originating from 10.200.201.0/24 that is heading out the public interface.

**Note:** We explicitly exclude the primary upstream network so that BGP or OSPF traffic doesn't accidentally get NAT'ed.

```
set nat source rule 10 destination address '!192.0.2.0/24'
set nat source rule 10 outbound-interface name 'eth0.50'
set nat source rule 10 source address '10.200.201.0/24'
set nat source rule 10 translation address '203.0.113.1'
```

### Configure contrack-sync and enable helpers

Contrack helper modules are enabled by default, but they tend to cause more problems than they're worth in complex networks. You can disable all of them at one go.

```
delete system contrack modules
```

Now enable replication between nodes. Replace eth0.201 with bond0.201 on the hardware router.

```
set service contrack-sync accept-protocol 'tcp,udp,icmp'
set service contrack-sync event-listen-queue-size '8'
set service contrack-sync failover-mechanism vrrp sync-group 'sync'
set service contrack-sync interface eth0.201
set service contrack-sync mcast-group '224.0.0.50'
set service contrack-sync sync-queue-size '8'
```

### Testing

The simplest way to test is to look at the connection tracking stats on the standby hardware router with the command `show contrack-sync statistics`. The numbers should be very close to the numbers on the primary router.

When you have both routers up, you should be able to establish a connection from a NAT'ed machine out to the internet, reboot the active machine, and that connection should be preserved, and will not drop out.

## 12.6.5 OSPF Over WireGuard

Wireguard doesn't have the concept of an up or down link, due to its design. This complicates AND simplifies using it for network transport, as for reliable state detection you need to use SOMETHING to detect when the link is down.

If you use a routing protocol itself, you solve two problems at once. This is only a basic example, and is provided as a starting point.

## Configure Wireguard

There is plenty of instructions and documentation on setting up Wireguard. The only important thing you need to remember is to only use one WireGuard interface per OSPF connection.

We use small /30's from 10.254.60/24 for the point-to-point links.

### router1

Replace the 203.0.113.3 with whatever the other router's IP address is.

```
set interfaces wireguard wg01 address '10.254.60.1/30'
set interfaces wireguard wg01 description 'router1-to-offsite1'
set interfaces wireguard wg01 peer OFFSITE1 allowed-ips '0.0.0.0/0'
set interfaces wireguard wg01 peer OFFSITE1 endpoint '203.0.113.3:50001'
set interfaces wireguard wg01 peer OFFSITE1 persistent-keepalive '15'
set interfaces wireguard wg01 peer OFFSITE1 pubkey 'GEFMOWzAyau42/
↪HwdwfXnrfHdIISQF8YHj35rOgSZ0o='
set interfaces wireguard wg01 port '50001'
set protocols ospf interface wg01 authentication md5 key-id 1 md5-key 'i360KoCwUGZvPq7e'
set protocols ospf interface wg01 cost '11'
set protocols ospf interface wg01 dead-interval '5'
set protocols ospf interface wg01 hello-interval '1'
set protocols ospf interface wg01 network 'point-to-point'
set protocols ospf interface wg01 priority '1'
set protocols ospf interface wg01 retransmit-interval '5'
set protocols ospf interface wg01 transmit-delay '1'
```

### offsite1

This is connecting back to the STATIC IP of router1, not the floating.

```
set interfaces wireguard wg01 address '10.254.60.2/30'
set interfaces wireguard wg01 description 'offsite1-to-router1'
set interfaces wireguard wg01 peer ROUTER1 allowed-ips '0.0.0.0/0'
set interfaces wireguard wg01 peer ROUTER1 endpoint '192.0.2.21:50001'
set interfaces wireguard wg01 peer ROUTER1 persistent-keepalive '15'
set interfaces wireguard wg01 peer ROUTER1 pubkey 'CKwMV3ZaLntMule2Kd3G7UyVBR7zE8/
↪qoZgLb82EE2Q='
set interfaces wireguard wg01 port '50001'
set protocols ospf interface wg01 authentication md5 key-id 1 md5-key 'i360KoCwUGZvPq7e'
set protocols ospf interface wg01 cost '11'
set protocols ospf interface wg01 dead-interval '5'
set protocols ospf interface wg01 hello-interval '1'
set protocols ospf interface wg01 network 'point-to-point'
set protocols ospf interface wg01 priority '1'
set protocols ospf interface wg01 retransmit-interval '5'
set protocols ospf interface wg01 transmit-delay '1'
```

## Test WireGuard

Make sure you can ping 10.254.60.1 and .2 from both routers.

## Create Export Filter

We only want to export the networks we know. Always do a whitelist on your route filters, both importing and exporting. A good rule of thumb is **'If you are not the default router for a network, don't advertise it'**. This means we explicitly do not want to advertise the 192.0.2.0/24 network (but do want to advertise 10.200.201.0 and 203.0.113.0, which we ARE the default route for). This filter is applied to `redistribute connected`. If we WERE to advertise it, the remote machines would see 192.0.2.21 available via their default route, establish the connection, and then OSPF would say '192.0.2.0/24 is available via this tunnel', at which point the tunnel would break, OSPF would drop the routes, and then 192.0.2.0/24 would be reachable via default again. This is called 'flapping'.

```
set policy access-list 150 description 'Outbound OSPF Redistribution'
set policy access-list 150 rule 10 action 'permit'
set policy access-list 150 rule 10 destination any
set policy access-list 150 rule 10 source inverse-mask '0.0.0.255'
set policy access-list 150 rule 10 source network '10.200.201.0'
set policy access-list 150 rule 20 action 'permit'
set policy access-list 150 rule 20 destination any
set policy access-list 150 rule 20 source inverse-mask '0.0.0.255'
set policy access-list 150 rule 20 source network '203.0.113.0'
set policy access-list 150 rule 100 action 'deny'
set policy access-list 150 rule 100 destination any
set policy access-list 150 rule 100 source any
```

## Create Import Filter

We only want to import networks we know. Our OSPF peer should only be advertising networks in the 10.201.0.0/16 range. Note that this is an INVERSE MATCH. You deny in access-list 100 to accept the route.

```
set policy access-list 100 description 'Inbound OSPF Routes from Peers'
set policy access-list 100 rule 10 action 'deny'
set policy access-list 100 rule 10 destination any
set policy access-list 100 rule 10 source inverse-mask '0.0.255.255'
set policy access-list 100 rule 10 source network '10.201.0.0'
set policy access-list 100 rule 100 action 'permit'
set policy access-list 100 rule 100 destination any
set policy access-list 100 rule 100 source any
set policy route-map PUBOSPF rule 100 action 'deny'
set policy route-map PUBOSPF rule 100 match ip address access-list '100'
set policy route-map PUBOSPF rule 500 action 'permit'
```

## Enable OSPF

Every router **must** have a unique router-id. The 'reference-bandwidth' is used because when OSPF was originally designed, the idea of a link faster than 1gbit was unheard of, and it does not scale correctly.

```
set protocols ospf area 0.0.0.0 authentication 'md5'  
set protocols ospf area 0.0.0.0 network '10.254.60.0/24'  
set protocols ospf auto-cost reference-bandwidth '10000'  
set protocols ospf log-adjacency-changes  
set protocols ospf parameters abr-type 'cisco'  
set protocols ospf parameters router-id '10.254.60.2'  
set protocols ospf route-map PUBOSPF
```

## Test OSPF

When you have enabled OSPF on both routers, you should be able to see each other with the command `show ip ospf neighbour`. The state must be 'Full' or '2-Way'. If it is not, then there is a network connectivity issue between the hosts. This is often caused by NAT or MTU issues. You should not see any new routes (unless this is the second pass) in the output of `show ip route`

### 12.6.6 Advertise connected routes

As a reminder, only advertise routes that you are the default router for. This is why we are NOT announcing the 192.0.2.0/24 network, because if that was announced into OSPF, the other routers would try to connect to that network over a tunnel that connects to that network!

```
set protocols ospf access-list 150 export 'connected'  
set protocols ospf redistribute connected
```

You should now be able to see the advertised network on the other host.

## Duplicate configuration

At this point, you now need to create the X link between all four routers. Use a different /30 for each link.

## Priorities

Set the cost on the secondary links to be 200. This means that they will not be used unless the primary links are down.

```
set protocols ospf interface wg01 cost '10'  
set protocols ospf interface wg01 cost '200'
```

This will be visible in 'show ip route'.

## 12.6.7 BGP

BGP is an extremely complex network protocol. An example is provided here.

**Note:** Router id's must be unique.

### router1

The `redistribute ospf` command is there purely as an example of how this can be expanded. In this walkthrough, it will be filtered by BGPOUT rule 10000, as it is not 203.0.113.0/24.

```

set policy prefix-list BGPOUT description 'BGP Export List'
set policy prefix-list BGPOUT rule 10 action 'deny'
set policy prefix-list BGPOUT rule 10 description 'Do not advertise short masks'
set policy prefix-list BGPOUT rule 10 ge '25'
set policy prefix-list BGPOUT rule 10 prefix '0.0.0.0/0'
set policy prefix-list BGPOUT rule 100 action 'permit'
set policy prefix-list BGPOUT rule 100 description 'Our network'
set policy prefix-list BGPOUT rule 100 prefix '203.0.113.0/24'
set policy prefix-list BGPOUT rule 10000 action 'deny'
set policy prefix-list BGPOUT rule 10000 prefix '0.0.0.0/0'

set policy route-map BGPOUT description 'BGP Export Filter'
set policy route-map BGPOUT rule 10 action 'permit'
set policy route-map BGPOUT rule 10 match ip address prefix-list 'BGPOUT'
set policy route-map BGPOUT rule 10000 action 'deny'
set policy route-map BGPPREPENDOUT description 'BGP Export Filter'
set policy route-map BGPPREPENDOUT rule 10 action 'permit'
set policy route-map BGPPREPENDOUT rule 10 set as-path prepend '65551 65551 65551'
set policy route-map BGPPREPENDOUT rule 10 match ip address prefix-list 'BGPOUT'
set policy route-map BGPPREPENDOUT rule 10000 action 'deny'

set protocols bgp system-as 65551
set protocols bgp address-family ipv4-unicast network 192.0.2.0/24
set protocols bgp address-family ipv4-unicast redistribute connected metric '50'
set protocols bgp address-family ipv4-unicast redistribute ospf metric '50'
set protocols bgp neighbor 192.0.2.11 address-family ipv4-unicast route-map export
↪ 'BGPOUT'
set protocols bgp neighbor 192.0.2.11 address-family ipv4-unicast soft-reconfiguration_
↪ inbound
set protocols bgp neighbor 192.0.2.11 remote-as '65550'
set protocols bgp neighbor 192.0.2.11 update-source '192.0.2.21'
set protocols bgp parameters router-id '192.0.2.21'

```

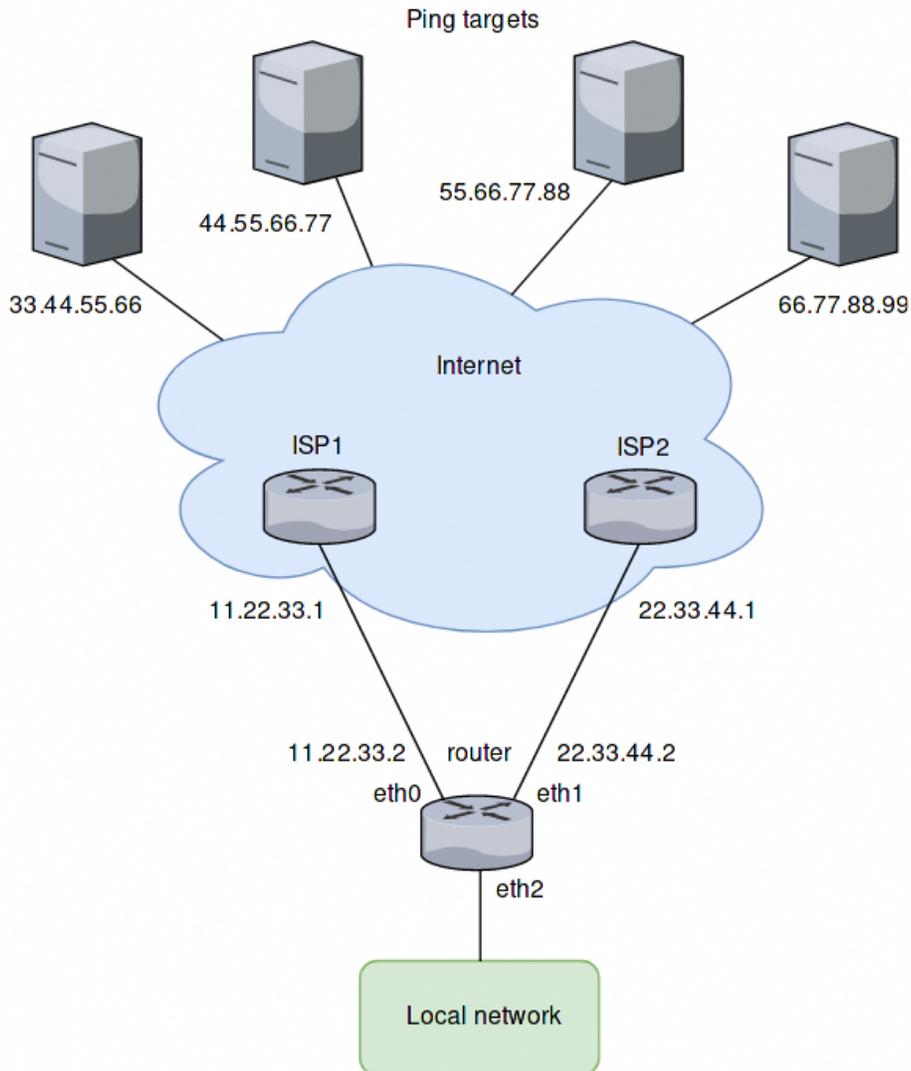
### router2

This is identical, but you use the BGPPREPENDOUT route-map to advertise the route with a longer path.

## 12.7 WAN Load Balancer examples

### 12.7.1 Example 1: Distributing load evenly

The setup used in this example is shown in the following diagram:



## Overview

- All traffic coming in through eth2 is balanced between eth0 and eth1 on the router.
- Pings will be sent to four targets for health testing (33.44.55.66, 44.55.66.77, 55.66.77.88 and 66.77.88.99).
- All outgoing packets are assigned the source address of the assigned interface (SNAT).
- eth0 is set to be removed from the load balancer's interface pool after 5 ping failures, eth1 will be removed after 4 ping failures.

## Create static routes to ping targets

Create static routes through the two ISPs towards the ping targets and commit the changes:

```
set protocols static route 33.44.55.66/32 next-hop 11.22.33.1
set protocols static route 44.55.66.77/32 next-hop 11.22.33.1
set protocols static route 55.66.77.88/32 next-hop 22.33.44.1
set protocols static route 66.77.88.99/32 next-hop 22.33.44.1
```

## Configure the load balancer

Configure the WAN load balancer with the parameters described above:

```
set load-balancing wan interface-health eth0 failure-count 5
set load-balancing wan interface-health eth0 nexthop 11.22.33.1
set load-balancing wan interface-health eth0 test 10 type ping
set load-balancing wan interface-health eth0 test 10 target 33.44.55.66
set load-balancing wan interface-health eth0 test 20 type ping
set load-balancing wan interface-health eth0 test 20 target 44.55.66.77
set load-balancing wan interface-health eth1 failure-count 4
set load-balancing wan interface-health eth1 nexthop 22.33.44.1
set load-balancing wan interface-health eth1 test 10 type ping
set load-balancing wan interface-health eth1 test 10 target 55.66.77.88
set load-balancing wan interface-health eth1 test 20 type ping
set load-balancing wan interface-health eth1 test 20 target 66.77.88.99
set load-balancing wan rule 10 inbound-interface eth2
set load-balancing wan rule 10 interface eth0
set load-balancing wan rule 10 interface eth1
```

### 12.7.2 Example 2: Failover based on interface weights

This example uses the failover mode.

## Overview

In this example, eth0 is the primary interface and eth1 is the secondary interface. To provide simple failover functionality. If eth0 fails, eth1 takes over.

### Create interface weight based configuration

The configuration steps are the same as in the previous example, except rule 10. So we keep the configuration, remove rule 10 and add a new rule for the failover mode:

```
delete load-balancing wan rule 10
set load-balancing wan rule 10 failover
set load-balancing wan rule 10 inbound-interface eth2
set load-balancing wan rule 10 interface eth0 weight 10
set load-balancing wan rule 10 interface eth1 weight 1
```

## 12.7.3 Example 3: Failover based on rule order

The previous example used the failover command to send traffic through eth1 if eth0 fails. In this example, failover functionality is provided by rule order.

### Overview

Two rules will be created, the first rule directs traffic coming in from eth2 to eth0 and the second rule directs the traffic to eth1. If eth0 fails the first rule is bypassed and the second rule matches, directing traffic to eth1.

### Create rule order based configuration

We keep the configuration from the previous example, delete rule 10 and create the two new rules as described:

```
delete load-balancing wan rule 10
set load-balancing wan rule 10 inbound-interface eth2
set load-balancing wan rule 10 interface eth0
set load-balancing wan rule 20 inbound-interface eth2
set load-balancing wan rule 20 interface eth1
```

## 12.7.4 Example 4: Failover based on rule order - priority traffic

A rule order for prioritizing traffic is useful in scenarios where the secondary link has a lower speed and should only carry high priority traffic. It is assumed for this example that eth1 is connected to a slower connection than eth0 and should prioritize VoIP traffic.

## Overview

A rule order for prioritizing traffic is useful in scenarios where the secondary link has a lower speed and should only carry high priority traffic. It is assumed for this example that eth1 is connected to a slower connection than eth0 and should prioritize VoIP traffic.

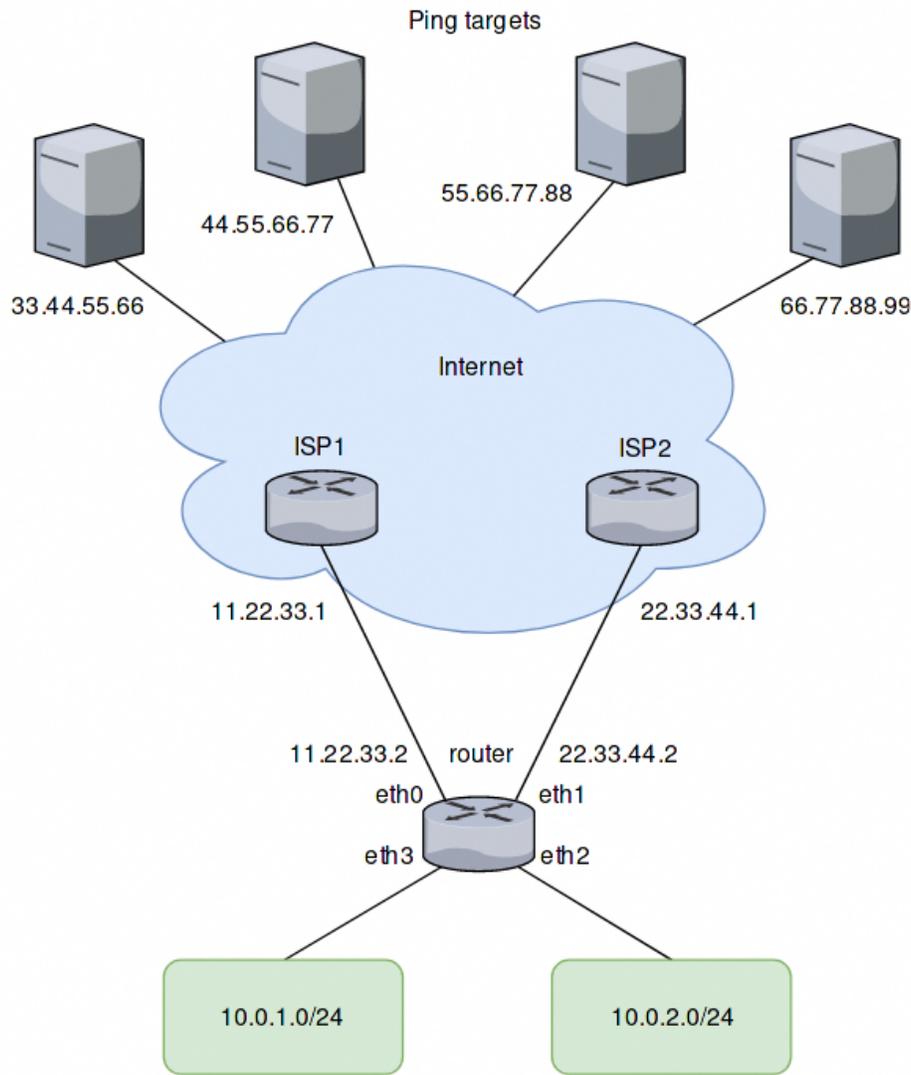
### Create rule order based configuration with low speed secondary link

We keep the configuration from the previous example, delete rule 20 and create a new rule as described:

```
delete load-balancing wan rule 20
set load-balancing wan rule 20 inbound-interface eth2
set load-balancing wan rule 20 interface eth1
set load-balancing wan rule 20 destination port sip
set load-balancing wan rule 20 protocol tcp
set protocols static route 0.0.0.0/0 next-hop 11.22.33.1
```

## 12.7.5 Example 5: Exclude traffic from load balancing

In this example two LAN interfaces exist in different subnets instead of one like in the previous examples:



### Adding a rule for the second interface

Based on the previous example, another rule for traffic from the second interface eth3 can be added to the load balancer. However, traffic meant to flow between the LAN subnets will be sent to eth0 and eth1 as well. To prevent this, another rule is required. This rule excludes traffic between the local subnets from the load balancer. It also excludes locally-sources packets (required for web caching with load balancing). eth+ is used as an alias that refers to all ethernet interfaces:

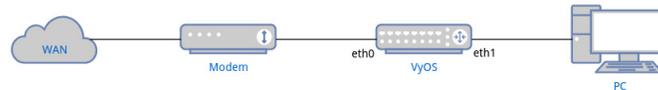
```
set load-balancing wan rule 5 exclude
set load-balancing wan rule 5 inbound-interface eth+
set load-balancing wan rule 5 destination address 10.0.0.0/8
```

## 12.8 PPPoE IPv6 Basic Setup for Home Network

This document is to describe a basic setup using PPPoE with DHCPv6-PD + SLAAC to construct a typical home network. The user can follow the steps described here to quickly setup a working network and use this as a starting point to further configure or fine-tune other settings.

To achieve this, your ISP is required to support DHCPv6-PD. If you're not sure, please contact your ISP for more information.

### 12.8.1 Network Topology



### 12.8.2 Configurations

#### PPPoE Setup

```

set interfaces pppoe pppoe0 authentication password <YOUR PASSWORD>
set interfaces pppoe pppoe0 authentication user <YOUR USERNAME>
set interfaces pppoe pppoe0 service-name <YOUR SERVICENAME>
set interfaces pppoe pppoe0 source-interface 'eth0'
  
```

- Fill password and user with the credential provided by your ISP.
- service-name can be an arbitrary string.

#### DHCPv6-PD Setup

During address configuration, in addition to assigning an address to the WAN interface, ISP also provides a prefix to allow the router to configure addresses of LAN interface and other nodes connecting to LAN, which is called prefix delegation (PD).

```

set interfaces pppoe pppoe0 ipv6 address autoconf
set interfaces pppoe pppoe0 dhcpv6-options pd 0 interface eth1 address '100'
  
```

- Here we use the prefix to configure the address of eth1 (LAN) to form <prefix>::64, where 64 is hexadecimal of address 100.
- For home network users, most of time ISP only provides /64 prefix, hence there is no need to set SLA ID and prefix length. See [PPPoE](#) for more information.

## Router Advertisement

We need to enable router advertisement for LAN network so that PC can receive the prefix and use SLAAC to configure the address automatically.

```
set service router-advert interface eth1 link-mtu '1492'
set service router-advert interface eth1 name-server <NAME SERVER>
set service router-advert interface eth1 prefix '::/64 valid-lifetime '172800'
```

- Set MTU in advertisement to 1492 because of PPPoE header overhead.
- Set DNS server address in the advertisement so that clients can obtain it by using RDNSS option. Most operating systems (Windows, Linux, Mac) should already support it.
- Here we set the prefix to `::/64` to indicate advertising any /64 prefix the LAN interface is assigned.
- Since some ISPs disconnects continuous connection for every 2~3 days, we set `valid-lifetime` to 2 days to allow PC for phasing out old address.

## Basic Firewall

To have basic protection while keeping IPv6 network functional, we need to:

- Allow all established and related traffic for router and LAN
- Allow all icmpv6 packets for router and LAN
- Allow DHCPv6 packets for router

```
set firewall ipv6 name WAN_IN default-action 'drop'
set firewall ipv6 name WAN_IN rule 10 action 'accept'
set firewall ipv6 name WAN_IN rule 10 state established 'enable'
set firewall ipv6 name WAN_IN rule 10 state related 'enable'
set firewall ipv6 name WAN_IN rule 20 action 'accept'
set firewall ipv6 name WAN_IN rule 20 protocol 'icmpv6'
set firewall ipv6 name WAN_LOCAL default-action 'drop'
set firewall ipv6 name WAN_LOCAL rule 10 action 'accept'
set firewall ipv6 name WAN_LOCAL rule 10 state established 'enable'
set firewall ipv6 name WAN_LOCAL rule 10 state related 'enable'
set firewall ipv6 name WAN_LOCAL rule 20 action 'accept'
set firewall ipv6 name WAN_LOCAL rule 20 protocol 'icmpv6'
set firewall ipv6 name WAN_LOCAL rule 30 action 'accept'
set firewall ipv6 name WAN_LOCAL rule 30 destination port '546'
set firewall ipv6 name WAN_LOCAL rule 30 protocol 'udp'
set firewall ipv6 name WAN_LOCAL rule 30 source port '547'
set firewall ipv6 forward filter rule 10 action jump
set firewall ipv6 forward filter rule 10 jump-target 'WAN_IN'
set firewall ipv6 forward filter rule 10 inbound-interface name 'pppoe0'
set firewall ipv6 input filter rule 10 action jump
set firewall ipv6 input filter rule 10 jump-target 'WAN_LOCAL'
set firewall ipv6 input filter rule 10 inbound-interface name 'pppoe0'
```

Note to allow the router to receive DHCPv6 response from ISP. We need to allow packets with source port 547 (server) and destination port 546 (client).

## 12.9 L3VPN for Hub-and-Spoke connectivity with VyOS

IP/MPLS technology is widely used by various service providers and large enterprises in order to achieve better network scalability, manageability and flexibility. It also provides the possibility to deliver different services for the customers in a seamless manner. Layer 3 VPN (L3VPN) is a type of VPN mode that is built and delivered through OSI layer 3 networking technologies. Often the border gateway protocol (BGP) is used to send and receive VPN-related data that is responsible for the control plane. L3VPN utilizes virtual routing and forwarding (VRF) techniques to receive and deliver user data as well as separate data planes of the end-users. It is built using a combination of IP- and MPLS-based information. Generally, L3VPNs are used to send data on back-end VPN infrastructures, such as for VPN connections between data centres, HQs and branches.

An L3VPN consists of multiple access links, multiple VPN routing and forwarding (VRF) tables, and multiple MPLS paths or multiple P2MP LSPs. An L3VPN can be configured to connect two or more customer sites. In hub-and-spoke MPLS L3VPN environments, the spoke routers need to have unique Route Distinguishers (RDs). In order to use the hub site as a transit point for connectivity in such an environment, the spoke sites export their routes to the hub. Spokes can talk to hubs, but never have direct paths to other spokes. All traffic between spokes is controlled and delivered over the hub site.

To deploy a Layer3 VPN with MPLS on VyOS, we should meet a couple requirements in order to properly implement the solution. We'll use the following nodes in our LAB environment:

- 2 x Route reflectors (VyOS-RRx)
- 4 x Provider routers (VyOS-Px)
- 3 x Provider Edge (VyOs-PEx)
- 3 x Customer Edge (VyOS-CEx)

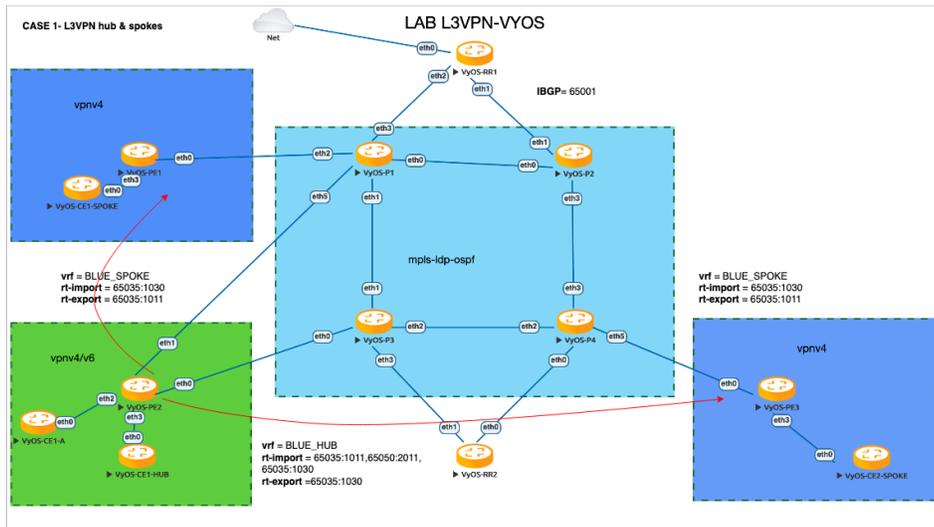
The following software was used in the creation of this document:

- Operating system: VyOS
- Version: 1.4-rolling-202110310317
- Image name: vyos-1.4-rolling-202110310317-amd64.iso

**NOTE:** VyOS Router (tested with VyOS 1.4-rolling-202110310317) – The configurations below are specifically for VyOS 1.4.x.

General information can be found in the [L3VPN VRFs](#) chapter.

## 12.9.1 Topology



## 12.9.2 How does it work?

As we know the main assumption of L3VPN “Hub and Spoke” is, that the traffic between spokes have to pass via hub, in our scenario VyOS-PE2 is the Hub PE and the VyOS-CE1-HUB is the central customer office device that is responsible for controlling access between all spokes and announcing its network prefixes (10.0.0.100/32). VyOS-PE2 has the main VRF (its name is BLUE\_HUB), its own Route-Distinguisher(RD) and route-target import/export lists. Multiprotocol-BGP(MP-BGP) delivers L3VPN related control-plane information to the nodes across network where PEs Spokes import the route-target 60535:1030 (this is export route-target of vrf BLUE\_HUB) and export its own route-target 60535:1011(this is vrf BLUE\_SPOKE export route-target). Therefore, the Customer edge nodes can only learn the network prefixes of the HUB site [10.0.0.100/32]. For this example VyOS-CE1 has network prefixes [10.0.0.80/32] / VyOS-CE2 has network prefixes [10.0.0.90/32]. Route-Reflector devices VyOS-RR1 and VyOS-RR2 are used to simplify network routes exchange and minimize iBGP peerings between devices.

L3VPN configuration parameters table:

Node	Role	VRF	RD	RT import	RT export
VyOS-PE2	Hub	BLUE_HUB	10.80.80.1:1011	65035:1011 65035:1030	65035:1030
VyOS-PE1	Spoke	BLUE_SPOKE	10.50.50.1:1011	65035:1030	65035:1011
VyOS-PE3	Spoke	BLUE_SPOKE	10.60.60.1:1011	65035:1030	65035:1011

## 12.9.3 Configuration

### Step-1: Configuring IGP and enabling MPLS LDP

At the first step we need to configure the IP/MPLS backbone network using OSPF as IGP protocol and LDP as label-switching protocol for the base connectivity between **P** (rovider), **P** (rovider) **E** (dge) and **R** (oute) **R** (efflector) nodes:

- VyOS-P1:

```
# interfaces
set interfaces dummy dum10 address '10.0.0.3/32'
```

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```

set interfaces ethernet eth0 address '172.16.30.1/24'
set interfaces ethernet eth1 address '172.16.40.1/24'
set interfaces ethernet eth2 address '172.16.90.1/24'
set interfaces ethernet eth3 address '172.16.10.1/24'
set interfaces ethernet eth5 address '172.16.100.1/24'

# protocols ospf+ldp
set protocols mpls interface 'eth1'
set protocols mpls interface 'eth2'
set protocols mpls interface 'eth3'
set protocols mpls interface 'eth5'
set protocols mpls interface 'eth0'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.3'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp interface 'eth2'
set protocols mpls ldp interface 'eth3'
set protocols mpls ldp interface 'eth5'
set protocols mpls ldp router-id '10.0.0.3'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.3'

```

- VyOS-P2:

```

# interfaces
set interfaces dummy dum10 address '10.0.0.4/32'
set interfaces ethernet eth0 address '172.16.30.2/24'
set interfaces ethernet eth1 address '172.16.20.1/24'
set interfaces ethernet eth2 address '172.16.120.1/24'
set interfaces ethernet eth3 address '172.16.60.1/24'

# protocols ospf+ldp
set protocols mpls interface 'eth1'
set protocols mpls interface 'eth2'
set protocols mpls interface 'eth3'
set protocols mpls interface 'eth0'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.4'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp interface 'eth2'
set protocols mpls ldp interface 'eth3'
set protocols mpls ldp router-id '10.0.0.4'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.4'

```

- VyOS-P3:

```

# interfaces
set interfaces dummy dum10 address '10.0.0.5/32'
set interfaces ethernet eth0 address '172.16.110.1/24'

```

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```

set interfaces ethernet eth1 address '172.16.40.2/24'
set interfaces ethernet eth2 address '172.16.50.1/24'
set interfaces ethernet eth3 address '172.16.70.1/24'

# protocols ospf + ldp
set protocols mpls interface 'eth1'
set protocols mpls interface 'eth2'
set protocols mpls interface 'eth3'
set protocols mpls interface 'eth0'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.5'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp interface 'eth2'
set protocols mpls ldp interface 'eth3'
set protocols mpls ldp router-id '10.0.0.5'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.5'

```

- VyOS-P4:

```

# interfaces
set interfaces dummy dum10 address '10.0.0.6/32'
set interfaces ethernet eth0 address '172.16.80.2/24'
set interfaces ethernet eth1 address '172.16.130.1/24'
set interfaces ethernet eth2 address '172.16.50.2/24'
set interfaces ethernet eth3 address '172.16.60.2/24'
set interfaces ethernet eth5 address '172.16.140.1/24'

# protocols ospf + ldp
set protocols mpls interface 'eth1'
set protocols mpls interface 'eth2'
set protocols mpls interface 'eth3'
set protocols mpls interface 'eth0'
set protocols mpls interface 'eth5'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.6'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp interface 'eth2'
set protocols mpls ldp interface 'eth3'
set protocols mpls ldp interface 'eth5'
set protocols mpls ldp router-id '10.0.0.6'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.6'

```

- VyOS-PE1:

```

# interfaces
set interfaces dummy dum10 address '10.0.0.7/32'
set interfaces ethernet eth0 address '172.16.90.2/24'

```

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```
# protocols ospf + ldp
set protocols mpls interface 'eth0'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.7'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp router-id '10.0.0.7'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.7'
```

- VyOS-PE2:

```
# interfaces
set interfaces dummy dum10 address '10.0.0.8/32'
set interfaces ethernet eth0 address '172.16.110.2/24'
set interfaces ethernet eth1 address '172.16.100.2/24'
set interfaces ethernet eth2 address '172.16.80.1/24'

# protocols ospf + ldp
set protocols mpls interface 'eth0'
set protocols mpls interface 'eth1'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.8'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp router-id '10.0.0.8'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.8'
```

- VyOS-PE3:

```
# interfaces
set interfaces dummy dum10 address '10.0.0.10/32'
set interfaces ethernet eth0 address '172.16.140.2/24'

# protocols ospf + ldp
set protocols mpls interface 'eth0'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.10'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp router-id '10.0.0.10'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.10'
```

- VyOS-RR1:

```
# interfaces
set interfaces ethernet eth1 address '172.16.20.2/24'
set interfaces ethernet eth2 address '172.16.10.2/24'
set interfaces dummy dum10 address '10.0.0.1/32'

# protocols ospf + ldp
set protocols mpls interface 'eth1'
```

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```

set protocols mpls interface 'eth2'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.1'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp interface 'eth2'
set protocols mpls ldp router-id '10.0.0.1'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.1'

```

- VyOS-RR2:

```

# interfaces
set interfaces ethernet eth0 address '172.16.80.1/24'
set interfaces ethernet eth1 address '172.16.70.2/24'
set interfaces dummy dum10 address '10.0.0.2/32'

# protocols ospf + ldp
set protocols mpls interface 'eth0'
set protocols mpls interface 'eth1'
set protocols mpls ldp discovery transport-ipv4-address '10.0.0.2'
set protocols mpls ldp interface 'eth1'
set protocols mpls ldp interface 'eth0'
set protocols mpls ldp router-id '10.0.0.2'
set protocols ospf area 0 network '0.0.0.0/0'
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '10.0.0.2'

```

## Step-2: Configuring iBGP for L3VPN control-plane

At this step we are going to enable iBGP protocol on MPLS nodes and Route Reflectors (two routers for redundancy) that will deliver IPv4 VPN (L3VPN) routes between them:

- VyOS-RR1:

```

set protocols bgp system-as '65001'
set protocols bgp neighbor 10.0.0.7 address-family ipv4-vpn route-reflector-client
set protocols bgp neighbor 10.0.0.7 peer-group 'RR_VPNv4'
set protocols bgp neighbor 10.0.0.8 address-family ipv4-vpn route-reflector-client
set protocols bgp neighbor 10.0.0.8 peer-group 'RR_VPNv4'
set protocols bgp neighbor 10.0.0.10 address-family ipv4-vpn route-reflector-client
set protocols bgp neighbor 10.0.0.10 peer-group 'RR_VPNv4'
set protocols bgp parameters cluster-id '10.0.0.1'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.0.0.1'
set protocols bgp peer-group RR_VPNv4 remote-as '65001'
set protocols bgp peer-group RR_VPNv4 update-source 'dum10'

```

- VyOS-RR2:

```

set protocols bgp system-as '65001'
set protocols bgp neighbor 10.0.0.7 address-family ipv4-vpn route-reflector-client
set protocols bgp neighbor 10.0.0.7 peer-group 'RR_VPNv4'

```

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```

set protocols bgp neighbor 10.0.0.8 address-family ipv4-vpn route-reflector-client
set protocols bgp neighbor 10.0.0.8 peer-group 'RR_VPNv4'
set protocols bgp neighbor 10.0.0.10 address-family ipv4-vpn route-reflector-client
set protocols bgp neighbor 10.0.0.10 peer-group 'RR_VPNv4'
set protocols bgp parameters cluster-id '10.0.0.1'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.0.0.2'
set protocols bgp peer-group RR_VPNv4 remote-as '65001'
set protocols bgp peer-group RR_VPNv4 update-source 'dum10'

```

- VyOS-PE1:

```

set protocols bgp system-as '65001'
set protocols bgp neighbor 10.0.0.1 address-family ipv4-vpn nexthop-self
set protocols bgp neighbor 10.0.0.1 peer-group 'RR_VPNv4'
set protocols bgp neighbor 10.0.0.2 address-family ipv4-vpn nexthop-self
set protocols bgp neighbor 10.0.0.2 peer-group 'RR_VPNv4'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.0.0.7'
set protocols bgp peer-group RR_VPNv4 remote-as '65001'
set protocols bgp peer-group RR_VPNv4 update-source 'dum10'

```

- VyOS-PE2:

```

set protocols bgp system-as '65001'
set protocols bgp neighbor 10.0.0.1 address-family ipv4-vpn nexthop-self
set protocols bgp neighbor 10.0.0.1 peer-group 'RR_VPNv4'
set protocols bgp neighbor 10.0.0.2 address-family ipv4-vpn nexthop-self
set protocols bgp neighbor 10.0.0.2 peer-group 'RR_VPNv4'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.0.0.8'
set protocols bgp peer-group RR_VPNv4 remote-as '65001'
set protocols bgp peer-group RR_VPNv4 update-source 'dum10'

```

- VyOS-PE3:

```

set protocols bgp system-as '65001'
set protocols bgp neighbor 10.0.0.1 address-family ipv4-vpn nexthop-self
set protocols bgp neighbor 10.0.0.1 peer-group 'RR_VPNv4'
set protocols bgp neighbor 10.0.0.2 address-family ipv4-vpn nexthop-self
set protocols bgp neighbor 10.0.0.2 peer-group 'RR_VPNv4'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.0.0.10'
set protocols bgp peer-group RR_VPNv4 remote-as '65001'
set protocols bgp peer-group RR_VPNv4 update-source 'dum10'

```

### Step-3: Configuring L3VPN VRFs on PE nodes

This section provides configuration steps for setting up VRFs on our PE nodes including CE facing interfaces, BGP, rd and route-target import/export based on the pre-defined parameters.

- VyOS-PE1:

```
# VRF settings
set vrf name BLUE_SPOKE table '200'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast export vpn
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast import vpn
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast label vpn export 'auto'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast network 10.50.50.0/24
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast rd vpn export '10.50.
↪50.1:1011'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast redistribute connected
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast route-target vpn↵
↪export '65035:1011'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast route-target vpn↵
↪import '65035:1030'
set vrf name BLUE_SPOKE protocols bgp system-as '65001'
set vrf name BLUE_SPOKE protocols bgp neighbor 10.50.50.2 address-family ipv4-unicast as-
↪override
set vrf name BLUE_SPOKE protocols bgp neighbor 10.50.50.2 remote-as '65035'

# interfaces
set interfaces ethernet eth3 address '10.50.50.1/24'
set interfaces ethernet eth3 vrf 'BLUE_SPOKE'
```

- VyOS-PE2:

```
# VRF settings
set vrf name BLUE_HUB table '400'
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast export vpn
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast import vpn
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast label vpn export 'auto'
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast network 10.80.80.0/24
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast rd vpn export '10.80.80.
↪1:1011'
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast redistribute connected
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast route-target vpn export
↪'65035:1030'
set vrf name BLUE_HUB protocols bgp address-family ipv4-unicast route-target vpn import
↪'65035:1011 65050:2011 65035:1030'
set vrf name BLUE_HUB protocols bgp system-as '65001'
set vrf name BLUE_HUB protocols bgp neighbor 10.80.80.2 address-family ipv4-unicast as-
↪override
set vrf name BLUE_HUB protocols bgp neighbor 10.80.80.2 remote-as '65035'

# interfaces
set interfaces ethernet eth3 address '10.80.80.1/24'
set interfaces ethernet eth3 vrf 'BLUE_HUB'
```

- VyOS-PE3:

```
# VRF settings
set vrf name BLUE_SPOKE table '200'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast export vpn
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast import vpn
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast label vpn export 'auto'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast network 10.60.60.0/24
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast rd vpn export '10.60.
↪60.1:1011'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast redistribute connected
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast route-target vpn↪
↪export '65035:1011'
set vrf name BLUE_SPOKE protocols bgp address-family ipv4-unicast route-target vpn↪
↪import '65035:1030'
set vrf name BLUE_SPOKE protocols bgp system-as '65001'
set vrf name BLUE_SPOKE protocols bgp neighbor 10.60.60.2 address-family ipv4-unicast as-
↪override
set vrf name BLUE_SPOKE protocols bgp neighbor 10.60.60.2 remote-as '65035'

# interfaces
set interfaces ethernet eth3 address '10.60.60.1/24'
set interfaces ethernet eth3 vrf 'BLUE_SPOKE'
```

#### Step-4: Configuring CE nodes

Dynamic routing used between CE and PE nodes and eBGP peering established for the route exchanging between them. All routes received by PEs are then exported to L3VPN and delivered from Spoke sites to Hub and vice-versa based on previously configured L3VPN parameters.

- VyOS-CE1-SPOKE:

```
# interfaces
set interfaces dummy dum20 address '10.0.0.80/32'
set interfaces ethernet eth0 address '10.50.50.2/24'

# BGP for peering with PE
set protocols bgp system-as 65035
set protocols bgp address-family ipv4-unicast network 10.0.0.80/32
set protocols bgp neighbor 10.50.50.1 ebgp-multihop '2'
set protocols bgp neighbor 10.50.50.1 remote-as '65001'
set protocols bgp neighbor 10.50.50.1 update-source 'eth0'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.50.50.2'
```

- VyOS-CE1-HUB:

```
# interfaces
set interfaces dummy dum20 address '10.0.0.100/32'
set interfaces ethernet eth0 address '10.80.80.2/24'

# BGP for peering with PE
set protocols bgp system-as 65035
set protocols bgp address-family ipv4-unicast network 10.0.0.100/32
```

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```
set protocols bgp address-family ipv4-unicast redistribute connected
set protocols bgp neighbor 10.80.80.1 ebgp-multihop '2'
set protocols bgp neighbor 10.80.80.1 remote-as '65001'
set protocols bgp neighbor 10.80.80.1 update-source 'eth0'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.80.80.2'
```

- VyOS-CE2-SPOKE:

```
# interfaces
set interfaces dummy dum20 address '10.0.0.90/32'
set interfaces ethernet eth0 address '10.60.60.2/24'

# BGP for peering with PE
set protocols bgp system-as 65035
set protocols bgp address-family ipv4-unicast network 10.0.0.90/32
set protocols bgp neighbor 10.60.60.1 ebgp-multihop '2'
set protocols bgp neighbor 10.60.60.1 remote-as '65001'
set protocols bgp neighbor 10.60.60.1 update-source 'eth0'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '10.60.60.2'
```

## Step-5: Verification

This section describes verification commands for MPLS/BGP/LDP protocols and L3VPN related routes as well as diagnosis and reachability checks between CE nodes.

Let's check IPv4 routing and MPLS information on provider nodes (same procedure for all P nodes):

- “show ip ospf neighbor” for checking ospf relationship

```
vyos@VyOS-P1:~$ show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface	RXmtL
↪ RqstL DBsmL						
10.0.0.4		1 Full/Backup	34.718s	172.16.30.2	eth0:172.16.30.1	↪
↪ 0	0	0				
10.0.0.5		1 Full/Backup	35.132s	172.16.40.2	eth1:172.16.40.1	↪
↪ 0	0	0				
10.0.0.7		1 Full/Backup	34.764s	172.16.90.2	eth2:172.16.90.1	↪
↪ 0	0	0				
10.0.0.1		1 Full/Backup	35.642s	172.16.10.2	eth3:172.16.10.1	↪
↪ 0	0	0				
10.0.0.8		1 Full/Backup	35.484s	172.16.100.2	eth5:172.16.100.1	↪
↪ 0	0	0				

- “show mpls ldp neighbor “ for checking ldp neighbors

```
vyos@VyOS-P1:~$ show mpls ldp neighbor
```

AF	ID	State	Remote Address	Uptime
ipv4	10.0.0.1	OPERATIONAL	10.0.0.1	07w5d06h
ipv4	10.0.0.4	OPERATIONAL	10.0.0.4	09w3d00h

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ipv4 10.0.0.5	OPERATIONAL	10.0.0.5	09w2d23h
ipv4 10.0.0.7	OPERATIONAL	10.0.0.7	03w0d01h
ipv4 10.0.0.8	OPERATIONAL	10.0.0.8	01w3d02h

- “show mpls ldp binding” for checking mpls label assignment

```
vyos@VyOS-P1:~$ show mpls ldp discovery
AF Destination Nexthop Local Label Remote Label In Use
ipv4 10.0.0.1/32 10.0.0.1 23 imp-null yes
ipv4 10.0.0.1/32 10.0.0.4 23 20 no
ipv4 10.0.0.1/32 10.0.0.5 23 17 no
ipv4 10.0.0.1/32 10.0.0.7 23 16 no
ipv4 10.0.0.1/32 10.0.0.8 23 16 no
ipv4 10.0.0.2/32 10.0.0.1 20 16 no
ipv4 10.0.0.2/32 10.0.0.4 20 22 no
ipv4 10.0.0.2/32 10.0.0.5 20 24 yes
ipv4 10.0.0.2/32 10.0.0.7 20 17 no
ipv4 10.0.0.2/32 10.0.0.8 20 17 no
ipv4 10.0.0.3/32 10.0.0.1 imp-null 17 no
ipv4 10.0.0.3/32 10.0.0.4 imp-null 16 no
ipv4 10.0.0.3/32 10.0.0.5 imp-null 18 no
ipv4 10.0.0.3/32 10.0.0.7 imp-null 18 no
ipv4 10.0.0.3/32 10.0.0.8 imp-null 18 no
ipv4 10.0.0.4/32 10.0.0.1 16 18 no
ipv4 10.0.0.4/32 10.0.0.4 16 imp-null yes
ipv4 10.0.0.4/32 10.0.0.5 16 19 no
ipv4 10.0.0.4/32 10.0.0.7 16 19 no
ipv4 10.0.0.4/32 10.0.0.8 16 19 no
ipv4 10.0.0.5/32 10.0.0.1 21 19 no
ipv4 10.0.0.5/32 10.0.0.4 21 17 no
ipv4 10.0.0.5/32 10.0.0.5 21 imp-null yes
ipv4 10.0.0.5/32 10.0.0.7 21 20 no
ipv4 10.0.0.5/32 10.0.0.8 21 20 no
ipv4 10.0.0.6/32 10.0.0.1 17 20 no
ipv4 10.0.0.6/32 10.0.0.4 17 23 yes
ipv4 10.0.0.6/32 10.0.0.5 17 21 yes
ipv4 10.0.0.6/32 10.0.0.7 17 21 no
ipv4 10.0.0.6/32 10.0.0.8 17 21 no
ipv4 10.0.0.7/32 10.0.0.1 22 21 no
ipv4 10.0.0.7/32 10.0.0.4 22 18 no
ipv4 10.0.0.7/32 10.0.0.5 22 20 no
ipv4 10.0.0.7/32 10.0.0.7 22 imp-null yes
ipv4 10.0.0.7/32 10.0.0.8 22 22 no
ipv4 10.0.0.8/32 10.0.0.1 24 22 no
ipv4 10.0.0.8/32 10.0.0.4 24 19 no
ipv4 10.0.0.8/32 10.0.0.5 24 16 no
ipv4 10.0.0.8/32 10.0.0.7 24 22 no
ipv4 10.0.0.8/32 10.0.0.8 24 imp-null yes
ipv4 10.0.0.9/32 10.0.0.1 18 23 no
ipv4 10.0.0.9/32 10.0.0.4 18 21 yes
ipv4 10.0.0.9/32 10.0.0.5 18 22 no
ipv4 10.0.0.9/32 10.0.0.7 18 23 no
```

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ipv4 10.0.0.9/32	10.0.0.8	18	23	no
ipv4 10.0.0.10/32	10.0.0.1	19	24	no
ipv4 10.0.0.10/32	10.0.0.4	19	24	yes
ipv4 10.0.0.10/32	10.0.0.5	19	23	yes
ipv4 10.0.0.10/32	10.0.0.7	19	24	no
ipv4 10.0.0.10/32	10.0.0.8	19	24	no

Now we're checking iBGP status and routes from route-reflector nodes to other devices:

- “show bgp ipv4 vpn summary” for checking BGP VPNv4 neighbors:

```
vyos@VyOS-RR1:~$ show bgp ipv4 vpn summary
BGP router identifier 10.0.0.1, local AS number 65001 vrf-id 0
BGP table version 0
RIB entries 9, using 1728 bytes of memory
Peers 4, using 85 KiB of memory
Peer groups 1, using 64 bytes of memory

Neighbor      V      AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd  PfxSnt
→ 10.0.0.7      4      4    65001    7719    7733           0    0    0 0
→ 5d07h56m
→ 10.0.0.8      4      4    65001    7715    7724           0    0    0 0
→ 5d08h28m
→ 10.0.0.9      4      4    65001    7713    7724           0    0    0 0
→ 5d08h28m
→ 10.0.0.10     4      4    65001    7713    7724           0    0    0 5d08h28m
→      2      10

Total number of neighbors 4
```

- “show bgp ipv4 vpn” for checking all VPNv4 prefixes information:

```
vyos@VyOS-RR1:~$ show bgp ipv4 vpn
BGP table version is 2, local router ID is 10.0.0.1, vrf id 0
Default local pref 100, local AS 65001
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes:  i - IGP, e - EGP, ? - incomplete

Network      Next Hop      Metric LocPrf Weight Path
Route Distinguisher: 10.50.50.1:1011
*>i10.50.50.0/24 10.0.0.7      0      100    0 i
UN=10.0.0.7 EC{65035:1011} label=80 type=bgp, subtype=0
*>i80.80.80.80/32 10.0.0.7      0      100    0 65035 i
UN=10.0.0.7 EC{65035:1011} label=80 type=bgp, subtype=0
Route Distinguisher: 10.60.60.1:1011
*>i10.60.60.0/24 10.0.0.10     0      100    0 i
UN=10.0.0.10 EC{65035:1011} label=80 type=bgp, subtype=0
*>i90.90.90.90/32 10.0.0.10     0      100    0 65035 i
UN=10.0.0.10 EC{65035:1011} label=80 type=bgp, subtype=0
Route Distinguisher: 10.80.80.1:1011
```

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```
*>i10.80.80.0/24 10.0.0.8 0 100 0 i
    UN=10.0.0.8 EC{65035:1030} label=80 type=bgp, subtype=0
*>i100.100.100.100/32
    10.0.0.8 0 100 0 65035 i
    UN=10.0.0.8 EC{65035:1030} label=80 type=bgp, subtype=0
Route Distinguisher: 172.16.80.1:2011
*>i10.110.110.0/24 10.0.0.8 0 100 0 65050 i
    UN=10.0.0.8 EC{65050:2011} label=81 type=bgp, subtype=0
*>i172.16.80.0/24 10.0.0.8 0 100 0 i
    UN=10.0.0.8 EC{65050:2011} label=81 type=bgp, subtype=0
Route Distinguisher: 172.16.100.1:2011
*>i10.210.210.0/24 10.0.0.9 0 100 0 65050 i
    UN=10.0.0.9 EC{65050:2011} label=80 type=bgp, subtype=0
*>i172.16.100.0/24 10.0.0.9 0 100 0 i
    UN=10.0.0.9 EC{65050:2011} label=80 type=bgp, subtype=0
```

- “show bgp ipv4 vpn x.x.x.x/x” for checking best path selected for specific VPNv4 destination

```
vyos@VyOS-RR1:~$ show bgp ipv4 vpn 10.0.0.100/32
BGP routing table entry for 10.80.80.1:1011:10.0.0.100/32
not allocated
Paths: (1 available, best #1)
  Advertised to non peer-group peers:
    10.0.0.7 10.0.0.8 10.0.0.9 10.0.0.10
    65035, (Received from a RR-client)
    10.0.0.8 from 10.0.0.8 (10.0.0.8)
    Origin incomplete, metric 0, localpref 100, valid, internal, best (First path
    ←received)
    Extended Community: RT:65035:1030
    Remote label: 80
    Last update: Tue Oct 19 13:45:32 202
```

Also we can verify how PE devices receives VPNv4 networks from the RRs and installing them to the specific customer VRFs:

- “show bgp ipv4 vpn summary” for checking iBGP neighbors against route-reflector devices:

```
vyos@VyOS-PE1:~$ show bgp ipv4 vpn summary
BGP router identifier 10.0.0.7, local AS number 65001 vrf-id 0
BGP table version 0
RIB entries 9, using 1728 bytes of memory
Peers 2, using 43 KiB of memory
Peer groups 1, using 64 bytes of memory

Neighbor      V      AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd  ←
←PfxSnt
10.0.0.1      4      4      65001    8812     8794           0      0      0      0      ←
←01:18:42      8      2
10.0.0.2      4      4      65001    8800     8792           0      0      0      0      ←
←6d02h27m      8      2
```

- “show bgp vrf all” for checking all the prefix learning on BGP within VRFs:

```
vyos@VyOS-PE1:~$ show bgp vrf all

Instance default:
No BGP prefixes displayed, 0 exist

Instance BLUE_SPOKE:
BGP table version is 8, local router ID is 10.50.50.1, vrf id 6
Default local pref 100, local AS 65001
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
* 10.50.50.0/24     0.0.0.0           0      32768 ?
*>                 0.0.0.0           0      32768 i
*> 10.80.80.0/24    10.0.0.8@0<      0       100    0 i
*                  10.0.0.8@0<      0       100    0 i
*> 10.0.0.80/32    10.50.50.2        0                   0 65035 i
*> 10.0.0.100/32   10.0.0.8@0<      0       100    0 65035 ?
*                  10.0.0.8@0<      0       100    0 65035 ?
```

- “show bgp vrf BLUE\_SPOKE summary” for checking EBGp neighbor information between PE and CE:

```
vyos@VyOS-PE1:~$ show bgp vrf BLUE_SPOKE summary

IPv4 Unicast Summary:
BGP router identifier 10.50.50.1, local AS number 65001 vrf-id 6
BGP table version 8
RIB entries 7, using 1344 bytes of memory
Peers 1, using 21 KiB of memory

Neighbor      V      AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd  PfxSnt
↔PfxSnt
10.50.50.2   4       65035   9019    9023           0    0           0    6d06h12m
↔      1      4

Total number of neighbors 1
```

- “show ip route vrf BLUE\_SPOKE” for viewing the RIB in our Spoke PE.  
Using this command we are also able to check the transport and customer label (inner/outer) for Hub network prefix (10.0.0.100/32):

```
vyos@VyOS-PE1:~$ show ip route vrf BLUE_SPOKE

Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
```

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```
VRF BLUE_SPOKE:
K>* 0.0.0.0/0 [255/8192] unreachable (ICMP unreachable), 03w0d23h
C>* 10.50.50.0/24 is directly connected, eth3, 03w0d23h
B> 10.80.80.0/24 [200/0] via 10.0.0.8 (vrf default) (recursive), label 80, weight 1,
↪04:22:00
*
via 172.16.90.1, eth0 (vrf default), label 24/80, weight 1,
↪04:22:00
B>* 10.0.0.80/32 [20/0] via 10.50.50.2, eth3, weight 1, 6d05h30m
B> 10.0.0.100/32 [200/0] via 10.0.0.8 (vrf default) (recursive), label 80, weight 1,
↪04:22:00
*
via 172.16.90.1, eth0 (vrf default), label 24/80,
↪weight 1, 04:22:00
```

- **“show bgp ipv4 vpn x.x.x.x/32” for checking the best-path to the** specific VPNv4 destination including extended community and remotelabel information. This procedure is the same on all Spoke nodes:

```
vyos@VyOS-PE1:~$ show bgp ipv4 vpn 10.0.0.100/32
BGP routing table entry for 10.80.80.1:1011:10.0.0.100/32
not allocated
Paths: (2 available, best #1)
Not advertised to any peer
65035
10.0.0.8 from 10.0.0.1 (10.0.0.8)
Origin incomplete, metric 0, localpref 100, valid, internal, best (Neighbor IP)
Extended Community: RT:65035:1030
Originator: 10.0.0.8, Cluster list: 10.0.0.1
Remote label: 80
Last update: Tue Oct 19 13:45:26 2021
65035
10.0.0.8 from 10.0.0.2 (10.0.0.8)
Origin incomplete, metric 0, localpref 100, valid, internal
Extended Community: RT:65035:1030
Originator: 10.0.0.8, Cluster list: 10.0.0.1
Remote label: 80
Last update: Wed Oct 13 12:39:34 202
```

Now, let’s check routing information on out Hub PE:

- **“show bgp ipv4 vpn summary” for checking iBGP neighbors again**  
VyOS-RR1/RR2

```
vyos@VyOS-PE2:~$ show bgp ipv4 vpn summary
BGP router identifier 10.0.0.8, local AS number 65001 vrf-id 0
BGP table version 0
RIB entries 9, using 1728 bytes of memory
Peers 2, using 43 KiB of memory
Peer groups 1, using 64 bytes of memory

Neighbor      V      AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd  ↪
↪PfxSnt
10.0.0.1      4      4      65001    15982    15949           0        0      0 05:41:28 ↪
```

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↔	6	4							
10.0.0.2		4	65001	9060	9054	0	0	0	6d06h47m ↵
↔	6	4							

Total number of neighbors

- “show bgp vrf all” for checking all the prefixes learning on BGP

```
vyos@VyOS-PE2:~$ show bgp vrf all

Instance default:
No BGP prefixes displayed, 0 exist

Instance BLUE_HUB:
BGP table version is 50, local router ID is 10.80.80.1, vrf id 8
Default local pref 100, local AS 65001
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes:  i - IGP, e - EGP, ? - incomplete

   Network          Next Hop          Metric LocPrf Weight Path
*> 10.50.50.0/24    10.0.0.7@0<      0       100     0 i
*                  10.0.0.7@0<      0       100     0 i
*> 10.60.60.0/24    10.0.0.10@0<     0       100     0 i
*                  10.0.0.10@0<    0       100     0 i
* 10.80.80.0/24     10.80.80.2       0                0 65035 ?
*                  0.0.0.0          0       32768 i
*>                  0.0.0.0          0       32768 ?
*> 10.110.110.0/24  172.16.80.2@9<   0                0 65050 i
*> 10.210.210.0/24  10.0.0.9@0<      0       100     0 65050 i
*                  10.0.0.9@0<      0       100     0 65050 i
*> 10.0.0.80/32     10.0.0.7@0<      0       100     0 65035 i
*                  10.0.0.7@0<      0       100     0 65035 i
*> 10.0.0.90/32     10.0.0.10@0<    0       100     0 65035 i
*                  10.0.0.10@0<    0       100     0 65035 i
*> 10.0.0.100/32    10.80.80.2       0                0 65035 ?
*> 172.16.80.0/24  0.0.0.0@9<       0       32768 ?
*                  0.0.0.0@9<       0       32768 i
*> 172.16.100.0/24  10.0.0.9@0<      0       100     0 i
*                  10.0.0.9@0<      0       100     0 i
```

- “show bgp vrf BLUE\_HUB summary” for checking EBGp neighbor  
CE Hub device

```
vyos@VyOS-PE2:~$ show bgp vrf BLUE_HUB summary

IPv4 Unicast Summary:
BGP router identifier 10.80.80.1, local AS number 65001 vrf-id 8
BGP table version 50
RIB entries 19, using 3648 bytes of memory
```

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Peers 1, using 21 KiB of memory

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
↪ PfxSnt									
10.80.80.2	4	65035	15954	15972		0	0	0	01w4d01h
↪ 2	10								

- “show ip route vrf BLUE\_HUB” to view the RIB in our Hub PE.

With this command we are able to check the transport and customer label (inner/outer) for network spokes prefixes 10.0.0.80/32 - 10.0.0.90/32

```
vyos@VyOS-PE2:~$ show ip route vrf BLUE_HUB
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
VRF BLUE_HUB:
K>* 0.0.0.0/0 [255/8192] unreachable (ICMP unreachable), 01w4d01h
B> 10.50.50.0/24 [200/0] via 10.0.0.7 (vrf default) (recursive), label 144, weight 1,
↪05:53:15
*
via 172.16.100.1, eth1 (vrf default), label 22/144, weight
↪1, 05:53:15
B> 10.60.60.0/24 [200/0] via 10.0.0.10 (vrf default) (recursive), label 144, weight 1,
↪05:53:15
*
via 172.16.110.1, eth0 (vrf default), label 23/144, weight
↪1, 05:53:15
C>* 10.80.80.0/24 is directly connected, eth3, 01w4d01h
B>* 10.110.110.0/24 [200/0] via 172.16.80.2, eth2 (vrf GREEN), weight 1, 01w4d01h
B> 10.210.210.0/24 [200/0] via 10.0.0.9 (vrf default) (recursive), label 144, weight 1,
↪05:53:15
*
via 172.16.100.1, eth1 (vrf default), label 18/144, weight
↪1, 05:53:15
*
via 172.16.110.1, eth0 (vrf default), label 22/144, weight
↪1, 05:53:15
B> 10.0.0.80/32 [200/0] via 10.0.0.7 (vrf default) (recursive), label 144, weight 1,
↪05:53:15
*
via 172.16.100.1, eth1 (vrf default), label 22/144, weight
↪1, 05:53:15
B> 10.0.0.90/32 [200/0] via 10.0.0.10 (vrf default) (recursive), label 144, weight 1,
↪05:53:15
*
via 172.16.110.1, eth0 (vrf default), label 23/144, weight
↪1, 05:53:15
B>* 10.0.0.100/32 [20/0] via 10.80.80.2, eth3, weight 1, 01w4d01h
B>* 172.16.80.0/24 [200/0] is directly connected, eth2 (vrf GREEN), weight 1, 01w4d01h
B> 172.16.100.0/24 [200/0] via 10.0.0.9 (vrf default) (recursive), label 144, weight 1,
↪05:53:15
*
via 172.16.100.1, eth1 (vrf default), label 18/144, weight
↪1, 05:53:15
*
via 172.16.110.1, eth0 (vrf default), label 22/144, weight
↪1, 05:53:15
```

- “show bgp ipv4 vpn x.x.x.x/32” for checking best-path,

extended community and remote label of specific destination

```
vyos@VyOS-PE2:~$ show bgp ipv4 vpn 10.0.0.80/32
BGP routing table entry for 10.50.50.1:1011:10.0.0.80/32
not allocated
Paths: (2 available, best #1)
  Not advertised to any peer
  65035
    10.0.0.7 from 10.0.0.1 (10.0.0.7)
    Origin IGP, metric 0, localpref 100, valid, internal, best (Neighbor IP)
    Extended Community: RT:65035:1011
    Originator: 10.0.0.7, Cluster list: 10.0.0.1
    Remote label: 144
    Last update: Tue Oct 19 13:45:30 2021
  65035
    10.0.0.7 from 10.0.0.2 (10.0.0.7)
    Origin IGP, metric 0, localpref 100, valid, internal
    Extended Community: RT:65035:1011
    Originator: 10.0.0.7, Cluster list: 10.0.0.1
    Remote label: 144
    Last update: Wed Oct 13 12:39:37 2021

vyos@VyOS-PE2:~$ show bgp ipv4 vpn 10.0.0.90/32
BGP routing table entry for 10.60.60.1:1011:10.0.0.90/32
not allocated
Paths: (2 available, best #1)
  Not advertised to any peer
  65035
    10.0.0.10 from 10.0.0.1 (10.0.0.10)
    Origin IGP, metric 0, localpref 100, valid, internal, best (Neighbor IP)
    Extended Community: RT:65035:1011
    Originator: 10.0.0.10, Cluster list: 10.0.0.1
    Remote label: 144
    Last update: Tue Oct 19 13:45:30 2021
  65035
    10.0.0.10 from 10.0.0.2 (10.0.0.10)
    Origin IGP, metric 0, localpref 100, valid, internal
    Extended Community: RT:65035:1011
    Originator: 10.0.0.10, Cluster list: 10.0.0.1
    Remote label: 144
    Last update: Wed Oct 13 12:45:44 2021
```

Finally, let's check the reachability between CEs:

- VyOS-CE1-SPOKE —> VyOS-CE-HUB

```
# check rib
vyos@VyOS-CE1-SPOKE:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
F - PBR, f - OpenFabric,
> - selected route, * - FIB route, q - queued, r - rejected, b - backup
```

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```

B 10.50.50.0/24 [20/0] via 10.50.50.1 inactive, weight 1, 6d07h53m
C>* 10.50.50.0/24 is directly connected, eth0, 09w0d00h
B>* 10.80.80.0/24 [20/0] via 10.50.50.1, eth0, weight 1, 6d07h53m
C>* 10.0.0.80/32 is directly connected, dum20, 09w0d00h
B>* 10.0.0.100/32 [20/0] via 10.50.50.1, eth0, weight 1, 6d07h53m

# check icmp
vyos@VyOS-CE1-SPOKE:~$ ping 10.0.0.100 interface 10.0.0.80
PING 10.0.0.100 (10.0.0.100) from 10.0.0.80 : 56(84) bytes of data.
64 bytes from 10.0.0.100: icmp_seq=1 ttl=62 time=6.52 ms
64 bytes from 10.0.0.100: icmp_seq=2 ttl=62 time=4.13 ms
64 bytes from 10.0.0.100: icmp_seq=3 ttl=62 time=4.04 ms
64 bytes from 10.0.0.100: icmp_seq=4 ttl=62 time=4.03 ms
^C
--- 10.0.0.100 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 8ms
rtt min/avg/max/mdev = 4.030/4.680/6.518/1.064 ms

# check network path
vyos@VyOS-CE1-SPOKE:~$ traceroute 10.0.0.100
traceroute to 10.0.0.100 (10.0.0.100), 30 hops max, 60 byte packets
 1 10.50.50.1 (10.50.50.1) 1.041 ms 1.252 ms 1.835 ms
 2 * * *
 3 10.0.0.100 (10.0.0.100) 9.225 ms 9.159 ms 9.121 m

```

- VyOS-CE-HUB ———> VyOS-CE1-SPOKE
- VyOS-CE-HUB ———> VyOS-CE2-SPOKE

```

# check rib
vyos@VyOS-CE-HUB:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

B>* 10.50.50.0/24 [20/0] via 10.80.80.1, eth0, weight 1, 6d08h04m
B>* 10.60.60.0/24 [20/0] via 10.80.80.1, eth0, weight 1, 6d08h35m
C>* 10.80.80.0/24 is directly connected, eth0, 01w6d07h
B>* 10.110.110.0/24 [20/0] via 10.80.80.1, eth0, weight 1, 01w4d02h
B>* 10.210.210.0/24 [20/0] via 10.80.80.1, eth0, weight 1, 6d08h35m
B>* 10.0.0.80/32 [20/0] via 10.80.80.1, eth0, weight 1, 6d08h04m
B>* 10.0.0.90/32 [20/0] via 10.80.80.1, eth0, weight 1, 6d08h35m
C>* 10.0.0.100/32 is directly connected, dum20, 01w6d07h
B>* 172.16.80.0/24 [20/0] via 10.80.80.1, eth0, weight 1, 01w4d02h
B>* 172.16.100.0/24 [20/0] via 10.80.80.1, eth0, weight 1, 6d08h35m

# check icmp
vyos@VyOS-CE-HUB:~$ ping 10.0.0.80 interface 10.0.0.100 c 4
PING 10.0.0.80 (10.0.0.80) from 10.0.0.100 : 56(84) bytes of data.
64 bytes from 10.0.0.80: icmp_seq=1 ttl=62 time=3.31 ms
64 bytes from 10.0.0.80: icmp_seq=2 ttl=62 time=4.23 ms

```

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```

64 bytes from 10.0.0.80: icmp_seq=3 ttl=62 time=3.89 ms
64 bytes from 10.0.0.80: icmp_seq=4 ttl=62 time=3.22 ms

--- 10.0.0.80 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 9ms
rtt min/avg/max/mdev = 3.218/3.661/4.226/0.421 ms

vyos@VyOS-CE-HUB:~$ ping 10.0.0.90 interface 10.0.0.100 c 4
PING 10.0.0.90 (10.0.0.90) from 10.0.0.100 : 56(84) bytes of data.
64 bytes from 10.0.0.90: icmp_seq=1 ttl=62 time=7.46 ms
64 bytes from 10.0.0.90: icmp_seq=2 ttl=62 time=4.43 ms
64 bytes from 10.0.0.90: icmp_seq=3 ttl=62 time=4.60 ms
^C
--- 10.0.0.90 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 6ms
rtt min/avg/max/mdev = 4.430/5.498/7.463/1.391 ms

# check network path
vyos@VyOS-CE-HUB:~$ traceroute 10.0.0.80
traceroute to 10.0.0.80 (10.0.0.80), 30 hops max, 60 byte packets
 1  10.80.80.1 (10.80.80.1)  1.563 ms  1.341 ms  1.075 ms
 2  * * *
 3  10.0.0.80 (10.0.0.80)  8.125 ms  8.019 ms  7.781 ms

vyos@VyOS-CE-HUB:~$ traceroute 10.0.0.90
traceroute to 10.0.0.90 (10.0.0.90), 30 hops max, 60 byte packets
 1  10.80.80.1 (10.80.80.1)  1.305 ms  1.137 ms  1.097 ms
 2  * * *
 3  * * *
 4  10.0.0.90 (10.0.0.90)  9.358 ms  9.325 ms  9.292 ms

```

- VyOS-CE2-SPOKE ———> VyOS-CE-HUB

```

# check rib
vyos@rt-ce2-SPOKE:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

B  10.60.60.0/24 [20/0] via 10.60.60.1 inactive, weight 1, 02w6d00h
C>* 10.60.60.0/24 is directly connected, eth0, 02w6d00h
B>* 10.80.80.0/24 [20/0] via 10.60.60.1, eth0, weight 1, 6d08h46m
C>* 10.0.0.90/32 is directly connected, dum20, 02w6d00h
B>* 10.0.0.100/32 [20/0] via 10.60.60.1, eth0, weight 1, 6d08h46m

# check icmp
vyos@rt-ce2-SPOKE:~$ ping 10.0.0.100 interface 10.0.0.90 c 4
PING 10.0.0.100 (10.0.0.100) from 10.0.0.90 : 56(84) bytes of data.
64 bytes from 10.0.0.100: icmp_seq=1 ttl=62 time=4.97 ms
64 bytes from 10.0.0.100: icmp_seq=2 ttl=62 time=4.45 ms

```

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```
64 bytes from 10.0.0.100: icmp_seq=3 ttl=62 time=4.20 ms
64 bytes from 10.0.0.100: icmp_seq=4 ttl=62 time=4.29 ms

--- 10.0.0.100 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 9ms
rtt min/avg/max/mdev = 4.201/4.476/4.971/0.309 ms

# check network path
vyos@rt-ce2-SPOKE:~$ traceroute 10.0.0.100
traceroute to 10.0.0.100 (10.0.0.100), 30 hops max, 60 byte packets
 1  10.60.60.1 (10.60.60.1)  1.343 ms  1.190 ms  1.152 ms
 2  * * *
 3  * * *
 4  10.0.0.100 (10.0.0.100)  7.504 ms  7.480 ms  7.488 ms
```

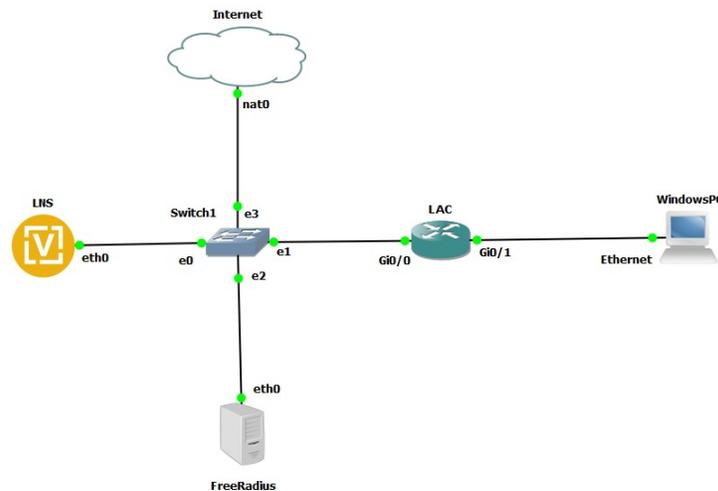
**Note:** At the moment, trace mpls doesn't show labels/paths. So we'll see \* \* \* for the transit routers of the mpls backbone.

## 12.10 PPPoE over L2TP

This document is to describe a basic setup using PPPoE over L2TP. LAC and LNS are components of the broadband topology. LAC - L2TP access concentrator LNS - L2TP Network Server LAC and LNS forms L2TP tunnel. LAC receives packets from PPPoE clients and forward them to LNS. LNS is the termination point that comes from PPP packets from the remote client.

In this example we use VyOS 1.5 as LNS and Cisco IOS as LAC. All users with domain **vyos.io** will be tunneled to LNS via L2TP.

### 12.10.1 Network Topology



## 12.10.2 Configurations

### LAC

```

aaa new-model
!
aaa authentication ppp default local
!
vpdn enable
vpdn aaa attribute nas-ip-address vpdn-nas
!
vpdn-group LAC
  request-dialin
  protocol l2tp
  domain vyos.io
  initiate-to ip 192.168.139.100
  source-ip 192.168.139.101
  local name LAC
  l2tp tunnel password 0 test123
!
bba-group pppoe MAIN-BBA
  virtual-template 1
!
interface GigabitEthernet0/0
  description To LNS
  ip address 192.168.139.101 255.255.255.0
  duplex auto
  speed auto
  media-type rj45
!
interface GigabitEthernet0/1
  description To PPPoE clients
  no ip address
  duplex auto
  speed auto
  media-type rj45
  pppoe enable group MAIN-BBA
!

```

### LNS

```

set interfaces ethernet eth0 address '192.168.139.100/24'
set nat source rule 100 outbound-interface name 'eth0'
set nat source rule 100 source address '10.0.0.0/24'
set nat source rule 100 translation address 'masquerade'
set protocols static route 0.0.0.0/0 next-hop 192.168.139.2
set vpn l2tp remote-access authentication mode 'radius'
set vpn l2tp remote-access authentication radius server 192.168.139.110 key 'radiustest'
set vpn l2tp remote-access client-ip-pool TEST-POOL range '10.0.0.2-10.0.0.100'
set vpn l2tp remote-access default-pool 'TEST-POOL'
set vpn l2tp remote-access gateway-address '10.0.0.1'

```

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```
set vpn l2tp remote-access lns host-name 'LAC'  
set vpn l2tp remote-access lns shared-secret 'test123'  
set vpn l2tp remote-access name-server '8.8.8.8'  
set vpn l2tp remote-access ppp-options disable-ccp
```

**Note:** This setup requires the Compression Control Protocol (CCP) being disabled, the command `set vpn l2tp remote-access ppp-options disable-ccp` accomplishes that.

## Client

In this lab we use Windows PPPoE client.

The screenshot shows the Windows Settings application with the 'Broadband Connection' window open. The title bar reads 'Settings' and 'Broadband Connection'. The main content area is titled 'Edit VPN connection' and includes the following fields and options:

- Connection name: A text box containing 'PPPoE'.
- Server name or address: An empty text box.
- VPN type: A dropdown menu set to 'Automatic'.
- Type of sign-in info: A dropdown menu set to 'User name and password'.
- User name (optional): A text box containing 'test@vyos.io'.
- Password (optional): A text box with masked characters (dots).
- Remember my sign-in info: A checked checkbox.
- Buttons: 'Save' and 'Cancel' buttons at the bottom right.

## Monitoring

Monitoring on LNS side

```
vyos@vyos:~$ show l2tp-server sessions
ifname | username | ip | ip6 | ip6-dp | calling-sid | rate-limit | state
↔| uptime | rx-bytes | tx-bytes
-----+-----+-----+-----+-----+-----+-----+-----
↔+-----+-----+-----+-----+-----+-----+-----+-----
l2tp0 | test@vyos.io | 10.0.0.2 | | | 192.168.139.101 | | active
↔| 00:00:35 | 188.4 KiB | 9.3 MiB
```

Monitoring on LAC side

```
Router#show pppoe session
  1 session in FORWARDED (FWDED) State
  1 session total
Uniq ID  PPPoE  RemMAC      Port          VT  VA      State
      SID  LocMAC
      1    1  000c.290b.20a6  Gi0/1        1  N/A    FWDED
      0c58.88ac.0001

Router#show l2tp
L2TP Tunnel and Session Information Total tunnels 1 sessions 1

LocTunID  RemTunID  Remote Name  State  Remote Address  Sessn L2TP Class/
Count  VPDN Group
23238    2640     LAC          est    192.168.139.100  1     LAC

LocID     RemID     TunID       Username, Intf/
Vcid, Circuit  State  Last Chg Uniq ID
25641    25822    23238      test@vyos.io, Gi0/1  est    00:05:36  1
```

Monitoring on RADIUS Server side

```
root@Radius:~# cat /var/log/freeradius/radacct/192.168.139.100/detail-20240221
Wed Feb 21 13:37:17 2024
  User-Name = "test@vyos.io"
  NAS-Port = 0
  NAS-Port-Id = "l2tp0"
  NAS-Port-Type = Virtual
  Service-Type = Framed-User
  Framed-Protocol = PPP
  Calling-Station-Id = "192.168.139.101"
  Called-Station-Id = "192.168.139.100"
  Acct-Status-Type = Start
  Acct-Authentic = RADIUS
  Acct-Session-Id = "45c731e169d9a4f1"
  Acct-Session-Time = 0
  Acct-Input-Octets = 0
  Acct-Output-Octets = 0
  Acct-Input-Packets = 0
  Acct-Output-Packets = 0
  Acct-Input-Gigawords = 0
```

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```
Acct-Output-Gigawords = 0
Framed-IP-Address = 10.0.0.2
NAS-IP-Address = 192.168.139.100
Event-Timestamp = "Feb 21 2024 13:37:17 UTC"
Tmp-String-9 = "ai:"
Acct-Unique-Session-Id = "ea6a1089816f19c0d0f1819bc61c3318"
Timestamp = 1708522637
```

## 12.11 Inter-VRF Routing over VRF Lite

**Virtual Routing and Forwarding** is a technology that allow multiple instance of a routing table to exist within a single device. One of the key aspect of **VRFs** is that do not share the same routes or interfaces, therefore packets are forwarded between interfaces that belong to the same VRF only.

Any information related to a VRF is not exchanged between devices -or in the same device- by default, this is a technique called **VRF-Lite**.

Keep networks isolated is -in general- a good principle, but there are cases where you might need that some network can access other in a different VRF.

The scope of this document is to cover such cases in a dynamic way without the use of MPLS-LDP.

General information about L3VPNs can be found in the [L3VPN VRFs](#) chapter.

### 12.11.1 Overview

Let's say we have a requirement to have multiple networks.

- LAN 1
- LAN 2
- Management
- Internet

Both LANs have to be able to route between each other, both will have managed devices through a dedicated management network and both will need Internet access yet the LAN2 will need access to some set of outside networks, not all. The management network will need access to both LANs but cannot have access to/from the outside.

This scenario could be a nightmare applying regular routing and might need filtering in multiple interfaces.

A simple solution could be using different routing tables, or VRFs for all the networks so we can keep the routing restrictions. But for us to route between the different VRFs we would need a cable or a logical connection between each other:

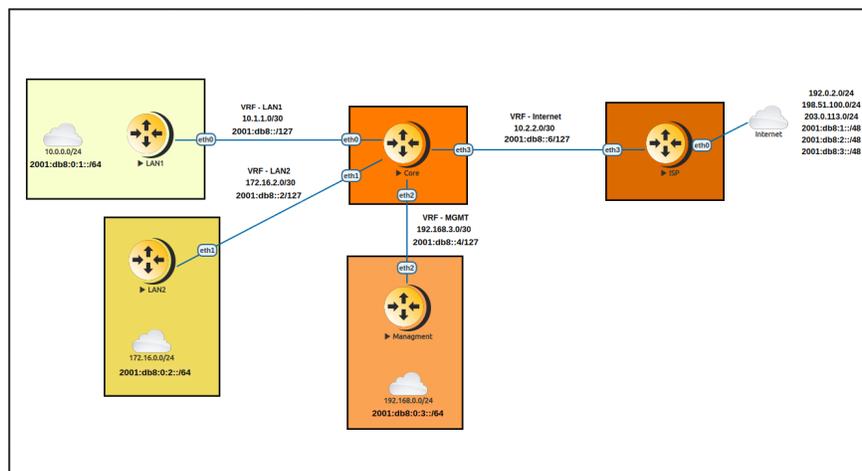
- One cable/logical connection between LAN1 and LAN2
- One cable/logical connection between LAN1 and Internet
- One cable/logical connection between LAN2 and Internet
- One cable/logical connection between LAN1 and Management
- One cable/logical connection between LAN2 and Management

As we can see this is unpractical.

To address this scenario we will use to our advantage an extension of the BGP routing protocol that will help us in the “Export” between VRFs without the need for MPLS.

MP-BGP or MultiProtocol BGP introduces two main concepts to solve this limitation: - Route Distinguisher (RD): Is used to distinguish between different VRFs –called VPNs- inside the BGP Process. The RD is appended to each IPv4 Network that is advertised into BGP for that VPN making it a unique VPNv4 route. - Route Target (RT): This is an extended BGP community append to the VPNv4 route in the Import/Export process. When a route passes from the VRF routing table into the BGP process it will add the configured export extended community(ies) for that VPN. When that route needs to go from BGP into the VRF routing table will only pass if that given VPN import policy matches any of the appended community(ies) into that prefix.

### 12.11.2 Topology



#### IP Schema

Device-A	Device-B	IPv4 Network	IPv6 Network
Core	LAN1	10.1.1.0/30	2001:db8::/127
Core	LAN2	172.16.2.0/30	2001:db8::2/127
Core	Management	192.168.3.0/30	2001:db8::4/127
Core	ISP	10.2.2.0/30	2001:db8::6/127

#### RD & RT Schema

VRF	RD	RT
LAN1	64496:1	64496:1
LAN2	64496:2	64496:2
Management	64496:50	64496:50
Internet	64496:100	64496:100

### 12.11.3 Configurations

**Note:** We use a static route configuration in between the Core and each LAN and Management router, and BGP between the Core router and the ISP router but any dynamic routing protocol can be used.

#### Remote Networks

The following template configuration can be used in each remote router based in our topology.

```
# Interface Configuration
set interface eth eth<N> address <IP ADDRESS/CIDR>

# Static default route back to Core
set protocols static route 0.0.0.0/0 next-hop <CORE IP ADDRESS>
```

#### Core Router

##### Step 1: VRF and Configurations to remote networks

- Configuration

Set the VRF name and Table ID, set interface address and bind it to the VRF. Last add the static route to the remote network.

```
# VRF name and table ID (MANDATORY)
set vrf name <VRF> table <ID>

# Interface Configuration
set interface eth eth<N> address <IP ADDRESS/CIDR>

# Assign interface to VRF
set interface eth eth<N> vrf <VRF>

# Static route to remote Network
set vrf name <VRF> protocols static route <NETWORK/CIDR> next-hop <REMOTE IP ADDRESS>
```

- Verification

Checking the routing table of the VRF should reveal both static and connected entries active. A PING test between the Core and remote router is a way to validate connectivity within the VRF.

```
# show ip route vrf <VRF>
# show ipv6 route vrf <VRF>

vyos@Core:~$ show ip route vrf LAN1
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
```

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```

t - trapped, o - offload failure

VRF LAN1:
S>* 10.0.0.0/24 [1/0] via 10.1.1.2, eth0, weight 1, 00:05:41
C>* 10.1.1.0/30 is directly connected, eth0, 00:05:44

vyos@Core:~$ show ipv6 route vrf LAN1
Codes: K - kernel route, C - connected, S - static, R - RIPng,
       O - OSPFv3, I - IS-IS, B - BGP, N - NHRP, T - Table,
       v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

VRF LAN1:
C>* 2001:db8::/127 is directly connected, eth0, 00:18:43
S>* 2001:db8:0:1::/64 [1/0] via 2001:db8::1, eth0, weight 1, 00:16:03
C>* fe80::/64 is directly connected, eth0, 00:18:43

# ping <DESTINATION> vrf <VRF>

vyos@Core:~$ ping 10.1.1.2 vrf LAN1
PING 10.1.1.2 (10.1.1.2) 56(84) bytes of data.
64 bytes from 10.1.1.2: icmp_seq=1 ttl=64 time=1.52 ms
64 bytes from 10.1.1.2: icmp_seq=2 ttl=64 time=0.830 ms
^C
--- 10.1.1.2 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 0.830/1.174/1.518/0.344 ms
vyos@Core:~$ ping 10.0.0.1 vrf LAN1
PING 10.0.0.1 (10.0.0.1) 56(84) bytes of data.
64 bytes from 10.0.0.1: icmp_seq=1 ttl=64 time=0.785 ms
64 bytes from 10.0.0.1: icmp_seq=2 ttl=64 time=0.948 ms
^C
--- 10.0.0.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 0.785/0.866/0.948/0.081 ms

vyos@Core:~$ ping 2001:db8:0:1::1 vrf LAN1
PING 2001:db8:0:1::1(2001:db8:0:1::1) 56 data bytes
64 bytes from 2001:db8:0:1::1: icmp_seq=1 ttl=64 time=3.04 ms
64 bytes from 2001:db8:0:1::1: icmp_seq=2 ttl=64 time=1.04 ms
64 bytes from 2001:db8:0:1::1: icmp_seq=3 ttl=64 time=0.925 ms
^C
--- 2001:db8:0:1::1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 0.925/1.665/3.035/0.969 ms

```

**Step 2: BGP Configuration for VRF-Lite**

- Configuration

Setting BGP global local-as as well inside the VRF. Redistribute static routes to inject configured networks into the BGP process but still inside the VRF.

```
# set BGP global local-as
set protocols bgp system-as <ASN>

# set BGP VRF local-as and redistribution
set vrf name <VRF> protocols bgp system-as <ASN>
set vrf name <VRF> protocols bgp address-family <AF IPv4/IPv6> redistribute static
```

- Verification

Check the BGP VRF table and verify if the static routes are injected showing the correct next-hop information.

```
# show ip bgp vrf <VRF>
# show bgp vrf <VRF> ipv6

vyos@Core:~$ show ip bgp vrf LAN1
BGP table version is 3, local router ID is 10.1.1.1, vrf id 8
Default local pref 100, local AS 64496
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

   Network          Next Hop           Metric LocPrf Weight Path
*> 10.0.0.0/24      10.1.1.2           0         32768 ?

vyos@Core# run show bgp vrf LAN1 ipv6
BGP table version is 13, local router ID is 10.1.1.1, vrf id 8
Default local pref 100, local AS 64496
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

   Network          Next Hop           Metric LocPrf Weight Path
*> 2001:db8:0:1::/64
                        2001:db8::1       0         32768 ?
```

### Step 3: VPN Configuration

- Configuration

Within the VRF we set the Route-Distinguisher (RD) and Route-Targets (RT), then we enable the export/import VPN.

```
# set Route-distinguisher
set vrf name <VRF> protocols bgp address-family <AF IPv4/IPv6> rd vpn export '<RD>'

# set route-target for import/export
# Note: RT are a list that can be more than one community between apostrophe
#       and separated by blank space. Ex: '<RT:1> <RT:2> <RT:3>
set vrf name <VRF> protocols bgp address-family <AF IPv4/IPv6> route-target vpn export '
↳<RT:Export>'
set vrf name <VRF> protocols bgp address-family <AF IPv4/IPv6> route-target vpn import '
↳<RT:Import>'

# Enable VPN export/import under this VRF
set vrf name <VRF> protocols bgp address-family <AF IPv4/IPv6> export vpn
set vrf name <VRF> protocols bgp address-family <AF IPv4/IPv6> import vpn
```

A key point to understand is that if we need two VRFs to communicate between each other EXPORT rt from VRF1 has to be in the IMPORT rt list from VRF2. But this is only in ONE direction, to complete the communication the EXPORT rt from VRF2 has to be in the IMPORT rt list from VRF1.

There are some cases where this is not needed -for example, in some DDoS appliance- but most inter-vrf routing designs use the above configurations.

- Verification

After configured all the VRFs involved in this topology we take a deeper look at both BGP and Routing table for the VRF LAN1

```
# show ip bgp vrf <VRF>
# show bgp vrf <VRF> ipv6

vyos@Core# run show ip bgp vrf LAN1
BGP table version is 53, local router ID is 10.1.1.1, vrf id 8
Default local pref 100, local AS 64496
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 0.0.0.0/0	10.2.2.2@7<			0	64497 i
*> 10.0.0.0/24	10.1.1.2	0		32768	?
*> 10.2.2.0/30	10.2.2.2@7<	0		0	64497 ?
*> 192.0.2.0/24	10.2.2.2@7<	0		0	64497 ?
*> 192.168.0.0/24	192.168.3.2@11<	0		32768	?
*> 198.51.100.0/24	10.2.2.2@7<	0		0	64497 ?
*> 203.0.113.0/24	10.2.2.2@7<	0		0	64497 ?

```
vyos@Core# run show bgp vrf LAN1 ipv6
```

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```

BGP table version is 13, local router ID is 10.1.1.1, vrf id 8
Default local pref 100, local AS 64496
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @NNN nexthop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

Network          Next Hop          Metric LocPrf Weight Path
*> ::/0          fe80::5200:ff:fe02:3@7<
                                     0 64497 i
*> 2001:db8::6/127 fe80::5200:ff:fe02:3@7<
                                     0          0 64497 ?
*> 2001:db8:0:1::/64
                2001:db8::1          0          32768 ?
*> 2001:db8:0:3::/64
                2001:db8::5@11<    0          32768 ?
*> 2001:db8:1::/48 fe80::5200:ff:fe02:3@7<
                                     0          0 64497 ?
*> 2001:db8:2::/48 fe80::5200:ff:fe02:3@7<
                                     0          0 64497 ?
*> 2001:db8:3::/48 fe80::5200:ff:fe02:3@7<
                                     0          0 64497 ?

# show ip route vrf <VRF>
# show ipv6 route vrf <VRF>

vyos@Core:~$ show ip route vrf LAN1
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

VRF LAN1:
B>* 0.0.0.0/0 [20/0] via 10.2.2.2, eth3 (vrf Internet), weight 1, 00:00:38
S>* 10.0.0.0/24 [1/0] via 10.1.1.2, eth0, weight 1, 00:29:57
C>* 10.1.1.0/30 is directly connected, eth0, 00:29:59
B  10.2.2.0/30 [20/0] via 10.2.2.2 (vrf Internet) inactive, weight 1, 00:00:38
B>* 172.16.0.0/24 [20/0] via 172.16.2.2, eth1 (vrf LAN2), weight 1, 00:00:38
B>* 192.0.2.0/24 [20/0] via 10.2.2.2, eth3 (vrf Internet), weight 1, 00:00:38
B>* 198.51.100.0/24 [20/0] via 10.2.2.2, eth3 (vrf Internet), weight 1, 00:00:38
B>* 203.0.113.0/24 [20/0] via 10.2.2.2, eth3 (vrf Internet), weight 1, 00:00:38

vyos@Core# run show ipv6 route vrf LAN1
Codes: K - kernel route, C - connected, S - static, R - RIPng,
       O - OSPFv3, I - IS-IS, B - BGP, N - NHRP, T - Table,
       v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup

```

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```

t - trapped, o - offload failure

VRF LAN1:
B>* ::/0 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1, 00:07:50
C>* 2001:db8::/127 is directly connected, eth0, 05:33:43
B>* 2001:db8::6/127 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1,
↳00:07:50
S>* 2001:db8:0:1::/64 [1/0] via 2001:db8::1, eth0, weight 1, 05:31:03
B>* 2001:db8:0:3::/64 [20/0] via 2001:db8::5, eth2 (vrf Management), weight 1, 00:07:50
B>* 2001:db8:1::/48 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1,
↳00:07:50
B>* 2001:db8:2::/48 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1,
↳00:07:50
B>* 2001:db8:3::/48 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1,
↳00:07:50
C>* fe80::/64 is directly connected, eth0, 05:33:43

```

As we can see in the BGP table any imported route has been injected with a “@” followed by the VPN id; In the routing table of the VRF, if the route was installed, we can see -between round brackets- the exported VRF table.

#### Step 4: End to End verification

Now we perform some end-to-end testing

- From Management to LAN1/LAN2

```

vyos@Management:~$ ping 10.0.0.1 source-address 192.168.0.1
PING 10.0.0.1 (10.0.0.1) from 192.168.0.1 : 56(84) bytes of data.
64 bytes from 10.0.0.1: icmp_seq=1 ttl=63 time=1.93 ms
64 bytes from 10.0.0.1: icmp_seq=2 ttl=63 time=2.12 ms
64 bytes from 10.0.0.1: icmp_seq=3 ttl=63 time=2.12 ms
^C
--- 10.0.0.1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2005ms
rtt min/avg/max/mdev = 1.931/2.056/2.123/0.088 ms
vyos@Management:~$ ping 172.16.0.1 source-address 192.168.0.1
PING 172.16.0.1 (172.16.0.1) from 192.168.0.1 : 56(84) bytes of data.
64 bytes from 172.16.0.1: icmp_seq=1 ttl=63 time=1.62 ms
64 bytes from 172.16.0.1: icmp_seq=2 ttl=63 time=1.75 ms
^C
--- 172.16.0.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 1.621/1.686/1.752/0.065 ms
vyos@Management:~$ ping 2001:db8:0:1::1 source-address 2001:db8:0:3::1
PING 2001:db8:0:1::1(2001:db8:0:1::1) from 2001:db8:0:3::1 : 56 data bytes
64 bytes from 2001:db8:0:1::1: icmp_seq=1 ttl=63 time=2.44 ms
64 bytes from 2001:db8:0:1::1: icmp_seq=2 ttl=63 time=2.40 ms
64 bytes from 2001:db8:0:1::1: icmp_seq=3 ttl=63 time=2.41 ms
^C
--- 2001:db8:0:1::1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 2.399/2.418/2.442/0.017 ms

```

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```
vyos@Management:~$ ping 2001:db8:0:2::1 source-address 2001:db8:0:3::1
PING 2001:db8:0:2::1(2001:db8:0:2::1) from 2001:db8:0:3::1 : 56 data bytes
64 bytes from 2001:db8:0:2::1: icmp_seq=1 ttl=63 time=1.66 ms
64 bytes from 2001:db8:0:2::1: icmp_seq=2 ttl=63 time=1.99 ms
64 bytes from 2001:db8:0:2::1: icmp_seq=3 ttl=63 time=1.88 ms
64 bytes from 2001:db8:0:2::1: icmp_seq=4 ttl=63 time=2.32 ms
^C
--- 2001:db8:0:2::1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 1.660/1.960/2.315/0.236 ms
```

- From Management to Outside (fails as intended)

```
vyos@Management:~$ show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

S>* 0.0.0.0/0 [1/0] via 192.168.3.1, eth2, weight 1, 00:01:58
C>* 192.168.0.0/24 is directly connected, dum0, 00:02:05
C>* 192.168.3.0/30 is directly connected, eth2, 00:02:03
vyos@Management:~$ ping 192.0.2.1
PING 192.0.2.1 (192.0.2.1) 56(84) bytes of data.
From 192.168.3.1 icmp_seq=1 Destination Net Unreachable
From 192.168.3.1 icmp_seq=2 Destination Net Unreachable
^C
--- 192.0.2.1 ping statistics ---
2 packets transmitted, 0 received, +2 errors, 100% packet loss, time 1002ms

vyos@Management:~$ ping 195.51.100.1
PING 195.51.100.1 (195.51.100.1) 56(84) bytes of data.
From 192.168.3.1 icmp_seq=1 Destination Net Unreachable
From 192.168.3.1 icmp_seq=2 Destination Net Unreachable
From 192.168.3.1 icmp_seq=3 Destination Net Unreachable
^C
--- 195.51.100.1 ping statistics ---
3 packets transmitted, 0 received, +3 errors, 100% packet loss, time 2003ms

vyos@Management:~$ ping 2001:db8:1::1
PING 2001:db8:1::1(2001:db8:1::1) 56 data bytes
From 2001:db8::4 icmp_seq=1 Destination unreachable: No route
From 2001:db8::4 icmp_seq=2 Destination unreachable: No route
^C
--- 2001:db8:1::1 ping statistics ---
2 packets transmitted, 0 received, +2 errors, 100% packet loss, time 1002ms

vyos@Management:~$ ping 2001:db8:2::1
PING 2001:db8:2::1(2001:db8:2::1) 56 data bytes
From 2001:db8::4 icmp_seq=1 Destination unreachable: No route
```

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```
From 2001:db8::4 icmp_seq=2 Destination unreachable: No route
^C
--- 2001:db8:2::1 ping statistics ---
2 packets transmitted, 0 received, +2 errors, 100% packet loss, time 1002ms
```

- LAN1 to Outside

```
vyos@LAN1:~$ ping 192.0.2.1 source-address 10.0.0.1
PING 192.0.2.1 (192.0.2.1) from 10.0.0.1 : 56(84) bytes of data.
64 bytes from 192.0.2.1: icmp_seq=1 ttl=63 time=1.47 ms
64 bytes from 192.0.2.1: icmp_seq=2 ttl=63 time=1.41 ms
64 bytes from 192.0.2.1: icmp_seq=3 ttl=63 time=1.80 ms
^C
--- 192.0.2.1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 1.414/1.563/1.803/0.171 ms
vyos@LAN1:~$ ping 198.51.100.1 source-address 10.0.0.1
PING 198.51.100.1 (198.51.100.1) from 10.0.0.1 : 56(84) bytes of data.
64 bytes from 198.51.100.1: icmp_seq=1 ttl=63 time=1.71 ms
64 bytes from 198.51.100.1: icmp_seq=2 ttl=63 time=1.83 ms
^C
--- 198.51.100.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 1.705/1.766/1.828/0.061 ms
vyos@LAN1:~$ ping 203.0.113.1 source-address 10.0.0.1
PING 203.0.113.1 (203.0.113.1) from 10.0.0.1 : 56(84) bytes of data.
64 bytes from 203.0.113.1: icmp_seq=1 ttl=63 time=1.25 ms
64 bytes from 203.0.113.1: icmp_seq=2 ttl=63 time=1.88 ms
^C
--- 203.0.113.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1003ms
rtt min/avg/max/mdev = 1.249/1.566/1.884/0.317 ms
vyos@LAN1:~$ ping 2001:db8:1::1 source-address 2001:db8:0:1::1
PING 2001:db8:1::1(2001:db8:1::1) from 2001:db8:0:1::1 : 56 data bytes
64 bytes from 2001:db8:1::1: icmp_seq=1 ttl=63 time=2.35 ms
64 bytes from 2001:db8:1::1: icmp_seq=2 ttl=63 time=2.29 ms
64 bytes from 2001:db8:1::1: icmp_seq=3 ttl=63 time=2.22 ms
^C
--- 2001:db8:1::1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2004ms
rtt min/avg/max/mdev = 2.215/2.285/2.352/0.055 ms
vyos@LAN1:~$ ping 2001:db8:2::1 source-address 2001:db8:0:1::1
PING 2001:db8:2::1(2001:db8:2::1) from 2001:db8:0:1::1 : 56 data bytes
64 bytes from 2001:db8:2::1: icmp_seq=1 ttl=63 time=1.37 ms
64 bytes from 2001:db8:2::1: icmp_seq=2 ttl=63 time=2.68 ms
64 bytes from 2001:db8:2::1: icmp_seq=3 ttl=63 time=2.00 ms
^C
--- 2001:db8:2::1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 1.367/2.015/2.679/0.535 ms
```

**Note:** we are using “source-address” option cause we are not redistributing connected interfaces into BGP on the Core

router hence there is no comeback route and ping will fail.

- LAN1 to LAN2

```
vyos@LAN1:~$ ping 172.16.0.1 source-address 10.0.0.1
PING 172.16.0.1 (172.16.0.1) from 10.0.0.1 : 56(84) bytes of data.
64 bytes from 172.16.0.1: icmp_seq=1 ttl=63 time=3.00 ms
64 bytes from 172.16.0.1: icmp_seq=2 ttl=63 time=2.20 ms
^C
--- 172.16.0.1 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 2.199/2.600/3.001/0.401 ms
vyos@LAN1:~$ ping 2001:db8:0:2::1 source 2001:db8:0:1::1
PING 2001:db8:0:2::1(2001:db8:0:2::1) from 2001:db8:0:1::1 : 56 data bytes
64 bytes from 2001:db8:0:2::1: icmp_seq=1 ttl=63 time=4.82 ms
64 bytes from 2001:db8:0:2::1: icmp_seq=2 ttl=63 time=1.95 ms
64 bytes from 2001:db8:0:2::1: icmp_seq=3 ttl=63 time=1.98 ms
^C
--- 2001:db8:0:2::1 ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 1.949/2.915/4.815/1.343 ms
```

## 12.11.4 Conclusions

Inter-VRF routing is a well-known solution to address complex routing scenarios that enable -in a dynamic way- to leak routes between VRFs. It is recommended to take special consideration while designing route-targets and its application as it can minimize future interventions while creating a new VRF will automatically take the desired effect in its propagation.

## 12.11.5 Appendix-A

### Full configuration from all devices

- Core

```
set interfaces ethernet eth0 address '10.1.1.1/30'
set interfaces ethernet eth0 address '2001:db8::/127'
set interfaces ethernet eth0 vrf 'LAN1'
set interfaces ethernet eth1 address '172.16.2.1/30'
set interfaces ethernet eth1 address '2001:db8::2/127'
set interfaces ethernet eth1 vrf 'LAN2'
set interfaces ethernet eth2 address '192.168.3.1/30'
set interfaces ethernet eth2 address '2001:db8::4/127'
set interfaces ethernet eth2 vrf 'Management'
set interfaces ethernet eth3 address '10.2.2.1/30'
set interfaces ethernet eth3 address '2001:db8::6/127'
set interfaces ethernet eth3 vrf 'Internet'
set protocols bgp address-family ipv4-unicast
set protocols bgp system-as '64496'
set vrf name Internet protocols bgp address-family ipv4-unicast export vpn
set vrf name Internet protocols bgp address-family ipv4-unicast import vpn
```

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```

set vrf name Internet protocols bgp address-family ipv4-unicast rd vpn export '64496:100'
set vrf name Internet protocols bgp address-family ipv4-unicast route-target vpn export
↳ '64496:100'
set vrf name Internet protocols bgp address-family ipv4-unicast route-target vpn import
↳ '64496:1 64496:2'
set vrf name Internet protocols bgp address-family ipv6-unicast export vpn
set vrf name Internet protocols bgp address-family ipv6-unicast import vpn
set vrf name Internet protocols bgp address-family ipv6-unicast rd vpn export '64496:100'
set vrf name Internet protocols bgp address-family ipv6-unicast route-target vpn export
↳ '64496:100'
set vrf name Internet protocols bgp address-family ipv6-unicast route-target vpn import
↳ '64496:1 64496:2'
set vrf name Internet protocols bgp system-as '64496'
set vrf name Internet protocols bgp neighbor 10.2.2.2 address-family ipv4-unicast
set vrf name Internet protocols bgp neighbor 10.2.2.2 remote-as '64497'
set vrf name Internet protocols bgp neighbor 2001:db8::7 address-family ipv6-unicast
set vrf name Internet protocols bgp neighbor 2001:db8::7 remote-as '64497'
set vrf name Internet table '104'
set vrf name LAN1 protocols bgp address-family ipv4-unicast export vpn
set vrf name LAN1 protocols bgp address-family ipv4-unicast import vpn
set vrf name LAN1 protocols bgp address-family ipv4-unicast rd vpn export '64496:1'
set vrf name LAN1 protocols bgp address-family ipv4-unicast redistribute static
set vrf name LAN1 protocols bgp address-family ipv4-unicast route-target vpn export
↳ '64496:1'
set vrf name LAN1 protocols bgp address-family ipv4-unicast route-target vpn import
↳ '64496:100 64496:50 64496:2'
set vrf name LAN1 protocols bgp address-family ipv6-unicast export vpn
set vrf name LAN1 protocols bgp address-family ipv6-unicast import vpn
set vrf name LAN1 protocols bgp address-family ipv6-unicast rd vpn export '64496:1'
set vrf name LAN1 protocols bgp address-family ipv6-unicast redistribute static
set vrf name LAN1 protocols bgp address-family ipv6-unicast route-target vpn export
↳ '64496:1'
set vrf name LAN1 protocols bgp address-family ipv6-unicast route-target vpn import
↳ '64496:100 64496:50 64496:2'
set vrf name LAN1 protocols bgp system-as '64496'
set vrf name LAN1 protocols static route 10.0.0.0/24 next-hop 10.1.1.2
set vrf name LAN1 protocols static route6 2001:db8:0:1::/64 next-hop 2001:db8::1
set vrf name LAN1 table '101'
set vrf name LAN2 protocols bgp address-family ipv4-unicast export vpn
set vrf name LAN2 protocols bgp address-family ipv4-unicast import vpn
set vrf name LAN2 protocols bgp address-family ipv4-unicast rd vpn export '64496:2'
set vrf name LAN2 protocols bgp address-family ipv4-unicast redistribute static
set vrf name LAN2 protocols bgp address-family ipv4-unicast route-target vpn export
↳ '64496:2'
set vrf name LAN2 protocols bgp address-family ipv4-unicast route-target vpn import
↳ '64496:100 64496:50 64496:1'
set vrf name LAN2 protocols bgp address-family ipv6-unicast export vpn
set vrf name LAN2 protocols bgp address-family ipv6-unicast import vpn
set vrf name LAN2 protocols bgp address-family ipv6-unicast rd vpn export '64496:2'
set vrf name LAN2 protocols bgp address-family ipv6-unicast redistribute static
set vrf name LAN2 protocols bgp address-family ipv6-unicast route-target vpn export
↳ '64496:2'

```

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```

set vrf name LAN2 protocols bgp address-family ipv6-unicast route-target vpn import
↪ '64496:100 64496:50 64496:1'
set vrf name LAN2 protocols bgp system-as '64496'
set vrf name LAN2 protocols static route 172.16.0.0/24 next-hop 172.16.2.2
set vrf name LAN2 protocols static route6 2001:db8:0:2::/64 next-hop 2001:db8::3
set vrf name LAN2 table '102'
set vrf name Management protocols bgp address-family ipv4-unicast export vpn
set vrf name Management protocols bgp address-family ipv4-unicast import vpn
set vrf name Management protocols bgp address-family ipv4-unicast rd vpn export '64496:50
↪ '
set vrf name Management protocols bgp address-family ipv4-unicast redistribute static
set vrf name Management protocols bgp address-family ipv4-unicast route-target vpn↵
↪ export '64496:50'
set vrf name Management protocols bgp address-family ipv4-unicast route-target vpn↵
↪ import '64496:1 64496:2'
set vrf name Management protocols bgp address-family ipv6-unicast export vpn
set vrf name Management protocols bgp address-family ipv6-unicast import vpn
set vrf name Management protocols bgp address-family ipv6-unicast rd vpn export '64496:50
↪ '
set vrf name Management protocols bgp address-family ipv6-unicast redistribute static
set vrf name Management protocols bgp address-family ipv6-unicast route-target vpn↵
↪ export '64496:50'
set vrf name Management protocols bgp address-family ipv6-unicast route-target vpn↵
↪ import '64496:1 64496:2'
set vrf name Management protocols bgp system-as '64496'
set vrf name Management protocols static route 192.168.0.0/24 next-hop 192.168.3.2
set vrf name Management protocols static route6 2001:db8:0:3::/64 next-hop 2001:db8::5
set vrf name Management table '103'

```

- LAN1

```

set interfaces dummy dum0 address '10.0.0.1/24'
set interfaces dummy dum0 address '2001:db8:0:1::1/64'
set interfaces ethernet eth0 address '10.1.1.2/30'
set interfaces ethernet eth0 address '2001:db8::1/127'
set protocols static route 0.0.0.0/0 next-hop 10.1.1.1
set protocols static route6 ::/0 next-hop 2001:db8::*

```

- LAN2

```

set interfaces dummy dum0 address '172.16.0.1/24'
set interfaces dummy dum0 address '2001:db8:0:2::1/64'
set interfaces ethernet eth0 hw-id '50:00:00:03:00:00'
set interfaces ethernet eth1 address '172.16.2.2/30'
set interfaces ethernet eth1 address '2001:db8::3/127'
set protocols static route 0.0.0.0/0 next-hop 172.16.2.1
set protocols static route6 ::/0 next-hop 2001:db8::2

```

- Management

```

set interfaces dummy dum0 address '192.168.0.1/24'
set interfaces dummy dum0 address '2001:db8:0:3::1/64'
set interfaces ethernet eth2 address '192.168.3.2/30'

```

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```
set interfaces ethernet eth2 address '2001:db8::5/127'
set protocols static route 0.0.0.0/0 next-hop 192.168.3.1
set protocols static route6 ::/0 next-hop 2001:db8::4
```

- ISP

```
set interfaces dummy dum0 address '192.0.2.1/24'
set interfaces dummy dum0 address '2001:db8:1::1/48'
set interfaces dummy dum1 address '198.51.100.1/24'
set interfaces dummy dum1 address '2001:db8:2::1/48'
set interfaces dummy dum2 address '203.0.113.1/24'
set interfaces dummy dum2 address '2001:db8:3::1/48'
set interfaces ethernet eth3 address '10.2.2.2/30'
set interfaces ethernet eth3 address '2001:db8::7/127'
set protocols bgp address-family ipv4-unicast redistribute connected
set protocols bgp address-family ipv6-unicast redistribute connected
set protocols bgp system-as '64497'
set protocols bgp neighbor 10.2.2.1 address-family ipv4-unicast default-originate
set protocols bgp neighbor 10.2.2.1 remote-as '64496'
set protocols bgp neighbor 2001:db8::6 address-family ipv6-unicast default-originate
set protocols bgp neighbor 2001:db8::6 remote-as '64496'
set protocols static route 0.0.0.0/0 next-hop 10.2.2.1
set protocols static route6 ::/0 next-hop 2001:db8::6
```

## 12.11.6 Appendix-B

### Route-Filtering

When importing routes using MP-BGP it is possible to filter a subset of them before are injected in the BGP table. One of the most common case is to use a route-map with an prefix-list.

- Configuration

We create a prefix-list first and add all the routes we need to.

```
# set both ipv4 and ipv6 policies

set policy prefix-list LAN2-Internet rule 1 action 'permit'
set policy prefix-list LAN2-Internet rule 1 le '24'
set policy prefix-list LAN2-Internet rule 1 prefix '198.51.0.0/16'
set policy prefix-list LAN2-Internet rule 2 action 'permit'
set policy prefix-list LAN2-Internet rule 2 prefix '192.0.2.0/24'
set policy prefix-list LAN2-Internet rule 3 action 'permit'
set policy prefix-list LAN2-Internet rule 3 prefix '192.168.0.0/24'
set policy prefix-list LAN2-Internet rule 4 action 'permit'
set policy prefix-list LAN2-Internet rule 4 prefix '10.0.0.0/24'

set policy prefix-list6 LAN2-Internet-v6 rule 1 action 'permit'
set policy prefix-list6 LAN2-Internet-v6 rule 1 prefix '2001:db8:1::/48'
set policy prefix-list6 LAN2-Internet-v6 rule 2 action 'permit'
set policy prefix-list6 LAN2-Internet-v6 rule 2 prefix '2001:db8:2::/48'
set policy prefix-list6 LAN2-Internet-v6 rule 3 action 'permit'
```

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```
set policy prefix-list6 LAN2-Internet-v6 rule 3 prefix '2001:db8:0:3::/64'
set policy prefix-list6 LAN2-Internet-v6 rule 4 action 'permit'
set policy prefix-list6 LAN2-Internet-v6 rule 4 prefix '2001:db8:0:1::/64'
```

Then add a route-map and reference to above prefix. Consider that the actions taken inside the prefix will MATCH the routes that will be affected by the actions inside the rules of the route-map.

```
set policy route-map LAN2-Internet rule 1 action 'permit'
set policy route-map LAN2-Internet rule 1 match ip address prefix-list 'LAN2-Internet'

set policy route-map LAN2-Internet-v6 rule 1 action 'permit'
set policy route-map LAN2-Internet-v6 rule 1 match ipv6 address prefix-list 'LAN2-
↳Internet-v6'
```

We are using a “white list” approach by allowing only what is necessary. In case that need to implement a “black list” approach then you will need to change the action in the route-map for a deny BUT you need to add a rule that permits the rest due to the implicit deny in the route-map.

Then we need to attach the policy to the BGP process. This needs to be under the import statement in the vrf we need to filter.

```
set vrf name LAN2 protocols bgp address-family ipv4-unicast route-map vpn import 'LAN2-
↳Internet'
set vrf name LAN2 protocols bgp address-family ipv6-unicast route-map vpn import 'LAN2-
↳Internet-v6'
```

- Verification

```
# show ip route vrf LAN2

B>* 10.0.0.0/24 [20/0] via 10.1.1.2, eth0 (vrf LAN1), weight 1, 00:45:28
S>* 172.16.0.0/24 [1/0] via 172.16.2.2, eth1, weight 1, 00:45:32
C>* 172.16.2.0/30 is directly connected, eth1, 00:45:39
B>* 192.0.2.0/24 [20/0] via 10.2.2.2, eth3 (vrf Internet), weight 1, 00:45:24
B>* 192.168.0.0/24 [20/0] via 192.168.3.2, eth2 (vrf Managment), weight 1, 00:45:27
B>* 198.51.100.0/24 [20/0] via 10.2.2.2, eth3 (vrf Internet), weight 1, 00:45:24

# show ipv6 route vrf LAN2

C>* 2001:db8::2/127 is directly connected, eth1, 00:46:26
B>* 2001:db8:0:1::/64 [20/0] via 2001:db8::1, eth0 (vrf LAN1), weight 1, 00:46:17
S>* 2001:db8:0:2::/64 [1/0] via 2001:db8::3, eth1, weight 1, 00:46:21
B>* 2001:db8:0:3::/64 [20/0] via 2001:db8::5, eth2 (vrf Managment), weight 1, 00:46:16
B>* 2001:db8:1::/48 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1,↳
↳00:46:13
B>* 2001:db8:2::/48 [20/0] via fe80::5200:ff:fe02:3, eth3 (vrf Internet), weight 1,↳
↳00:46:13
C>* fe80::/64 is directly connected, eth1, 00:46:27
```

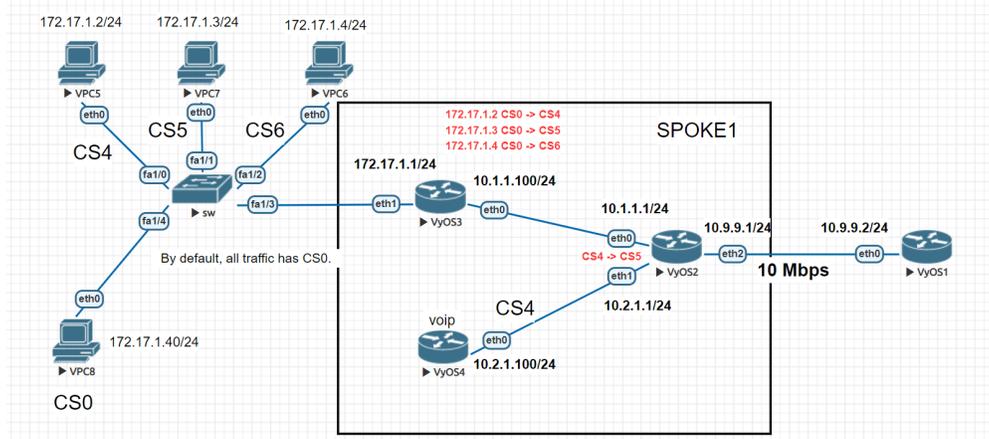
As we can see even if both VRF LAN1 and LAN2 has the same import RTs we are able to select which routes are effectively imported and installed.

## 12.12 QoS example

### 12.12.1 Configuration 'dscp' and shaper using QoS

In this case, we'll try to make a simple lab using QoS and the general ability of the VyOS system. We recommend you to go through the main article about [QoS](#) first.

Using the general schema for example:



We have four hosts on the local network 172.17.1.0/24. All hosts are labeled CS0 by default. We need to replace labels on all hosts except vpc8. We will replace the labels on the nearest router “VyOS3” using the IP addresses of the sources.

- 172.17.1.2 CS0 -> CS4
- 172.17.1.3 CS0 -> CS5
- 172.17.1.4 CS0 -> CS6
- 172.17.1.40 CS0 by default

Next, we will replace only all CS4 labels on the “VyOS2” router.

- CS4 -> CS5

In the end, we will configure the traffic shaper using QoS mechanisms on the “VyOS2” router.

### 12.12.2 Configuration:

Set IP addresses on all VPCs and a default gateway 172.17.1.1. We'll use in this case only static routes. On the VyOS3 router, we need to change the 'dscp' labels for the VPCs. To do this, we use this configuration.

```
set interfaces ethernet eth0 address '10.1.1.100/24'
set interfaces ethernet eth1 address '172.17.1.1/24'
set protocols static route 0.0.0.0/0 next-hop 10.1.1.1
set qos policy shaper vyos3 class 10 match ADDRESS10 ip source address '172.17.1.2/32'
set qos policy shaper vyos3 class 10 set-dscp 'CS4'
set qos policy shaper vyos3 class 20 match ADDRESS20 ip source address '172.17.1.3/32'
set qos policy shaper vyos3 class 20 set-dscp 'CS5'
set qos policy shaper vyos3 class 30 match ADDRESS20 ip source address '172.17.1.4/32'
set qos policy shaper vyos3 class 30 set-dscp 'CS6'
set qos policy shaper vyos3 default bandwidth '10%'
```

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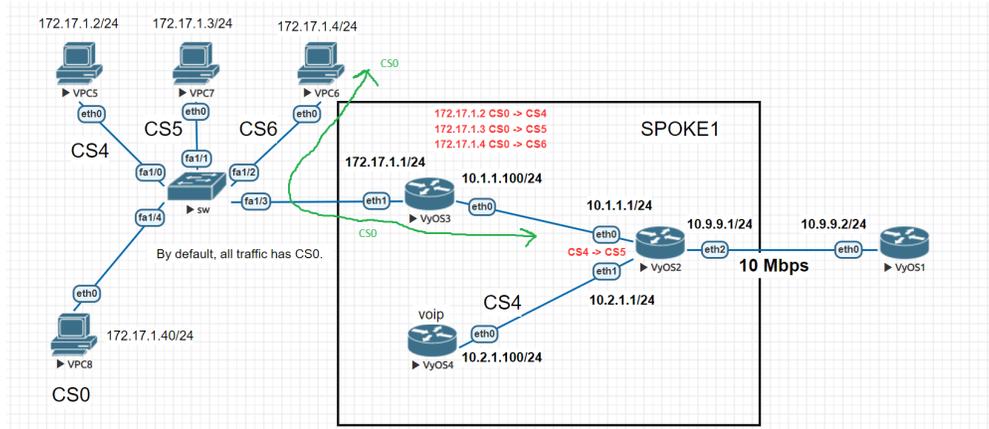
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```
set qos policy shaper vyos3 default ceiling '100%'
set qos policy shaper vyos3 default priority '7'
set qos policy shaper vyos3 default queue-type 'fair-queue'
set qos interface eth0 egress 'vyos3'
```

Main rules:

- ADDRESS10 change CS0 -> CS4 source 172.17.1.2/32
- ADDRESS20 change CS0 -> CS5 source 172.17.1.3/32
- ADDRESS30 change CS0 -> CS6 source 172.17.1.4/32

Check the result



Before the interface eth0 on router VyOS3

```
> Frame 19: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
> Ethernet II, Src: Private_66:68:06 (00:50:79:66:68:06), Dst: 50:0d:00:03:00:01 (50:0d:00:03:00:01)
v Internet Protocol Version 4, Src: 172.17.1.4, Dst: 10.9.9.2
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
```

After the interface eth0 on router VyOS3

```
> Frame 3: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
> Ethernet II, Src: 50:0d:00:03:00:00 (50:0d:00:03:00:00), Dst: 50:0d:00:02:00:00 (50:0d:00:02:00:00)
v Internet Protocol Version 4, Src: 172.17.1.4, Dst: 10.9.9.2
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0xc0 (DSCP: CS6, ECN: Not-ECT)
```

On the router, VyOS4 set all traffic as CS4. We have to configure the default class and class for changing all labels from CS0 to CS4

```
set interfaces ethernet eth0 address '10.2.1.100/24'
set protocols static route 0.0.0.0/0 next-hop 10.2.1.1
set qos policy shaper vyos4 class 10 bandwidth '100%'
set qos policy shaper vyos4 class 10 burst '15k'
set qos policy shaper vyos4 class 10 match ALL ether protocol 'all'
set qos policy shaper vyos4 class 10 queue-type 'fair-queue'
set qos policy shaper vyos4 class 10 set-dscp 'CS4'
set qos policy shaper vyos4 default bandwidth '10%'
```

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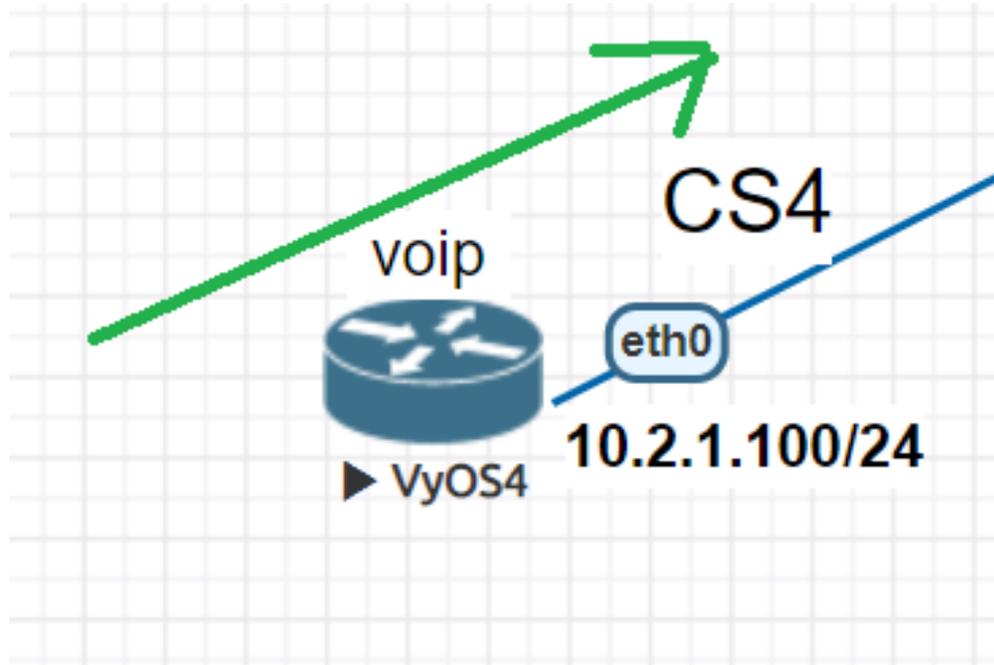
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```

set qos policy shaper vyos4 default burst '15k'
set qos policy shaper vyos4 default ceiling '100%'
set qos policy shaper vyos4 default priority '7'
set qos policy shaper vyos4 default queue-type 'fair-queue'
set qos interface eth0 egress 'vyos4'

```

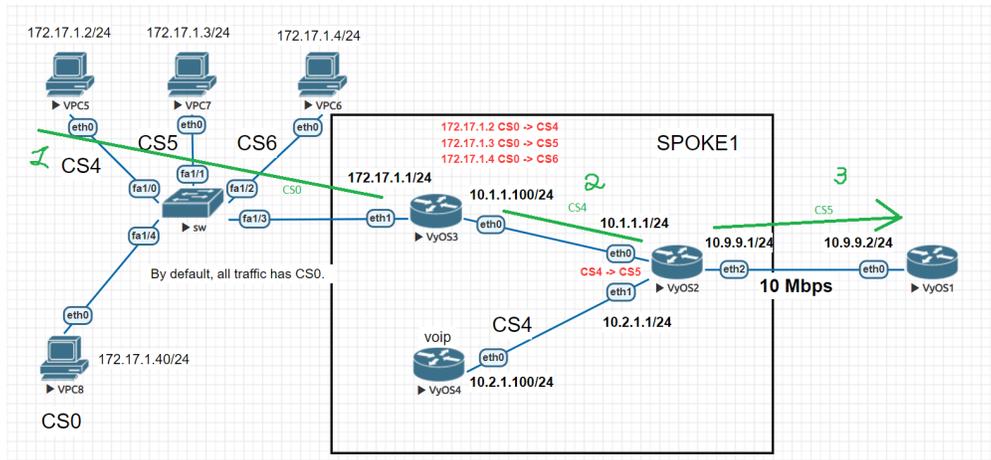
Next on the router VyOS2 we will change labels on all incoming traffic only from CS4-> CS6



```

set interfaces ethernet eth0 address '10.1.1.1/24'
set interfaces ethernet eth1 address '10.2.1.1/24'
set interfaces ethernet eth2 address '10.9.9.1/24'
set protocols static route 172.17.1.0/24 next-hop 10.1.1.100
set qos policy shaper vyos2 class 10 bandwidth '100%'
set qos policy shaper vyos2 class 10 burst '15k'
set qos policy shaper vyos2 class 10 match VYOS2 ip dscp 'CS4'
set qos policy shaper vyos2 class 10 queue-type 'fair-queue'
set qos policy shaper vyos2 class 10 set-dscp 'CS5'
set qos policy shaper vyos2 default bandwidth '100%'
set qos policy shaper vyos2 default burst '15k'
set qos policy shaper vyos2 default ceiling '100%'
set qos policy shaper vyos2 default priority '7'
set qos policy shaper vyos2 default queue-type 'fair-queue'
set qos interface eth2 egress 'vyos2'

```



• 172.17.1.2/24 CS0

```
> Frame 4: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
> Ethernet II, Src: Private_66:68:05 (00:50:79:66:68:05), Dst: 50:0d:00:03:00:01 (50:0d:00:03:00:01)
v Internet Protocol Version 4, Src: 172.17.1.2, Dst: 10.9.9.2
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
```

• 172.17.1.2/24 CS0 -> CS4

```
> Frame 3: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
> Ethernet II, Src: 50:0d:00:03:00:00 (50:0d:00:03:00:00), Dst: 50:0d:00:02:00:00 (50:0d:00:02:00:00)
v Internet Protocol Version 4, Src: 172.17.1.2, Dst: 10.9.9.2
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x80 (DSCP: CS4, ECN: Not-ECT)
```

• 172.17.1.2/24 CS4 -> CS5

```
> Frame 1: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0
> Ethernet II, Src: 50:0d:00:02:00:02 (50:0d:00:02:00:02), Dst: 50:0d:00:01:00:00 (50:0d:00:01:00:00)
v Internet Protocol Version 4, Src: 172.17.1.2, Dst: 10.9.9.2
  0100 .... = Version: 4
  .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0xa0 (DSCP: CS5, ECN: Not-ECT)
```

In the end, on the router “VyOS2” we will set outgoing bandwidth limits between the “VyOS3” and “VyOS1” routers. Let’s set a limit for IP 10.1.1.100 = 5 Mbps(Tx). We will check the result of the work with the help of the “iPerf” utility.

Set up bandwidth limits on the eth2 interface of the router “VyOS2”.

```
vyos@vyos2# show qos policy shaper vynos2 class 20
bandwidth 5mbit
description "for VyOS3 eth0"
match VyOS3 {
  ip {
    source {
      address 10.1.1.100/32
    }
  }
}
```

Check the result.

```

client
root@vyos3:/home/vyos# iperf -c 10.9.9.2 -b 5M -u -i 1 -t 1
Client connecting to 10.9.9.2, UDP port 5001
Sending 1470 byte datagrams, IPG target: 2243.04 us (kalman adjust)
UDP buffer size: 208 KByte (default)
-----
[ 3] local 10.1.1.100 port 59186 connected with 10.9.9.2 port 5001
[ ID] Interval      Transfer      Bandwidth
[ 3] 0.0- 1.0 sec   640 KBytes    5.24 Mbits/sec
[ 3] Sent 446 datagrams
[ 3] Server Report:
[ 3] 0.0- 1.1 sec   640 KBytes    4.83 Mbits/sec    1.656 ms    0/ 446 (0%)
root@vyos3:/home/vyos# iperf -c 10.9.9.2 -b 5M -u -i 1 -t 1
Client connecting to 10.9.9.2, UDP port 5001
Sending 1470 byte datagrams, IPG target: 1401.90 us (kalman adjust)
UDP buffer size: 208 KByte (default)
-----
[ 3] local 10.1.1.100 port 59186 connected with 10.9.9.2 port 5001
[ ID] Interval      Transfer      Bandwidth
[ 3] 0.0- 1.0 sec   1.00 MBytes   8.38 Mbits/sec
[ 3] Sent 714 datagrams
[ 3] Server Report:
[ 3] 0.0- 1.3 sec   769 KBytes    5.00 Mbits/sec    0.902 ms   177/ 713 (25%)
[ 3] 0.00-1.26 sec 1 datagrams received out-of-order
root@vyos3:/home/vyos# iperf -c 10.9.9.2 -b 5M -u -i 1 -t 1
Client connecting to 10.9.9.2, UDP port 5001
Sending 1470 byte datagrams, IPG target: 1246.13 us (kalman adjust)
UDP buffer size: 208 KByte (default)
-----
[ 3] local 10.1.1.100 port 35921 connected with 10.9.9.2 port 5001
[ ID] Interval      Transfer      Bandwidth
[ 3] 0.0- 1.0 sec   1.13 MBytes   9.44 Mbits/sec
[ 3] Sent 803 datagrams
[ 3] Server Report:
[ 3] 0.0- 1.3 sec   768 KBytes    4.82 Mbits/sec    0.907 ms   267/ 802 (33%)
[ 3] 0.00-1.31 sec 1 datagram received out-of-order
server
root@vyos1:/home/vyos# iperf -s -u -i 1
Server listening on UDP port 5001
Receiving 1470 byte datagrams
UDP buffer size: 208 KByte (default)
-----
[ 3] local 10.9.9.2 port 5001 connected with 10.1.1.100 port 59179
[ ID] Interval      Transfer      Bandwidth      Jitter    Lost/Totl  Datagram
[ 3] 0.0- 1.0 sec   512 KBytes    4.29 Mbits/sec  0.474 ms   0/ 357 (0%)
[ 4] local 10.9.9.2 port 5001 connected with 10.1.1.100 port 59106
[ 4] 0.0- 1.0 sec   589 KBytes    4.82 Mbits/sec  0.825 ms   0/ 410 (0%)
[ 4] 0.0- 1.1 sec   640 KBytes    4.83 Mbits/sec  1.657 ms   0/ 446 (0%)
[ 3] local 10.9.9.2 port 5001 connected with 10.1.1.100 port 50371
[ 3] 0.0- 1.0 sec   614 KBytes    5.03 Mbits/sec  0.732 ms   101/ 529 (19%)
[ 3] 0.0- 1.3 sec   769 KBytes    5.00 Mbits/sec  0.902 ms   177/ 713 (25%)
[ 3] 0.00-1.26 sec 1 datagrams received out-of-order
[ 4] local 10.9.9.2 port 5001 connected with 10.1.1.100 port 35921
[ 4] 0.0- 1.0 sec   589 KBytes    4.82 Mbits/sec  0.485 ms   151/ 561 (27%)
[ 4] 0.0- 1.3 sec   768 KBytes    4.82 Mbits/sec  0.907 ms   267/ 802 (33%)
[ 4] 0.00-1.31 sec 1 datagram received out-of-order

```

As we see shaper is working and the traffic will not work over 5 Mbit/s.

### 12.13 Segment-routing IS-IS example

When utilizing VyOS in an environment with Cisco IOS-XR gear you can use this blue print as an initial setup to get MPLS ISIS-SR working between those two devices. The lab was build using EVE-NG.

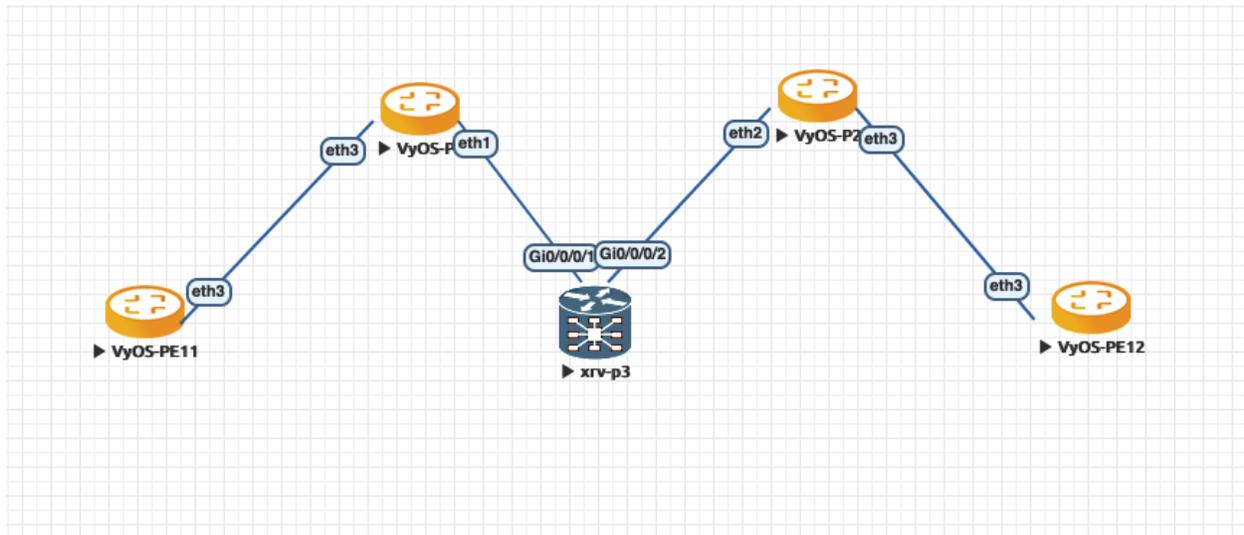


Fig. 1: ISIS-SR example network

The below configuration is used as example where we keep focus on VyOS-P1/VyOS-P2/XRv-P3 which we share the settings.

## 12.13.1 Configuration

- VyOS-P1:

```
set interfaces dummy dum0 address '192.0.2.1/32'
set interfaces ethernet eth1 address '192.0.2.5/30'
set interfaces ethernet eth1 mtu '8000'
set interfaces ethernet eth3 address '192.0.2.21/30'
set interfaces ethernet eth3 mtu '8000'
set protocols isis interface dum0 passive
set protocols isis interface eth1 network point-to-point
set protocols isis interface eth3 network point-to-point
set protocols isis level 'level-2'
set protocols isis log-adjacency-changes
set protocols isis metric-style 'wide'
set protocols isis net '49.0000.0000.0000.0001.00'
set protocols isis segment-routing maximum-label-depth '8'
set protocols isis segment-routing prefix 192.0.2.1/32 index value '1'
set protocols mpls interface 'eth1'
set protocols mpls interface 'eth3'
set system host-name 'P1-VyOS'
```

- XRv-P3:

```
hostname P3-VyOS
interface Loopback0
  ipv4 address 192.0.2.3 255.255.255.255
  !
interface GigabitEthernet0/0/0/1
  mtu 8014
  ipv4 address 192.0.2.6 255.255.255.252
  !
interface GigabitEthernet0/0/0/2
  mtu 8014
  ipv4 address 192.0.2.18 255.255.255.252
  !
router isis VyOS
  is-type level-2-only
  net 49.0000.0000.0000.0003.00
  log adjacency changes
  address-family ipv4 unicast
  metric-style wide
  segment-routing mpls
  !
interface Loopback0
  passive
  address-family ipv4 unicast
  prefix-sid index 3
  !
!
interface GigabitEthernet0/0/0/1
  point-to-point
  address-family ipv4 unicast
  !
```

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```

!
interface GigabitEthernet0/0/0/2
  point-to-point
  address-family ipv4 unicast
!
!
!
!

```

- VyOS-P2:

```

set interfaces dummy dum0 address '192.0.2.2/32'
set interfaces ethernet eth2 address '192.0.2.17/30'
set interfaces ethernet eth2 mtu '8000'
set interfaces ethernet eth3 address '192.0.2.26/30'
set interfaces ethernet eth3 mtu '8000'
set protocols isis interface dum0 passive
set protocols isis interface eth2 network point-to-point
set protocols isis interface eth3 network point-to-point
set protocols isis level 'level-2'
set protocols isis log-adjacency-changes
set protocols isis metric-style 'wide'
set protocols isis net '49.0000.0000.0000.0002.00'
set protocols isis segment-routing maximum-label-depth '8'
set protocols isis segment-routing prefix 192.0.2.2/32 index value '2'
set protocols mpls interface 'eth2'
set protocols mpls interface 'eth3'
set system host-name 'P2-VyOS'

```

This gives us MPLS segment routing enabled and labels forwarding :

```

vyos@P1-VyOS:~$ show mpls table
Inbound Label  Type          Nexthop          Outbound Label
-----
15000          SR (IS-IS)    192.0.2.6        implicit-null
15001          SR (IS-IS)    192.0.2.22       implicit-null
15002          SR (IS-IS)    fe80::5200:ff:fe04:3  implicit-null
16002          SR (IS-IS)    192.0.2.6        16002
16003          SR (IS-IS)    192.0.2.6        implicit-null
16011          SR (IS-IS)    192.0.2.22       implicit-null

vyos@P2-VyOS:~$ show mpls table
Inbound Label  Type          Nexthop          Outbound Label
-----
15000          SR (IS-IS)    192.0.2.18       implicit-null
16001          SR (IS-IS)    192.0.2.18       16001
16003          SR (IS-IS)    192.0.2.18       implicit-null
16011          SR (IS-IS)    192.0.2.18       16011

RP/0/0/CPU0:P3-VyOS#show mpls forwarding
Tue Mar 28 17:47:18.928 UTC
Local  Outgoing  Prefix          Outgoing  Next Hop  Bytes
Label  Label    or ID          Interface  Hop       Switched

```

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16001	Pop	SR Pfx (idx 1)	Gi0/0/0/1	192.0.2.5	0
16002	Pop	SR Pfx (idx 2)	Gi0/0/0/2	192.0.2.17	0
16011	16011	SR Pfx (idx 11)	Gi0/0/0/1	192.0.2.5	0
24000	Pop	SR Adj (idx 1)	Gi0/0/0/1	192.0.2.5	0
24001	Pop	SR Adj (idx 3)	Gi0/0/0/1	192.0.2.5	0
24002	Pop	SR Adj (idx 1)	Gi0/0/0/2	192.0.2.17	0
24003	Pop	SR Adj (idx 3)	Gi0/0/0/2	192.0.2.17	0

VyOS is able to check MSD per devices:

```
vyos@P1-VyOS:~$ show isis segment-routing node
Area VyOS:
IS-IS L1 SR-Nodes:

IS-IS L2 SR-Nodes:

System ID          SRGB              SRLB              Algorithm  MSD
-----
0000.0000.0001    16000 - 23999    15000 - 15999    SPF        8
0000.0000.0002    16000 - 23999    15000 - 15999    SPF        8
0000.0000.0003    16000 - 23999    0 - 4294967295   SPF        10
0000.0000.0011    16000 - 23999    15000 - 15999    SPF        8

vyos@P2-VyOS:~$ show isis segment-routing node
Area VyOS:
IS-IS L1 SR-Nodes:

IS-IS L2 SR-Nodes:

System ID          SRGB              SRLB              Algorithm  MSD
-----
0000.0000.0001    16000 - 23999    15000 - 15999    SPF        8
0000.0000.0002    16000 - 23999    15000 - 15999    SPF        8
0000.0000.0003    16000 - 23999    0 - 4294967295   SPF        10
0000.0000.0011    16000 - 23999    15000 - 15999    SPF        8
```

Here is the routing tables showing the MPLS segment routing label operations:

```
vyos@P1-VyOS:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I>* 192.0.2.2/32 [115/30] via 192.0.2.6, eth1, label 16002, weight 1, 1d03h18m
I>* 192.0.2.3/32 [115/10] via 192.0.2.6, eth1, label implicit-null, weight 1, 1d03h18m
I 192.0.2.4/30 [115/20] via 192.0.2.6, eth1 inactive, weight 1, 1d03h18m
I>* 192.0.2.11/32 [115/20] via 192.0.2.22, eth3, label implicit-null, weight 1, 1d02h47m
I>* 192.0.2.16/30 [115/20] via 192.0.2.6, eth1, weight 1, 1d03h18m
```

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```
I 192.0.2.20/30 [115/20] via 192.0.2.22, eth3 inactive, weight 1, 1d02h48m
I>* 192.0.2.24/30 [115/30] via 192.0.2.6, eth1, weight 1, 1d03h18m

vyos@P2-VyOS:~$ show ip route isis
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

I>* 192.0.2.1/32 [115/30] via 192.0.2.18, eth2, label 16001, weight 1, 1d03h17m
I>* 192.0.2.3/32 [115/10] via 192.0.2.18, eth2, label implicit-null, weight 1, 1d03h17m
I>* 192.0.2.4/30 [115/20] via 192.0.2.18, eth2, weight 1, 1d03h17m
I>* 192.0.2.11/32 [115/40] via 192.0.2.18, eth2, label 16011, weight 1, 1d02h47m
I 192.0.2.16/30 [115/20] via 192.0.2.18, eth2 inactive, weight 1, 1d03h17m
I>* 192.0.2.20/30 [115/30] via 192.0.2.18, eth2, weight 1, 1d03h17m

RP/0/0/CPU0:P3-VyOS#show route isis
Tue Mar 28 18:19:16.417 UTC

i L2 192.0.2.1/32 [115/20] via 192.0.2.5, 1d03h, GigabitEthernet0/0/0/1
i L2 192.0.2.2/32 [115/20] via 192.0.2.17, 1d03h, GigabitEthernet0/0/0/2
i L2 192.0.2.11/32 [115/30] via 192.0.2.5, 1d02h, GigabitEthernet0/0/0/1
i L2 192.0.2.20/30 [115/20] via 192.0.2.5, 1d03h, GigabitEthernet0/0/0/1
i L2 192.0.2.24/30 [115/20] via 192.0.2.17, 1d03h, GigabitEthernet0/0/0/2
```

Information about prefix-sid and label-operation from VyOS

```
vyos@P1-VyOS:~$ show isis route prefix-sid
Area VyOS:
IS-IS L2 IPv4 routing table:

Prefix          Metric  Interface  Nexthop    SID  Label Op.
-----
192.0.2.1/32    0       -          -          -    -
192.0.2.2/32    30      eth1       192.0.2.6  2    Swap(16002, 16002)
192.0.2.3/32    10      eth1       192.0.2.6  3    Pop(16003)
192.0.2.4/30    20      eth1       192.0.2.6  -    -
192.0.2.16/30   20      eth1       192.0.2.6  -    -
192.0.2.20/30   0       -          -          -    -
192.0.2.24/30   30      eth1       192.0.2.6  -    -

vyos@P2-VyOS:~$ show isis route prefix-sid
Area VyOS:
IS-IS L2 IPv4 routing table:

Prefix          Metric  Interface  Nexthop    SID  Label Op.
-----
192.0.2.1/32    30      eth2       192.0.2.18 1    Swap(16001, 16001)
192.0.2.2/32    0       -          -          -    -
```

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192.0.2.3/32	10	eth2	192.0.2.18	3	Pop(16003)
192.0.2.4/30	20	eth2	192.0.2.18	-	-
192.0.2.16/30	20	eth2	192.0.2.18	-	-
192.0.2.20/30	30	eth2	192.0.2.18	-	-
192.0.2.24/30	0	-	-	-	-

Ping between VyOS-P1 / VyOS-P2 to confirm reachability:

```
vyos@P1-VyOS:~$ ping 192.0.2.2 source-address 192.0.2.1
PING 192.0.2.2 (192.0.2.2) from 192.0.2.1 : 56(84) bytes of data.
64 bytes from 192.0.2.2: icmp_seq=1 ttl=63 time=3.47 ms
64 bytes from 192.0.2.2: icmp_seq=2 ttl=63 time=2.06 ms
64 bytes from 192.0.2.2: icmp_seq=3 ttl=63 time=3.90 ms
64 bytes from 192.0.2.2: icmp_seq=4 ttl=63 time=3.87 ms
^C
--- 192.0.2.2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 2.064/3.326/3.903/0.748 ms

vyos@P2-VyOS:~$ ping 192.0.2.1 source-address 192.0.2.2
PING 192.0.2.1 (192.0.2.1) from 192.0.2.2 : 56(84) bytes of data.
64 bytes from 192.0.2.1: icmp_seq=1 ttl=63 time=2.91 ms
64 bytes from 192.0.2.1: icmp_seq=2 ttl=63 time=3.23 ms
64 bytes from 192.0.2.1: icmp_seq=3 ttl=63 time=2.91 ms
64 bytes from 192.0.2.1: icmp_seq=4 ttl=63 time=2.85 ms
^C
--- 192.0.2.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 2.846/2.972/3.231/0.151 ms
```

## 12.14 NMP example

Consider how to quickly set up NMP and VyOS for monitoring. NMP is multi-vendor network monitoring from ‘SolarWinds’ built to scale and expand with the needs of your network.

### 12.14.1 Configuration ‘VyOS’

First prepare our VyOS router for connection to NMP. We have to set up the SNMP protocol and connectivity between the router and NMP.

```
set interfaces ethernet eth0 address 'dhcp'
set system name-server '8.8.8.8'
set service snmp community router authorization 'test'
set service snmp community router network '0.0.0.0/0'
```

## 12.14.2 Configuration ‘NMP’

Next, you just should follow the pictures:

The first screenshot shows the SolarWinds dashboard with the 'SETTINGS' menu open. The 'Manage Nodes' option is highlighted with a red box. The dashboard also shows 'Summary Home' and 'All Nodes' sections.

The second screenshot shows the 'Manage Nodes' page. The 'ADD NODE' button is highlighted with a red box. The page includes a search bar and a table with columns for Name, Polling IP Address, and Status.

The third screenshot shows the 'Add Node' configuration page. The 'Polling Hostname or IP Address' field contains '192.0.2.2'. The 'Polling Method' is set to 'Most Devices: SNMP and ICMP'. The 'Community String' field contains 'router'. A 'TEST' button is highlighted with a red box, and a 'Test Successful' message is displayed.

solarwinds **MY DASHBOARDS** ▾ **ALERTS & ACTIVITY** ▾ **REPORTS** ▾ **SETTINGS** ▾

[Admin](#) ▸ [Node Management](#) ▸ Add Node ? Help

## Add Node

[» Not seeing the data you want? Create a new poller.](#)

DEFINE NODE **CHOOSE RESOURCES** ADD POLLERS CHANGE PROPERTIES

### Choose Resource to monitor on vyos

Select the resources and statistics to monitor. The select menu provides shortcuts for selections

Select:  ALL  NONE  ALL VOLUMES  ALL INTERFACES  ALL ACTIVE INTERFACES  NO INTERFACE STATISTICS

- Routing
- CPU & Memory
- Status & Response Time
- Volume Utilization
- lo · lo
- eth0 · eth0
- eth1 · eth1
- eth2 · eth2
- eth3 · eth3

solarwinds **MY DASHBOARDS** ▾ **ALERTS & ACTIVITY** ▾ **REPORTS** ▾ **SETTINGS** ▾

[Admin](#) ▸ [Node Management](#) ▸ Add Node

## Add Node

DEFINE NODE CHOOSE RESOURCES ADD POLLERS **CHANGE PROPERTIES**

### Change Properties

Change properties or keep defaults. Select OK, Add Node to add this new node to Orion

Name:

Polling IP Address:

Polling Method:

[Help me choose a polling method](#)

**External Node: No Status**  
No data is collected for this node. Useful for monitoring a hosted application or other element on the node but not the node itself.

**Status Only: ICMP**  
Limited data (status, response time, and packet loss) is collected using ICMP (ping). Useful for devices which do not support SNMP or WMI.

**Most Devices: SNMP and ICMP**  
Standard polling method for network devices such as switches and routers, as well as Unix/Linux servers.

SNMP Version:  SNMPv2c is used, by default, when SNMPv3 is neither required nor supported.

SNMP Port:

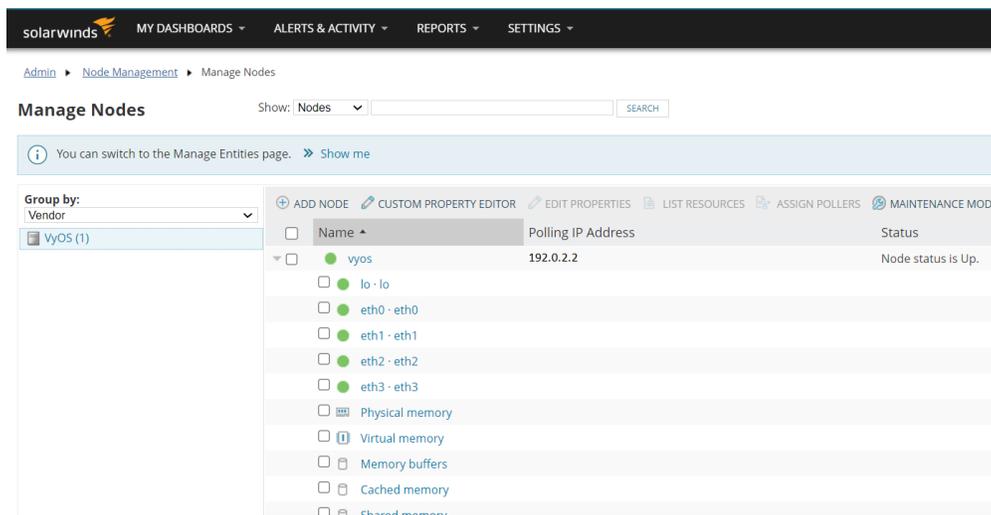
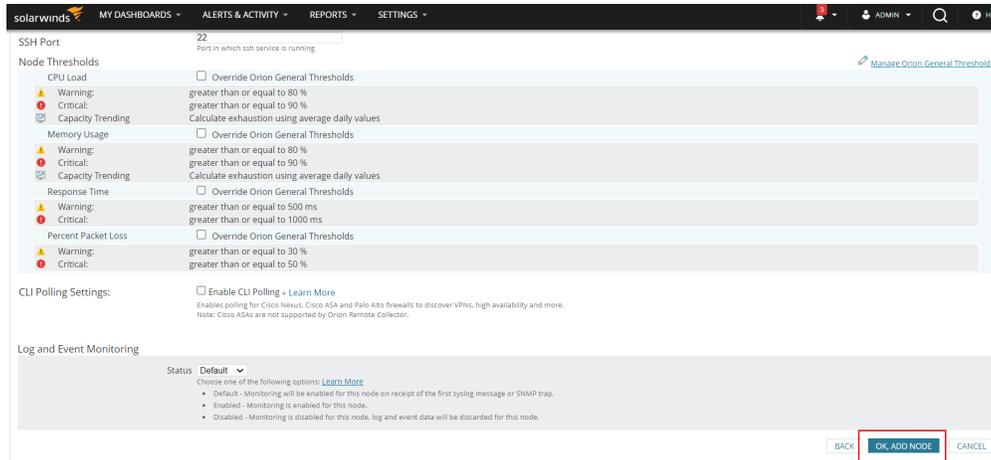
Allow 64 bit counters

Community String:  Press down arrow to view all

Read/Write Community String:

**Windows Servers: WMI and ICMP**  
Recommended agentless polling method for Windows servers.

**Windows & Unix/Linux Servers: Agent**  
Optional agent useful for monitoring Windows & Unix/Linux hosts in remote or distributed environments, such as the cloud. Credentials are needed only for installing already. [»What is an agent?](#)



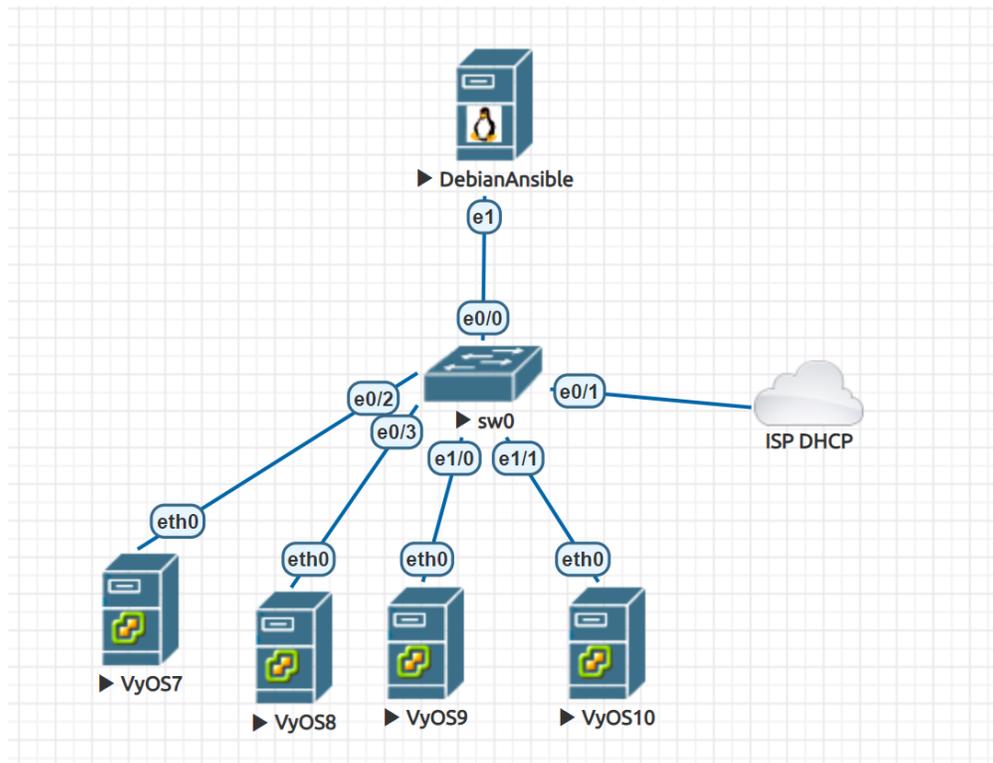
In the end, you'll get a powerful instrument for monitoring the VyOS systems.

## 12.15 Ansible example

### 12.15.1 Setting up Ansible on a server running the Debian operating system.

In this example, we will set up a simple use of Ansible to configure multiple VyOS routers. We have four pre-configured routers with this configuration:

Using the general schema for example:



We have four pre-configured routers with this configuration:

```
set interfaces ethernet eth0 address dhcp
set service ssh
commit
save
```

- vyos7 - 192.0.2.105
- vyos8 - 192.0.2.106
- vyos9 - 192.0.2.107
- vyos10 - 192.0.2.108

### 12.15.2 Install Ansible:

```
# apt-get install ansible
Do you want to continue? [Y/n] y
```

### 12.15.3 Install Paramiko:

```
#apt-get install -y python3-paramiko
```

### 12.15.4 Check the version:

```
# ansible --version
ansible 2.10.8
config file = None
configured module search path = ['/root/.ansible/plugins/modules', '/usr/share/ansible/
↳plugins/modules']
ansible python module location = /usr/lib/python3/dist-packages/ansible
executable location = /usr/bin/ansible
python version = 3.9.2 (default, Feb 28 2021, 17:03:44) [GCC 10.2.1 20210110]
```

### 12.15.5 Basic configuration of ansible.cfg:

```
# nano /root/ansible.cfg
[defaults]
host_key_checking = no
```

### 12.15.6 Add all the VyOS hosts:

```
# nano /root/hosts
[vyos_hosts]
vyos7 ansible_ssh_host=192.0.2.105
vyos8 ansible_ssh_host=192.0.2.106
vyos9 ansible_ssh_host=192.0.2.107
vyos10 ansible_ssh_host=192.0.2.108
```

### 12.15.7 Add general variables:

```
# mkdir /root/group_vars/
# nano /root/group_vars/vyos_hosts
ansible_python_interpreter: /usr/bin/python3
ansible_network_os: vyos
ansible_connection: network_cli
ansible_user: vyos
ansible_ssh_pass: vyos
```

### 12.15.8 Add a simple playbook with the tasks for each router:

```
# nano /root/main.yml

---
- hosts: vyos_hosts
gather_facts: 'no'
tasks:
  - name: Configure general settings for the vyos hosts group
    vyos_config:
      lines:
        - set system name-server 8.8.8.8
        - set interfaces ethernet eth0 description '#WAN#'
        - set interfaces ethernet eth1 description '#LAN#'
        - set interfaces ethernet eth2 disable
        - set interfaces ethernet eth3 disable
        - set system host-name {{ inventory_hostname }}
      save:
      true
```

### 12.15.9 Start the playbook:

```
ansible-playbook -i hosts main.yml
PLAY [vyos_hosts] *****

TASK [Configure general settings for the vyos hosts group] *****
ok: [vyos9]
ok: [vyos10]
ok: [vyos7]
ok: [vyos8]

PLAY RECAP *****
vyos10                : ok=2    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
vyos7                  : ok=2    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
vyos8                  : ok=2    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
vyos9                  : ok=2    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
```

### 12.15.10 Check the result on the vyos10 router:

```
vyos@vyos10:~$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
eth0           192.0.2.108/24  u/u  WAN
eth1           -               u/u  LAN
eth2           -               A/D
```

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```
eth3          -          A/D
lo            127.0.0.1/8  u/u
              ::1/128

vyos@vyos10:~$ sh configuration commands | grep 8.8.8.8
set system name-server '8.8.8.8'
```

### 12.15.11 The simple way without configuration of the hostname (one task for all routers):

```
# nano /root/hosts_v2
[vyos_hosts_group]
vyos7 ansible_ssh_host=192.0.2.105
vyos8 ansible_ssh_host=192.0.2.106
vyos9 ansible_ssh_host=192.0.2.107
vyos10 ansible_ssh_host=192.0.2.108
[vyos_hosts_group:vars]
ansible_python_interpreter=/usr/bin/python3
ansible_user=vyos
ansible_ssh_pass=vyos
ansible_network_os=vyos
ansible_connection=network_cli

# nano /root/main_v2.yml
---
- hosts: vyos_hosts_group

connection: network_cli
gather_facts: 'no'

tasks:
  - name: Configure remote vyos_hosts_group
    vyos_config:
      lines:
        - set system name-server 8.8.8.8
        - set interfaces ethernet eth0 description WAN
        - set interfaces ethernet eth1 description LAN
        - set interfaces ethernet eth2 disable
        - set interfaces ethernet eth3 disable
      save:
        true
```

```
# ansible-playbook -i hosts_v2 main_v2.yml

PLAY [vyos_hosts_group] *****

TASK [Configure remote vyos_hosts_group] *****
ok: [vyos8]
ok: [vyos7]
ok: [vyos9]
```

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```

ok: [vyos10]

PLAY RECAP *****
vyos10                : ok=1    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
vyos7                  : ok=1    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
vyos8                  : ok=1    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0
vyos9                  : ok=1    changed=0    unreachable=0    failed=0    skipped=0
↳ rescued=0    ignored=0

```

In the next chapter of the example, we'll use Ansible with jinja2 templates and variables.

## 12.16 Policy-Based Site-to-Site VPN and Firewall Configuration

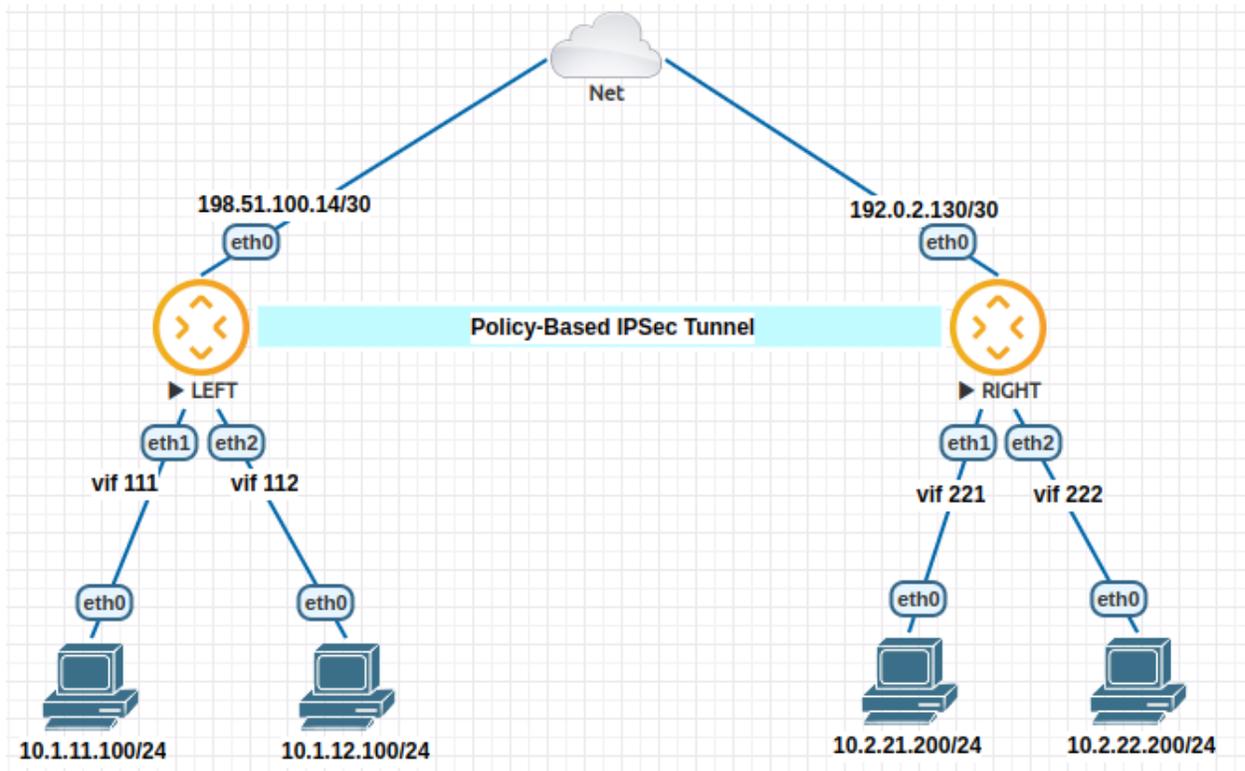
This guide shows an example policy-based IKEv2 site-to-site VPN between two VyOS routers, and firewall configuration.

For simplicity, configuration and tests are done only using IPv4, and firewall configuration is done only on one router.

### 12.16.1 Network Topology and requirements

This configuration example and the requirements consists of:

- Two VyOS routers with public IP address.
- 2 private subnets on each site.
- Local subnets should be able to reach internet using source NAT.
- Communication between private subnets should be done through IPSec tunnel without NAT.
- Configuration of basic firewall in one site, in order to:
  - Protect the router on 'WAN' interface, allowing only IPSec connections and SSH access from trusted IPs.
  - Allow access to the router only from trusted networks.
  - Allow DNS requests only for local networks.
  - Allow ICMP on all interfaces.
  - Allow all new connections from local subnets.
  - Allow connections from LANs to LANs through the tunnel.



## 12.16.2 Configuration

Interface and routing configuration:

```
# LEFT router:
set interfaces ethernet eth0 address '198.51.100.14/30'
set interfaces ethernet eth1 vif 111 address '10.1.11.1/24'
set interfaces ethernet eth2 vif 112 address '10.1.12.1/24'
set protocols static route 0.0.0.0/0 next-hop 198.51.100.13

# RIGHT router:
set interfaces ethernet eth0 address '192.0.2.130/30'
set interfaces ethernet eth1 vif 221 address '10.2.21.1/24'
set interfaces ethernet eth2 vif 222 address '10.2.22.1/24'
```

IPsec configuration:

```
# LEFT router:
set vpn ipsec authentication psk RIGHT id '198.51.100.14'
set vpn ipsec authentication psk RIGHT id '192.0.2.130'
set vpn ipsec authentication psk RIGHT secret 'p4ssw0rd'
set vpn ipsec esp-group ESP-GROUP mode 'tunnel'
set vpn ipsec esp-group ESP-GROUP proposal 1 encryption 'aes256'
set vpn ipsec esp-group ESP-GROUP proposal 1 hash 'sha256'
set vpn ipsec ike-group IKE-GROUP key-exchange 'ikev2'
set vpn ipsec ike-group IKE-GROUP proposal 1 dh-group '14'
set vpn ipsec ike-group IKE-GROUP proposal 1 encryption 'aes256'
```

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```

set vpn ipsec ike-group IKE-GROUP proposal 1 hash 'sha256'
set vpn ipsec interface 'eth0'
set vpn ipsec site-to-site peer RIGHT authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer RIGHT connection-type 'initiate'
set vpn ipsec site-to-site peer RIGHT default-esp-group 'ESP-GROUP'
set vpn ipsec site-to-site peer RIGHT ike-group 'IKE-GROUP'
set vpn ipsec site-to-site peer RIGHT local-address '198.51.100.14'
set vpn ipsec site-to-site peer RIGHT remote-address '192.0.2.130'
set vpn ipsec site-to-site peer RIGHT tunnel 0 local prefix '10.1.11.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 0 remote prefix '10.2.21.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 1 local prefix '10.1.11.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 1 remote prefix '10.2.22.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 2 local prefix '10.1.12.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 2 remote prefix '10.2.21.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 3 local prefix '10.1.12.0/24'
set vpn ipsec site-to-site peer RIGHT tunnel 3 remote prefix '10.2.22.0/24'

# RIGHT router:
set vpn ipsec authentication psk LEFT id '192.0.2.130'
set vpn ipsec authentication psk LEFT id '198.51.100.14'
set vpn ipsec authentication psk LEFT secret 'p4ssw0rd'
set vpn ipsec esp-group ESP-GROUP mode 'tunnel'
set vpn ipsec esp-group ESP-GROUP proposal 1 encryption 'aes256'
set vpn ipsec esp-group ESP-GROUP proposal 1 hash 'sha256'
set vpn ipsec ike-group IKE-GROUP key-exchange 'ikev2'
set vpn ipsec ike-group IKE-GROUP proposal 1 dh-group '14'
set vpn ipsec ike-group IKE-GROUP proposal 1 encryption 'aes256'
set vpn ipsec ike-group IKE-GROUP proposal 1 hash 'sha256'
set vpn ipsec interface 'eth0'
set vpn ipsec site-to-site peer LEFT authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer LEFT connection-type 'respond'
set vpn ipsec site-to-site peer LEFT default-esp-group 'ESP-GROUP'
set vpn ipsec site-to-site peer LEFT ike-group 'IKE-GROUP'
set vpn ipsec site-to-site peer LEFT local-address '192.0.2.130'
set vpn ipsec site-to-site peer LEFT remote-address '198.51.100.14'
set vpn ipsec site-to-site peer LEFT tunnel 0 local prefix '10.2.21.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 0 remote prefix '10.1.11.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 1 local prefix '10.2.22.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 1 remote prefix '10.1.11.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 2 local prefix '10.2.21.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 2 remote prefix '10.1.12.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 3 local prefix '10.2.22.0/24'
set vpn ipsec site-to-site peer LEFT tunnel 3 remote prefix '10.1.12.0/24'

```

## Firewall Configuration:

```

# Firewall Groups:
set firewall group network-group LOCAL-NETS network '10.1.11.0/24'
set firewall group network-group LOCAL-NETS network '10.1.12.0/24'
set firewall group network-group REMOTE-NETS network '10.2.21.0/24'
set firewall group network-group REMOTE-NETS network '10.2.22.0/24'
set firewall group network-group TRUSTED network '198.51.100.125/32'

```

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```
set firewall group network-group TRUSTED network '203.0.113.0/24'
set firewall group network-group TRUSTED network '10.1.11.0/24'
set firewall group network-group TRUSTED network '192.168.70.0/24'

# Forward traffic: default drop and only allow what is needed
set firewall ipv4 forward filter default-action 'drop'

# Forward traffic: global state policies
set firewall ipv4 forward filter rule 1 action 'accept'
set firewall ipv4 forward filter rule 1 state established 'enable'
set firewall ipv4 forward filter rule 1 state related 'enable'
set firewall ipv4 forward filter rule 2 action 'drop'
set firewall ipv4 forward filter rule 2 state invalid 'enable'

# Forward traffic: Accept all connections from local networks
set firewall ipv4 forward filter rule 10 action 'accept'
set firewall ipv4 forward filter rule 10 source group network-group 'LOCAL-NETS'

# Forward traffic: accept connections from remote LANs to local LANs
set firewall ipv4 forward filter rule 20 action 'accept'
set firewall ipv4 forward filter rule 20 destination group network-group 'LOCAL-NETS'
set firewall ipv4 forward filter rule 20 source group network-group 'REMOTE-NETS'

# Input traffic: default drop and only allow what is needed
set firewall ipv4 input filter default-action 'drop'

# Input traffic: global state policies
set firewall ipv4 input filter rule 1 action 'accept'
set firewall ipv4 input filter rule 1 state established 'enable'
set firewall ipv4 input filter rule 1 state related 'enable'
set firewall ipv4 input filter rule 2 action 'drop'
set firewall ipv4 input filter rule 2 state invalid 'enable'

# Input traffic: add rules needed for ipsec connection
set firewall ipv4 input filter rule 10 action 'accept'
set firewall ipv4 input filter rule 10 destination port '500,4500'
set firewall ipv4 input filter rule 10 inbound-interface interface-name 'eth0'
set firewall ipv4 input filter rule 10 protocol 'udp'
set firewall ipv4 input filter rule 15 action 'accept'
set firewall ipv4 input filter rule 15 inbound-interface interface-name 'eth0'
set firewall ipv4 input filter rule 15 protocol 'esp'

# Input traffic: accept ssh connection from trusted ips
set firewall ipv4 input filter rule 20 action 'accept'
set firewall ipv4 input filter rule 20 destination port '22'
set firewall ipv4 input filter rule 20 protocol 'tcp'
set firewall ipv4 input filter rule 20 source group network-group 'TRUSTED'

# Input traffic: accept dns requests only from local networks.
set firewall ipv4 input filter rule 25 action 'accept'
set firewall ipv4 input filter rule 25 destination port '53'
set firewall ipv4 input filter rule 25 protocol 'udp'
```

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```
set firewall ipv4 input filter rule 25 source group network-group 'LOCAL-NETS'

# Input traffic: allow icmp
set firewall ipv4 input filter rule 30 action 'accept'
set firewall ipv4 input filter rule 30 protocol 'icmp'
```

And NAT Configuration:

```
set nat source rule 10 destination group network-group 'REMOTE-NETS'
set nat source rule 10 exclude
set nat source rule 10 outbound-interface name 'eth0'
set nat source rule 10 source group network-group 'LOCAL-NETS'
set nat source rule 20 outbound-interface name 'eth0'
set nat source rule 20 source group network-group 'LOCAL-NETS'
set nat source rule 20 translation address 'masquerade'
```

### 12.16.3 Checking through op-mode commands

After some testing, we can check IPsec status, and counter on every tunnel:

```
vyos@LEFT:~$ show vpn ipsec sa
Connection      State      Uptime      Bytes In/Out  Packets In/Out  Remote address
↳Remote ID     Proposal
-----
↳-----
RIGHT-tunnel-0  up        36m24s     840B/840B    10/10          192.0.2.130
↳192.0.2.130  AES_CBC_256/HMAC_SHA2_256_128/MODP_2048
RIGHT-tunnel-1  up        36m33s     588B/588B    7/7           192.0.2.130
↳192.0.2.130  AES_CBC_256/HMAC_SHA2_256_128/MODP_2048
RIGHT-tunnel-2  up        35m50s     1K/1K        15/15         192.0.2.130
↳192.0.2.130  AES_CBC_256/HMAC_SHA2_256_128/MODP_2048
RIGHT-tunnel-3  up        36m54s     2K/2K        32/32         192.0.2.130
↳192.0.2.130  AES_CBC_256/HMAC_SHA2_256_128/MODP_2048
vyos@LEFT:~$
```

Also, we can check firewall counters:

```
vyos@LEFT:~$ show firewall
Rulesets Information

-----
IPv4 Firewall "forward filter"

Rule      Action    Protocol    Packets    Bytes    Conditions
-----
↳-----
1         accept   all         681        96545   ct state { established, related }
↳accept
2         drop     all         0          0       ct state invalid
10        accept   all         360        27205   ip saddr @N_LOCAL-NETS accept
20        accept   all         8          648     ip daddr @N_LOCAL-NETS ip saddr @N_
```

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```

↔REMOTE-NETS  accept
default drop    all

-----
IPv4 Firewall "input filter"

Rule      Action  Protocol  Packets  Bytes  Conditions
-----
↔-----
1         accept  all       901     123709 ct state { established, related } ↪
↔accept
2         drop    all       0       0      ct state invalid
10        accept  udp       0       0      udp dport { 500, 4500 } iifname "eth0
↔"  accept
15        accept  esp       0       0      meta l4proto esp iifname "eth0" ↪
↔accept
20        accept  tcp       1       60     tcp dport 22 ip saddr @N_TRUSTED ↪
↔accept
25        accept  udp       0       0      udp dport 53 ip saddr @N_LOCAL-NETS ↪
↔accept
30        accept  icmp      0       0      meta l4proto icmp  accept
default  drop    all

```

```

vyos@LEFT:~$
vyos@LEFT:~$ show firewall statistics
Rulesets Statistics

```

```

-----
IPv4 Firewall "forward filter"

Rule      Packets  Bytes  Action  Source  Destination  Inbound-Interface  ↪
↔Outbound-interface
-----
↔-----
1         681     96545  accept  any     any          any                ↪
↔any
2         0       0      drop    any     any          any                ↪
↔any
10        360     27205  accept  LOCAL-NETS  any          any                ↪
↔any
20        8       648    accept  REMOTE-NETS  LOCAL-NETS  any                ↪
↔any
default  N/A     N/A    drop    any     any          any                ↪
↔any

```

```

-----
IPv4 Firewall "input filter"

Rule      Packets  Bytes  Action  Source  Destination  Inbound-Interface  ↪
↔Outbound-interface
-----
↔-----

```

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1	905	124213	accept	any	any	any	↳
↳any							
2	0	0	drop	any	any	any	↳
↳any							
10	0	0	accept	any	any	eth0	↳
↳any							
15	0	0	accept	any	any	eth0	↳
↳any							
20	1	60	accept	TRUSTED	any	any	↳
↳any							
25	0	0	accept	LOCAL-NETS	any	any	↳
↳any							
30	0	0	accept	any	any	any	↳
↳any							
default	N/A	N/A	drop	any	any	any	↳
↳any							

vyos@LEFT:~\$

## 12.17 Site-to-Site IPSec VPN to Cisco using FlexVPN

This guide shows a sample configuration for FlexVPN site-to-site Internet Protocol Security (IPsec)/Generic Routing Encapsulation (GRE) tunnel.

FlexVPN is a newer “solution” for deployment of VPNs and it utilizes IKEv2 as the key exchange protocol. The result is a flexible and scalable VPN solution that can be easily adapted to fit various network needs. It can also support a variety of encryption methods, including AES and 3DES.

The lab was built using EVE-NG.

### 12.17.1 Configuration

#### VyOS

- GRE:

```
set interfaces tunnel tun1 encapsulation 'gre'
set interfaces tunnel tun1 ip adjust-mss '1336'
set interfaces tunnel tun1 mtu '1376'
set interfaces tunnel tun1 remote '10.1.1.6'
set interfaces tunnel tun1 source-address '88.2.2.1'
```

- IPsec:

```
set vpn ipsec authentication psk vyos_cisco_1 id 'vyos.net'
set vpn ipsec authentication psk vyos_cisco_1 id 'cisco.hub.net'
set vpn ipsec authentication psk vyos_cisco_1 secret 'secret'
set vpn ipsec esp-group e1 lifetime '3600'
set vpn ipsec esp-group e1 mode 'tunnel'
set vpn ipsec esp-group e1 pfs 'disable'
```

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```

set vpn ipsec esp-group e1 proposal 1 encryption 'aes128'
set vpn ipsec esp-group e1 proposal 1 hash 'sha256'
set vpn ipsec ike-group i1 key-exchange 'ikev2'
set vpn ipsec ike-group i1 lifetime '28800'
set vpn ipsec ike-group i1 proposal 1 dh-group '5'
set vpn ipsec ike-group i1 proposal 1 encryption 'aes256'
set vpn ipsec ike-group i1 proposal 1 hash 'sha256'
set vpn ipsec interface 'eth2'
set vpn ipsec options disable-route-autoinstall
set vpn ipsec options flexvpn
set vpn ipsec options interface 'tun1'
set vpn ipsec options virtual-ip
set vpn ipsec site-to-site peer cisco_hub authentication local-id 'vyos.net'
set vpn ipsec site-to-site peer cisco_hub authentication mode 'pre-shared-secret'
set vpn ipsec site-to-site peer cisco_hub authentication remote-id 'cisco.hub.net'
set vpn ipsec site-to-site peer cisco_hub connection-type 'initiate'
set vpn ipsec site-to-site peer cisco_hub default-esp-group 'e1'
set vpn ipsec site-to-site peer cisco_hub ike-group 'i1'
set vpn ipsec site-to-site peer cisco_hub local-address '88.2.2.1'
set vpn ipsec site-to-site peer cisco_hub remote-address '10.1.1.6'
set vpn ipsec site-to-site peer cisco_hub tunnel 1 local prefix '88.2.2.1/32'
set vpn ipsec site-to-site peer cisco_hub tunnel 1 protocol 'gre'
set vpn ipsec site-to-site peer cisco_hub tunnel 1 remote prefix '10.1.1.6/32'
set vpn ipsec site-to-site peer cisco_hub virtual-address '0.0.0.0'

```

## Cisco

```

aaa new-model
!
!
aaa authorization network default local
!
crypto ikev2 name-mangler GET_DOMAIN
  fqdn all
  email all
!
!
crypto ikev2 authorization policy vyos
  pool mypool
  aaa attribute list mylist
  route set interface
  route accept any tag 100 distance 5
!
crypto ikev2 keyring mykeys
  peer peer1
    identity fqdn vyos.net
    pre-shared-key local secret
    pre-shared-key remote secret
crypto ikev2 profile my_profile
  match identity remote fqdn vyos.net

```

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```

identity local fqdn cisco.hub.net
authentication remote pre-share
authentication local pre-share
keyring local mykeys
dpd 10 3 periodic
aaa authorization group psk list local name-mangler GET_DOMAIN
aaa authorization user psk cached
virtual-template 1
!
!
!
crypto ipsec transform-set TSET esp-aes esp-sha256-hmac
mode tunnel
!
!
crypto ipsec profile my-ipsec-profile
set transform-set TSET
set ikev2-profile my_profile
!
interface Virtual-Template1 type tunnel
no ip address
ip mtu 1376
ip nhrp network-id 1
ip nhrp shortcut virtual-template 1
ip tcp adjust-mss 1336
tunnel path-mtu-discovery
tunnel protection ipsec profile my-ipsec-profile
!
ip local pool my_pool 172.16.122.1 172.16.122.254

```

Since the tunnel is a point-to-point GRE tunnel, it behaves like any other point-to-point interface (for example: serial, dialer), and it is possible to run any Interior Gateway Protocol (IGP)/Exterior Gateway Protocol (EGP) over the link in order to exchange routing information

## 12.17.2 Verification

```

vyos@vyos$ show interfaces
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface          IP Address          S/L  Description
-----
eth0                -                   u/u
eth1                -                   u/u
eth2                88.2.2.1/24        u/u
eth3                172.16.1.2/24      u/u
lo                  127.0.0.1/8        u/u
                   ::1/128
tun1                172.16.122.2/32    u/u

vyos@vyos:~$ show vpn ipsec sa
Connection          State    Uptime    Bytes In/Out    Packets In/Out    Remote address
↔ Remote ID                Proposal

```

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```

-----
↪ -----
cisco_hub-tunnel-1 up      44m17s   35K/31K   382/367   10.1.1.6
↪ cisco.hub.net AES_CBC_128/HMAC_SHA2_256_128

Hub#sh crypto ikev2 sa detailed
IPv4 Crypto IKEv2 SA

Tunnel-id Local                Remote                fvrf/ivrf            Status
5          10.1.1.6/4500         88.2.2.1/4500         none/none            READY
    Encr: AES-CBC, keysize: 256, PRF: SHA256, Hash: SHA256, DH Grp:5, Auth sign: PSK,
↪Auth verify: PSK
    Life/Active Time: 86400/2694 sec
    CE id: 0, Session-id: 2
    Status Description: Negotiation done
    Local spi: C94EE2DC92A60C47      Remote spi: 9AF0EF151BECF14C
    Local id: cisco.hub.net
    Remote id: vyos.net
    Local req msg id: 269              Remote req msg id: 0
    Local next msg id: 269            Remote next msg id: 0
    Local req queued: 269             Remote req queued: 0
    Local window: 5                   Remote window: 1
    DPD configured for 10 seconds, retry 3
    Fragmentation not configured.
    Extended Authentication not configured.
    NAT-T is not detected
    Cisco Trust Security SGT is disabled
    Assigned host addr: 172.16.122.2

```

## CONFIGURATION BLUEPRINTS (AUTOTEST)

The next pages contains automatic full tested configuration examples.

Each lab will build an test from an external script. The page content will generate, so changes will not take an effect.

A host `vyos-oobm` will use as a ssh proxy. This host is just necessary for the Lab test.

The process will do the following steps:

1. create the lab on a eve-ng server
2. configure each host in the lab
3. do some defined tests
4. optional do an upgrade to a higher version and do step 3 again.
5. generate the documentation and include files
6. shutdown and destroy the lab, if there is no error

### 13.1 DHCP Relay trough GRE-Bridge

Testdate: 2023-05-11

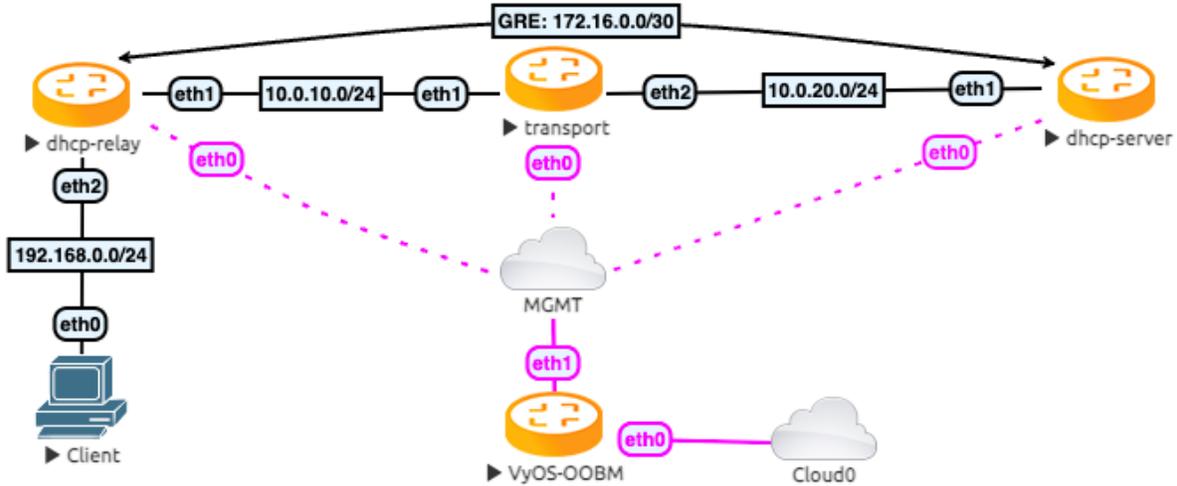
Version: 1.4-rolling-202305100734

This simple structure shows how to configure a DHCP Relay over a GRE Bridge interface.

#### 13.1.1 Topology

The topology has 3 VyOS routers and one client. Between the DHCP Server and the DHCP Relay is a GRE tunnel. The *transport* VyOS represent a large Network.

# DHCP Relay trough GRE-Bridge



## 13.1.2 Configuration

First, we configure the transport network and the Tunnel interface.

Transport:

```
set interfaces ethernet eth1 address '10.0.10.254/24'
set interfaces ethernet eth2 address '10.0.20.254/24'
```

DHCP-Server

```
set interfaces ethernet eth1 address '10.0.20.10/24'
set interfaces tunnel tun100 address '172.16.0.1/30'
set interfaces tunnel tun100 encapsulation 'gretap'
set interfaces tunnel tun100 remote '10.0.10.10'
set interfaces tunnel tun100 source-address '10.0.20.10'
set protocols static route 0.0.0.0/0 next-hop 172.16.0.2
set protocols static route 10.0.10.0/24 next-hop 10.0.20.254
set protocols static route 192.168.0.0/24 next-hop 127.16.0.2
```

DHCP-Relay

```
set interfaces ethernet eth1 address '10.0.10.10/24'
set interfaces ethernet eth2 address '192.168.0.254/24'
set interfaces tunnel tun100 address '172.16.0.2/30'
set interfaces tunnel tun100 encapsulation 'gretap'
set interfaces tunnel tun100 remote '10.0.20.10'
set interfaces tunnel tun100 source-address '10.0.10.10'
set protocols static route 0.0.0.0/0 next-hop 172.16.0.1
set protocols static route 10.0.20.0/24 next-hop 10.0.10.254
```

After this, we need the DHCP-Server and Relay configuration. To get a testable result, we just have one IP in the DHCP range. Expand it as you need it.

## DHCP-Server

```

set service dhcp-server listen-address '172.16.0.1'
set service dhcp-server shared-network-name DHCPtun100 authoritative
set service dhcp-server shared-network-name DHCPtun100 subnet 192.168.0.0/24 option_
↳default-router '192.168.0.254'
set service dhcp-server shared-network-name DHCPtun100 subnet 192.168.0.0/24 range 0_
↳start '192.168.0.30'
set service dhcp-server shared-network-name DHCPtun100 subnet 192.168.0.0/24 range 0_
↳stop '192.168.0.30'

```

## DHCP-Relay

```

set service dhcp-relay interface 'eth2'
set service dhcp-relay interface 'tun100'

```

### 13.1.3 Test the result

Ping the Client from the DHCP Server.

```

vyos@dhcp-server:~$ ping 192.168.0.30 count 4
PING 192.168.0.30 (192.168.0.30) 56(84) bytes of data.
64 bytes from 192.168.0.30: icmp_seq=1 ttl=63 time=1.02 ms
64 bytes from 192.168.0.30: icmp_seq=2 ttl=63 time=1.06 ms
64 bytes from 192.168.0.30: icmp_seq=3 ttl=63 time=1.21 ms
64 bytes from 192.168.0.30: icmp_seq=4 ttl=63 time=1.16 ms

--- 192.168.0.30 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 1.016/1.112/1.214/0.077 ms

```

And show all DHCP Leases

```

vyos@dhcp-server:~$ show dhcp server leases
IP Address      MAC address      State      Lease start      Lease expiration
↳Remaining     Pool             Hostname
-----
↳-----
192.168.0.30   00:50:79:66:68:05 active      2023/05/11 13:08:50 2023/05/12 13:08:50
↳23:59:16     DHCPtun100     VPCS

```

## 13.2 Tunnelbroker.net (IPv6)

Testdate: 2024-01-13

Version: 1.5-rolling-202401121239

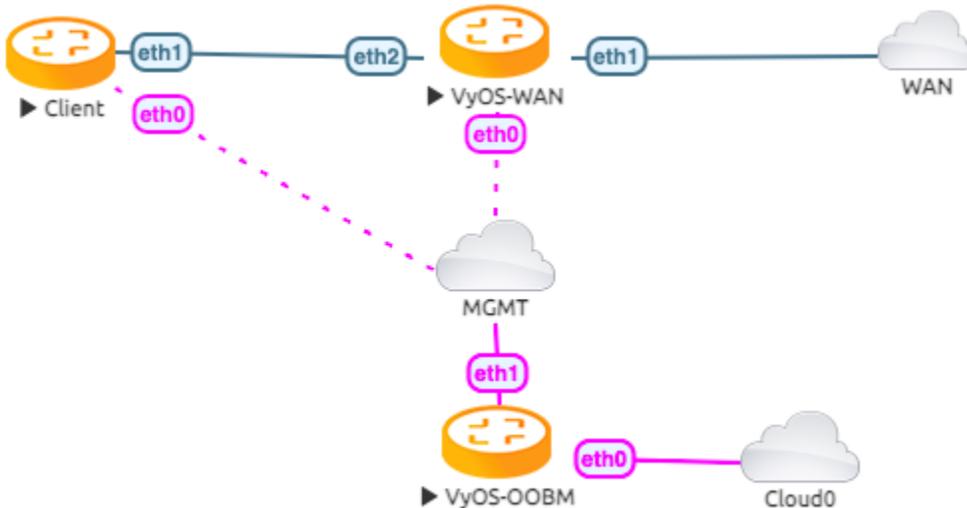
This guide walks through the setup of <https://www.tunnelbroker.net/> for an IPv6 Tunnel.

## 13.2.1 Prerequisites

- A public, routable IPv4 address. This does not necessarily need to be static, but you will need to update the tunnel endpoint when/if your IP address changes, which can be done with a script and a scheduled task.
- Account at <https://www.tunnelbroker.net/>
- Requested a “Regular Tunnel”. You want to choose a location that is closest to your physical location for the best response time.

### Topology

The example topology has 2 VyOS routers. One as The WAN Router and on as a Client, to test a single LAN setup



### Configuration

First, we configure the vyos-wan interface to get a DHCP address.

```
set interfaces ethernet eth1 address dhcp
```

Now we are able to setup the tunnel interface.

```
set interfaces tunnel tun0 address '2001:470:6c:779::2/64' #Tunnelbroker Client IPv6
↪Address
set interfaces tunnel tun0 description 'HE.NET IPv6 Tunnel'
set interfaces tunnel tun0 encapsulation 'sit'
set interfaces tunnel tun0 remote '216.66.86.114' #Tunnelbroker Server IPv4 Address
set interfaces tunnel tun0 source-address '172.29.129.60' # Tunnelbroker Client IPv4
↪Address or if there is NAT the current WAN interface address
```

Setup the ipv6 default route to the tunnel interface

```
set protocols static route6 ::/0 interface tun0
```

Now you should be able to ping a public IPv6 Address

```
vyos@vyos-wan:~$ ping 2001:470:20::2 count 4
PING 2001:470:20::2(2001:470:20::2) 56 data bytes
64 bytes from 2001:470:20::2: icmp_seq=1 ttl=64 time=33.8 ms
64 bytes from 2001:470:20::2: icmp_seq=2 ttl=64 time=43.9 ms
64 bytes from 2001:470:20::2: icmp_seq=3 ttl=64 time=43.4 ms
64 bytes from 2001:470:20::2: icmp_seq=4 ttl=64 time=42.5 ms

--- 2001:470:20::2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 2999ms
rtt min/avg/max/mdev = 33.802/40.920/43.924/4.139 ms
```

Assuming the pings are successful, you need to add some DNS servers. Some options:

```
set system name-server 2001:470:20::2 #Tunnelbroker DNS Server
```

You should now be able to ping something by IPv6 DNS name:

```
vyos@vyos-wan:~$ ping tunnelbroker.net count 4
PING tunnelbroker.net(tunnelbroker.net (2001:470:0:63::2)) 56 data bytes
64 bytes from tunnelbroker.net (2001:470:0:63::2): icmp_seq=1 ttl=48 time=285 ms
64 bytes from tunnelbroker.net (2001:470:0:63::2): icmp_seq=2 ttl=48 time=186 ms
64 bytes from tunnelbroker.net (2001:470:0:63::2): icmp_seq=3 ttl=48 time=178 ms
64 bytes from tunnelbroker.net (2001:470:0:63::2): icmp_seq=4 ttl=48 time=177 ms

--- tunnelbroker.net ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3002ms
rtt min/avg/max/mdev = 176.707/206.638/285.128/45.457 ms
```

## LAN Configuration

At this point, your VyOS install should have full IPv6, but now your LAN devices need access.

With Tunnelbroker.net, you have two options:

- Routed /64. This is the default assignment. In IPv6-land, it's good for a single "LAN", and is somewhat equivalent to a /24.
- Routed /48. This is something you can request by clicking the "Assign /48" link in the Tunnelbroker.net tunnel config. It allows you to have up to 65k

Unlike IPv4, IPv6 is really not designed to be broken up smaller than /64. So if you ever want to have multiple LANs, VLANs, DMZ, etc, you'll want to ignore the assigned /64, and request the /48 and use that.

### 13.2.2 Single LAN Setup

Single LAN setup where eth2 is your LAN interface. Use the Tunnelbroker Routed /64 prefix

```
set interface ethernet eth2 address '2001:470:6d:778::1/64' # Tunnelbroker Routed /64
↪prefix
set service router-advert interface eth2 name-server '2001:470:20::2'
set service router-advert interface eth2 prefix 2001:470:6d:778::/64 # Tunnelbroker
↪Routed /64 prefix
```

Please note, 'autonomous-flag' and 'on-link-flag' are enabled by default, 'valid-lifetime' and 'preferred-lifetime' are set to default values of 30 days and 4 hours respectively.

And the client to receive an IPv6 address with stateless autoconfig.

```
set interfaces ethernet eth1 ipv6 address autoconf
```

This accomplishes a few things:

- Sets your LAN interface's IP address
- Enables router advertisements. This is an IPv6 alternative for DHCP (though DHCPv6 can still be used). With RAs, Your devices will automatically find the information they need for routing and DNS.

Now the Client is able to ping a public IPv6 address

```
vyos@client:~$ ping 2001:470:20::2 count 4
PING 2001:470:20::2(2001:470:20::2) 56 data bytes
64 bytes from 2001:470:20::2: icmp_seq=1 ttl=63 time=32.1 ms
64 bytes from 2001:470:20::2: icmp_seq=2 ttl=63 time=41.8 ms
64 bytes from 2001:470:20::2: icmp_seq=3 ttl=63 time=41.7 ms
64 bytes from 2001:470:20::2: icmp_seq=4 ttl=63 time=47.1 ms

--- 2001:470:20::2 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3005ms
rtt min/avg/max/mdev = 32.128/40.688/47.107/5.403 ms
```

### 13.2.3 Multiple LAN/DMZ Setup

That's how you can expand the example above. Use the *Routed /48* information. This allows you to assign a different /64 to every interface, LAN, or even device. Or you could break your network into smaller chunks like /56 or /60.

The format of these addresses:

- *2001:470:xxxx::/48*: The whole subnet. xxxx should come from Tunnelbroker.
- *2001:470:xxxx:1::/64*: A subnet suitable for a LAN
- *2001:470:xxxx:2::/64*: Another subnet
- *2001:470:xxxx:fff:/64*: The last usable /64 subnet.

In the above examples, 1,2,fff are all chosen by you. You can use 1-fff (1-65535).

So, when your LAN is eth1, your DMZ is eth2, your cameras are on eth3, etc:

```
set interfaces ethernet eth1 address '2001:470:xxxx:1::1/64'
set service router-advert interface eth1 name-server '2001:470:20::2'
set service router-advert interface eth1 prefix 2001:470:xxxx:1::/64

set interfaces ethernet eth2 address '2001:470:xxxx:2::1/64'
set service router-advert interface eth2 name-server '2001:470:20::2'
set service router-advert interface eth2 prefix 2001:470:xxxx:2::/64

set interfaces ethernet eth3 address '2001:470:xxxx:3::1/64'
set service router-advert interface eth3 name-server '2001:470:20::2'
set service router-advert interface eth3 prefix 2001:470:xxxx:3::/64
```

Please note, ‘autonomous-flag’ and ‘on-link-flag’ are enabled by default, ‘valid-lifetime’ and ‘preferred-lifetime’ are set to default values of 30 days and 4 hours respectively.

### 13.2.4 Firewall

Finally, don’t forget the firewall. The usage is identical, except for instead of *set firewall name NAME*, you would use *set firewall ipv6-name NAME*.

Similarly, to attach the firewall, you would use *set interfaces ethernet eth0 firewall in ipv6-name* or *et firewall zone LOCAL from WAN firewall ipv6-name*.

## 13.3 L3VPN EVPN with VyOS

Testdate: 2023-05-11

Version: 1.4-rolling-202305100734

I spun up a new lab in EVE-NG, which represents this as the “Foo Bar - Service Provider Inc.” that has 3 points of presence (PoP) in random datacenters/sites named PE1, PE2, and PE3. Each PoP aggregates at least two customers.

I named the customers blue, red and green which is common practice in VRF (Virtual Routing and Forwarding) documentation scenarios.

- PE1 is located in an industrial area that holds multiple office buildings. All customers have a site in this area.
- PE2 is located in a smaller area where by coincidence two customers (blue and red) share an office building.
- PE3 is located in a smaller area where by coincidence two customers (blue and green) are located.

### 13.3.1 Management VRF

A brief excursion into VRFs: This has been one of the longest-standing feature requests of VyOS (dating back to 2016) which can be described as “a VLAN for layer 2 is what a VRF is for layer 3”. With VRFs, a router/system can hold multiple, isolated routing tables on the same system. If you wonder what’s the difference between multiple tables that people used for policy-based routing since forever, it’s that a VRF also isolates connected routes rather than just static and dynamically learned routes, so it allows NICs in different VRFs to use conflicting network ranges without issues.

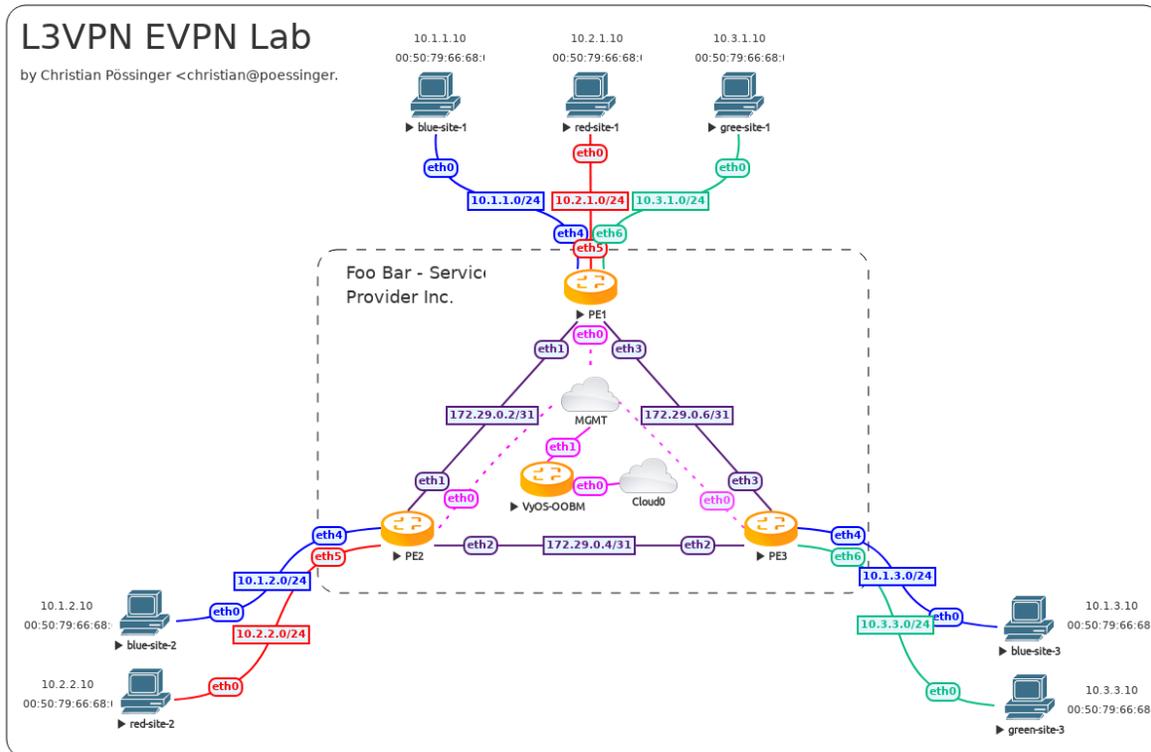
VyOS 1.3 added initial support for VRFs (including IPv4/IPv6 static routing) and VyOS 1.4 now enables full dynamic routing protocol support for OSPF, IS-IS, and BGP for individual VRFs.

The lab I built is using a VRF (called **mgmt**) to provide out-of-band SSH access to the PE (Provider Edge) routers.

```
set system host-name PE1
set interfaces ethernet eth0 address 'dhcp'
set interfaces ethernet eth0 description 'out-of-band management'
set interfaces ethernet eth0 vrf 'mgmt'
set service ssh vrf 'mgmt'
set vrf name mgmt table '1000'
```

### 13.3.2 Topology

We use the following network topology in this example:



### 13.3.3 Core network

I chose to run OSPF as the IGP (Interior Gateway Protocol). All required BGP sessions are established via a dummy interfaces (similar to the loopback, but in Linux you can have only one loopback, while there can be many dummy interfaces) on the PE routers. In case of a link failure, traffic is diverted in the other direction in this triangle setup and BGP sessions will not go down. One could even enable BFD (Bidirectional Forwarding Detection) on the links for a faster failover and resilience in the network.

Regular VyOS users will notice that the BGP syntax has changed in VyOS 1.4 from even the prior post about this subject. This is due to T1711, where it was finally decided to get rid of the redundant BGP ASN (Autonomous System Number) specification on the CLI and move it to a single leaf node (set protocols bgp local-as).

It's important to note that all your existing configurations will be migrated automatically on image upgrade. Nothing to do on your side.

PE1

```
set interfaces dummy dum0 address '172.29.255.1/32'

set interfaces ethernet eth1 address '172.29.0.2/31'
set interfaces ethernet eth1 description 'link to pe2'
set interfaces ethernet eth1 mtu '1600'
set interfaces ethernet eth3 address '172.29.0.6/31'
set interfaces ethernet eth3 description 'link to pe3'
```

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```

set interfaces ethernet eth3 mtu '1600'

set protocols ospf area 0 network '172.29.0.2/31'
set protocols ospf area 0 network '172.29.0.6/31'
set protocols ospf interface eth1 network 'point-to-point'
set protocols ospf interface eth3 network 'point-to-point'
set protocols ospf interface eth1 passive disable
set protocols ospf interface eth3 passive disable
set protocols ospf log-adjacency-changes detail
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '172.29.255.1'
set protocols ospf passive-interface 'default'
set protocols ospf redistribute connected

set protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set protocols bgp address-family l2vpn-evpn advertise-all-vni
set protocols bgp system-as '100'
set protocols bgp neighbor 172.29.255.2 peer-group 'ibgp'
set protocols bgp neighbor 172.29.255.3 peer-group 'ibgp'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '172.29.255.1'
set protocols bgp peer-group ibgp address-family l2vpn-evpn
set protocols bgp peer-group ibgp remote-as '100'
set protocols bgp peer-group ibgp update-source 'dum0'

```

PE2

```

set interfaces dummy dum0 address '172.29.255.2/32'

set interfaces ethernet eth1 address '172.29.0.3/31'
set interfaces ethernet eth1 description 'link to pe1'
set interfaces ethernet eth1 mtu '1600'
set interfaces ethernet eth2 address '172.29.0.4/31'
set interfaces ethernet eth2 description 'link to pe3'
set interfaces ethernet eth2 mtu '1600'

set protocols ospf area 0 network '172.29.0.2/31'
set protocols ospf area 0 network '172.29.0.4/31'
set protocols ospf interface eth1 network 'point-to-point'
set protocols ospf interface eth2 network 'point-to-point'
set protocols ospf interface eth1 passive disable
set protocols ospf interface eth2 passive disable
set protocols ospf log-adjacency-changes detail
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '172.29.255.2'
set protocols ospf passive-interface 'default'
set protocols ospf redistribute connected

set protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set protocols bgp address-family l2vpn-evpn advertise-all-vni
set protocols bgp system-as '100'
set protocols bgp neighbor 172.29.255.1 peer-group 'ibgp'

```

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```

set protocols bgp neighbor 172.29.255.3 peer-group 'ibgp'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '172.29.255.2'
set protocols bgp peer-group ibgp address-family l2vpn-evpn
set protocols bgp peer-group ibgp remote-as '100'
set protocols bgp peer-group ibgp update-source 'dum0'

```

PE3

```

set interfaces dummy dum0 address '172.29.255.3/32'

set interfaces ethernet eth2 address '172.29.0.5/31'
set interfaces ethernet eth2 description 'link to pe2'
set interfaces ethernet eth2 mtu '1600'
set interfaces ethernet eth3 address '172.29.0.7/31'
set interfaces ethernet eth3 description 'link to pe1'
set interfaces ethernet eth3 mtu '1600'

set protocols ospf area 0 network '172.29.0.4/31'
set protocols ospf area 0 network '172.29.0.6/31'
set protocols ospf interface eth2 network 'point-to-point'
set protocols ospf interface eth3 network 'point-to-point'
set protocols ospf interface eth2 passive disable
set protocols ospf interface eth3 passive disable
set protocols ospf log-adjacency-changes detail
set protocols ospf parameters abr-type 'cisco'
set protocols ospf parameters router-id '172.29.255.3'
set protocols ospf passive-interface 'default'
set protocols ospf redistribute connected

set protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set protocols bgp address-family l2vpn-evpn advertise-all-vni
set protocols bgp system-as '100'
set protocols bgp neighbor 172.29.255.1 peer-group 'ibgp'
set protocols bgp neighbor 172.29.255.2 peer-group 'ibgp'
set protocols bgp parameters log-neighbor-changes
set protocols bgp parameters router-id '172.29.255.3'
set protocols bgp peer-group ibgp address-family l2vpn-evpn
set protocols bgp peer-group ibgp remote-as '100'
set protocols bgp peer-group ibgp update-source 'dum0'

```

### 13.3.4 Tenant networks (VRFs)

Once all routers can be safely remotely managed and the core network is operational, we can now setup the tenant networks.

Every tenant is assigned an individual VRF that would support overlapping address ranges for customers blue, red and green. In our example, we do not use overlapping ranges to make it easier when showing debug commands.

Thus you can easily match it to one of the devices/networks below.

Every router that provides access to a customer network needs to have the customer network (VRF + VNI) configured. To make our own lives easier, we utilize the same VRF table id (local routing table number) and VNI (Virtual Network

Identifier) per tenant on all our routers.

- blue uses local routing table id and VNI 2000
- red uses local routing table id and VNI 3000
- green uses local routing table id and VNI 4000

PE1

```

set interfaces vxlan vxlan2000 mtu '1500'
set interfaces vxlan vxlan2000 parameters nolearning
set interfaces vxlan vxlan2000 port '4789'
set interfaces vxlan vxlan2000 source-address '172.29.255.1'
set interfaces vxlan vxlan2000 vni '2000'

set vrf name blue protocols bgp address-family ipv4-unicast redistribute connected
set vrf name blue protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name blue protocols bgp system-as '100'
set vrf name blue table '2000'
set vrf name blue vni '2000'

set interfaces vxlan vxlan3000 mtu '1500'
set interfaces vxlan vxlan3000 parameters nolearning
set interfaces vxlan vxlan3000 port '4789'
set interfaces vxlan vxlan3000 source-address '172.29.255.1'
set interfaces vxlan vxlan3000 vni '3000'

set vrf name red protocols bgp address-family ipv4-unicast redistribute connected
set vrf name red protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name red protocols bgp system-as '100'
set vrf name red table '3000'
set vrf name red vni '3000'

set interfaces vxlan vxlan4000 mtu '1500'
set interfaces vxlan vxlan4000 parameters nolearning
set interfaces vxlan vxlan4000 port '4789'
set interfaces vxlan vxlan4000 source-address '172.29.255.1'
set interfaces vxlan vxlan4000 vni '4000'

set vrf name green protocols bgp address-family ipv4-unicast redistribute connected
set vrf name green protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name green protocols bgp system-as '100'
set vrf name green table '4000'
set vrf name green vni '4000'

set interfaces bridge br2000 address '10.1.1.1/24'
set interfaces bridge br2000 description 'customer blue'
set interfaces bridge br2000 member interface eth4
set interfaces bridge br2000 member interface vxlan2000
set interfaces bridge br2000 vrf 'blue'

set interfaces bridge br3000 address '10.2.1.1/24'
set interfaces bridge br3000 description 'customer red'
set interfaces bridge br3000 member interface eth5

```

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```
set interfaces bridge br3000 member interface vxlan3000
set interfaces bridge br3000 vrf 'red'

set interfaces bridge br4000 address '10.3.1.1/24'
set interfaces bridge br4000 description 'customer green'
set interfaces bridge br4000 member interface eth6
set interfaces bridge br4000 member interface vxlan4000
set interfaces bridge br4000 vrf 'green'

set interfaces ethernet eth4 description 'customer blue'
set interfaces ethernet eth5 description 'customer red'
set interfaces ethernet eth6 description 'customer green'
```

PE2

```
set interfaces vxlan vxlan2000 mtu '1500'
set interfaces vxlan vxlan2000 parameters nolearning
set interfaces vxlan vxlan2000 port '4789'
set interfaces vxlan vxlan2000 source-address '172.29.255.2'
set interfaces vxlan vxlan2000 vni '2000'

set vrf name blue protocols bgp address-family ipv4-unicast redistribute connected
set vrf name blue protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name blue protocols bgp system-as '100'
set vrf name blue table '2000'
set vrf name blue vni '2000'

set interfaces vxlan vxlan3000 mtu '1500'
set interfaces vxlan vxlan3000 parameters nolearning
set interfaces vxlan vxlan3000 port '4789'
set interfaces vxlan vxlan3000 source-address '172.29.255.2'
set interfaces vxlan vxlan3000 vni '3000'

set vrf name red protocols bgp address-family ipv4-unicast redistribute connected
set vrf name red protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name red protocols bgp system-as '100'
set vrf name red table '3000'
set vrf name red vni '3000'

set interfaces vxlan vxlan4000 mtu '1500'
set interfaces vxlan vxlan4000 parameters nolearning
set interfaces vxlan vxlan4000 port '4789'
set interfaces vxlan vxlan4000 source-address '172.29.255.2'
set interfaces vxlan vxlan4000 vni '4000'

set vrf name green protocols bgp address-family ipv4-unicast redistribute connected
set vrf name green protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name green protocols bgp system-as '100'
set vrf name green table '4000'
set vrf name green vni '4000'

set interfaces bridge br2000 address '10.1.2.1/24'
```

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```
set interfaces bridge br2000 description 'customer blue'
set interfaces bridge br2000 member interface eth4
set interfaces bridge br2000 member interface vxlan2000
set interfaces bridge br2000 vrf 'blue'

set interfaces bridge br3000 address '10.2.2.1/24'
set interfaces bridge br3000 description 'customer red'
set interfaces bridge br3000 member interface eth5
set interfaces bridge br3000 member interface vxlan3000
set interfaces bridge br3000 vrf 'red'

set interfaces ethernet eth4 description 'customer blue'
set interfaces ethernet eth5 description 'customer red'
```

PE3

```
set interfaces vxlan vxlan2000 mtu '1500'
set interfaces vxlan vxlan2000 parameters nolearning
set interfaces vxlan vxlan2000 port '4789'
set interfaces vxlan vxlan2000 source-address '172.29.255.3'
set interfaces vxlan vxlan2000 vni '2000'

set vrf name blue protocols bgp address-family ipv4-unicast redistribute connected
set vrf name blue protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name blue protocols bgp system-as '100'
set vrf name blue table '2000'
set vrf name blue vni '2000'

set interfaces vxlan vxlan3000 mtu '1500'
set interfaces vxlan vxlan3000 parameters nolearning
set interfaces vxlan vxlan3000 port '4789'
set interfaces vxlan vxlan3000 source-address '172.29.255.3'
set interfaces vxlan vxlan3000 vni '3000'

set vrf name red protocols bgp address-family ipv4-unicast redistribute connected
set vrf name red protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name red protocols bgp system-as '100'
set vrf name red table '3000'
set vrf name red vni '3000'

set interfaces vxlan vxlan4000 mtu '1500'
set interfaces vxlan vxlan4000 parameters nolearning
set interfaces vxlan vxlan4000 port '4789'
set interfaces vxlan vxlan4000 source-address '172.29.255.3'
set interfaces vxlan vxlan4000 vni '4000'

set vrf name green protocols bgp address-family ipv4-unicast redistribute connected
set vrf name green protocols bgp address-family l2vpn-evpn advertise ipv4 unicast
set vrf name green protocols bgp system-as '100'
set vrf name green table '4000'
set vrf name green vni '4000'
```

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```

set interfaces bridge br2000 address '10.1.3.1/24'
set interfaces bridge br2000 description 'customer blue'
set interfaces bridge br2000 member interface eth4
set interfaces bridge br2000 member interface vxlan2000
set interfaces bridge br2000 vrf 'blue'

set interfaces bridge br4000 address '10.3.3.1/24'
set interfaces bridge br4000 description 'customer green'
set interfaces bridge br4000 member interface eth6
set interfaces bridge br4000 member interface vxlan4000
set interfaces bridge br4000 vrf 'green'

set interfaces ethernet eth4 description 'customer blue'
set interfaces ethernet eth6 description 'customer green'

```

### 13.3.5 Testing and debugging

You managed to come this far, now we want to see the network and routing tables in action.

Show routes for all VRFs

```

vyos@PE1:~$ show ip route vrf all
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, F - PBR,
       f - OpenFabric,
       > - selected route, * - FIB route, q - queued, r - rejected, b - backup
       t - trapped, o - offload failure

VRF blue:
C>* 10.1.1.0/24 is directly connected, br2000, 00:01:13
B>* 10.1.2.0/24 [200/0] via 172.29.255.2, br2000 onlink, weight 1, 00:00:49
B>* 10.1.3.0/24 [200/0] via 172.29.255.3, br2000 onlink, weight 1, 00:00:49

VRF default:
O 172.29.0.2/31 [110/1] is directly connected, eth1, weight 1, 00:01:09
C>* 172.29.0.2/31 is directly connected, eth1, 00:01:12
O>* 172.29.0.4/31 [110/2] via 172.29.0.3, eth1, weight 1, 00:00:46
   *
   via 172.29.0.7, eth3, weight 1, 00:00:46
O 172.29.0.6/31 [110/1] is directly connected, eth3, weight 1, 00:01:09
C>* 172.29.0.6/31 is directly connected, eth3, 00:01:12
C>* 172.29.255.1/32 is directly connected, dum0, 00:01:14
O>* 172.29.255.2/32 [110/20] via 172.29.0.3, eth1, weight 1, 00:00:50
O>* 172.29.255.3/32 [110/20] via 172.29.0.7, eth3, weight 1, 00:00:45

VRF green:
C>* 10.3.1.0/24 is directly connected, br4000, 00:01:13
B>* 10.3.3.0/24 [200/0] via 172.29.255.3, br4000 onlink, weight 1, 00:00:49

VRF mgmt:
S>* 0.0.0.0/0 [210/0] via 10.100.0.1, eth0, weight 1, 00:01:45

```

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```
C>* 10.100.0.0/24 is directly connected, eth0, 00:01:45
VRF red:
C>* 10.2.1.0/24 is directly connected, br3000, 00:01:13
B>* 10.2.2.0/24 [200/0] via 172.29.255.2, br3000 onlink, weight 1, 00:00:49
```

#### Information about Ethernet Virtual Private Networks

```
vyos@PE1:~$ show bgp l2vpn evpn
BGP table version is 1, local router ID is 172.29.255.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal
Origin codes: i - IGP, e - EGP, ? - incomplete
EVPN type-1 prefix: [1]:[EthTag]:[ESI]:[IPlen]:[VTEP-IP]:[Frag-id]
EVPN type-2 prefix: [2]:[EthTag]:[MAClen]:[MAC]:[IPlen]:[IP]
EVPN type-3 prefix: [3]:[EthTag]:[IPlen]:[OrigIP]
EVPN type-4 prefix: [4]:[ESI]:[IPlen]:[OrigIP]
EVPN type-5 prefix: [5]:[EthTag]:[IPlen]:[IP]

  Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 10.1.1.1:5
*> [5]:[0]:[24]:[10.1.1.0]
      172.29.255.1          0          32768 ?
      ET:8 RT:100:2000 Rmac:4e:bb:3c:ba:bd:a6
Route Distinguisher: 10.1.2.1:4
*>i [5]:[0]:[24]:[10.1.2.0]
      172.29.255.2          0    100    0 ?
      RT:100:2000 ET:8 Rmac:26:07:da:eb:fc:ea
Route Distinguisher: 10.1.3.1:4
*>i [5]:[0]:[24]:[10.1.3.0]
      172.29.255.3          0    100    0 ?
      RT:100:2000 ET:8 Rmac:26:98:28:24:6e:54
Route Distinguisher: 10.2.1.1:6
*> [5]:[0]:[24]:[10.2.1.0]
      172.29.255.1          0          32768 ?
      ET:8 RT:100:3000 Rmac:50:00:00:01:00:05
Route Distinguisher: 10.2.2.1:5
*>i [5]:[0]:[24]:[10.2.2.0]
      172.29.255.2          0    100    0 ?
      RT:100:3000 ET:8 Rmac:50:00:00:02:00:05
Route Distinguisher: 10.3.1.1:7
*> [5]:[0]:[24]:[10.3.1.0]
      172.29.255.1          0          32768 ?
      ET:8 RT:100:4000 Rmac:50:00:00:01:00:06
Route Distinguisher: 10.3.3.1:6
*>i [5]:[0]:[24]:[10.3.3.0]
      172.29.255.3          0    100    0 ?
      RT:100:4000 ET:8 Rmac:06:32:9d:22:55:8a

Displayed 7 out of 7 total prefixes
```

If we need to retrieve information about a specific host/network inside the EVPN network we need to run

```
vyos@PE2:~$ show bgp l2vpn evpn 10.3.1.10
BGP routing table entry for 10.3.1.1:7:[5]:[0]:[24]:[10.3.1.0]
Paths: (1 available, best #1)
  Not advertised to any peer
  Route [5]:[0]:[24]:[10.3.1.0] VNI 4000
  Local
    172.29.255.1 (metric 20) from 172.29.255.1 (172.29.255.1)
    Origin incomplete, metric 0, localpref 100, valid, internal, best (First path
↪received)
    Extended Community: RT:100:4000 ET:8 Rmac:50:00:00:01:00:06
    Last update: Thu May 11 13:31:13 2023
```

## 13.4 Wireguard

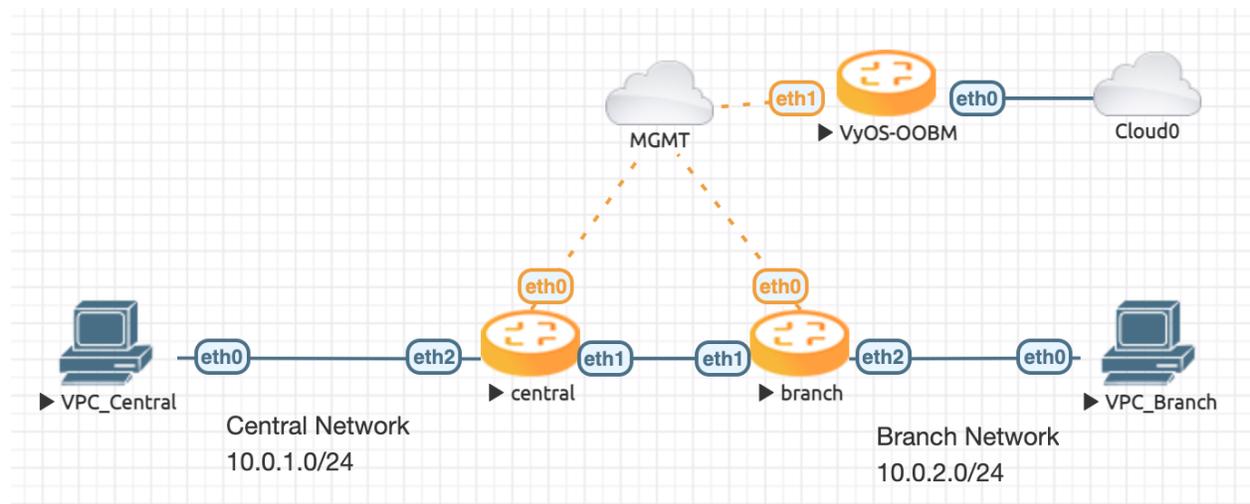
Testdate: 2024-01-13

Version: 1.5-rolling-202401121239

This simple structure show how to connect two offices. One remote branch and the central office.

### 13.4.1 Topology

The topology have a central and a branch VyOS router and one client, to test, in each site.



## 13.4.2 Configuration

Set the local subnet on eth2 and the public ip address eth1 on each site.

Central

```
set interface ethernet eth2 address 10.0.1.254/24
set interface ethernet eth1 address 198.51.100.1/24
```

Branch

```
set interface ethernet eth2 address 10.0.2.254/24
set interface ethernet eth1 address 198.51.100.2/24
```

Next thing to do, is to create a wireguard keypair on each side. After this, the public key can be displayed, to save for later.

```
vyos@central:~$ generate pki wireguard
Private key: wHQS+ib3eMIp2DxRiAeXffVaSCMMP1YHBaKfSR1xfV8=
Public key: RCMY6BAER0uEcPvspUb3K38MHyHJpK5kiV5IOX943HI=
```

After you have each public key. The wireguard interfaces can be setup.

Central

```
set interfaces wireguard wg01 private-key 'wHQS+ib3eMIp2DxRiAeXffVaSCMMP1YHBaKfSR1xfV8='
set interfaces wireguard wg01 address 192.168.0.1/24
set interfaces wireguard wg01 description 'VPN-to-Branch'
set interfaces wireguard wg01 peer branch allowed-ips 10.0.2.0/24
set interfaces wireguard wg01 peer branch allowed-ips 192.168.0.0/24
set interfaces wireguard wg01 peer branch address 198.51.100.2
set interfaces wireguard wg01 peer branch port 51820
set interfaces wireguard wg01 peer branch public-key 'nWhMTjGQbQijWaNqHpZ/
↪p8+iAH29HaJDNsdfsRdW9As='
set interfaces wireguard wg01 port 51820
```

Branch

```
set interfaces wireguard wg01 private-key 'QM3ZtmaxstxIDoz00AVLE/F/UVjmdcrOvfKYW/TVw18='
set interfaces wireguard wg01 address 192.168.0.2/24
set interfaces wireguard wg01 description 'VPN-to-central'
set interfaces wireguard wg01 peer central allowed-ips 10.0.1.0/24
set interfaces wireguard wg01 peer central allowed-ips 192.168.0.0/24
set interfaces wireguard wg01 peer central address 198.51.100.1
set interfaces wireguard wg01 peer central port 51820
set interfaces wireguard wg01 peer central public-key
↪'RCMY6BAER0uEcPvspUb3K38MHyHJpK5kiV5IOX943HI='
set interfaces wireguard wg01 port 51820
```

To reach the network, a route must be set on each VyOS host. In this structure, a static interface route will fit the requirements.

Central

```
set protocols static route 10.0.2.0/24 interface wg01
```

Branch

```
set protocols static route 10.0.1.0/24 interface wg01
```

### 13.4.3 Testing and debugging

After all is done and commit, let's take a look if the Wireguard interface is up and running.

```
vyos@central:~$ show interfaces wireguard
Codes: S - State, L - Link, u - Up, D - Down, A - Admin Down
Interface      IP Address      S/L  Description
-----
wg01           192.168.0.1/24  u/u  VPN-to-Branch
```

And ping the Branch PC from your central router to check the response.

```
vyos@central:~$ ping 10.0.2.100 count 4
PING 10.0.2.100 (10.0.2.100) 56(84) bytes of data.
64 bytes from 10.0.2.100: icmp_seq=1 ttl=63 time=0.894 ms
64 bytes from 10.0.2.100: icmp_seq=2 ttl=63 time=0.869 ms
64 bytes from 10.0.2.100: icmp_seq=3 ttl=63 time=0.966 ms
64 bytes from 10.0.2.100: icmp_seq=4 ttl=63 time=0.998 ms

--- 10.0.2.100 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3004ms
rtt min/avg/max/mdev = 0.869/0.931/0.998/0.052 ms
```

## 13.5 OpenVPN with LDAP

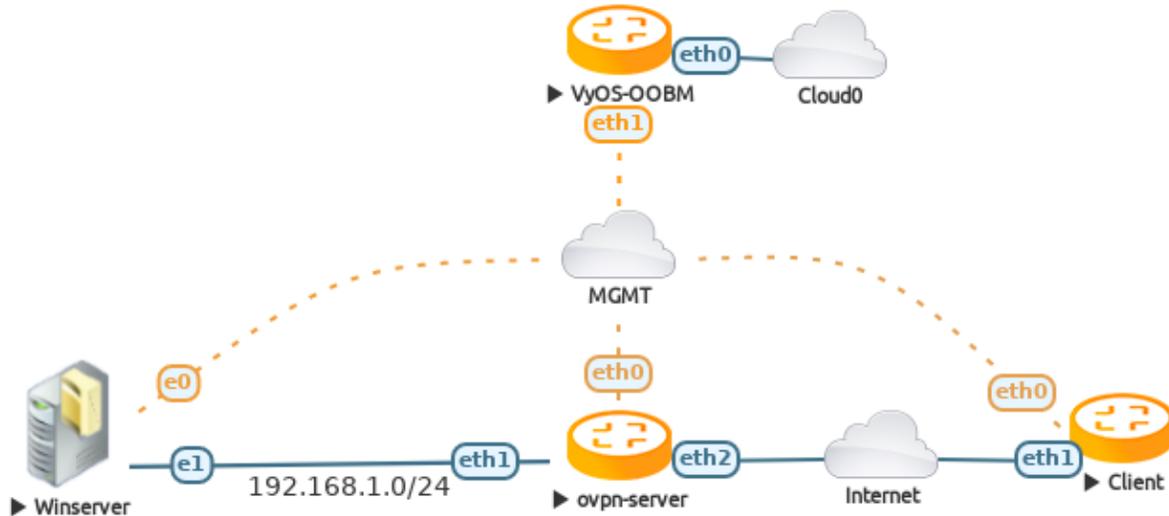
Testdate: 2023-05-11

Version: 1.4-rolling-202305100734

This LAB show how to uwe OpenVPN with a Active Directory authentication backend.

**The Topology are consists of:**

- Windows Server 2019 with a running Active Directory
- VyOS as a OpenVPN Server
- VyOS as Client



### 13.5.1 Active Directory on Windows server

The Lab assume a full running Active Directory on the Windows Server. Here are some PowerShell commands to quickly add a Test Active Directory.

```
# install the Active Directory Server role
Install-WindowsFeature AD-Domain-Services -IncludeManagementTools

# install the Active Directory Server role
Install-ADDSForest -DomainName "vyos.local" -DomainNetBiosName "VYOS" -InstallDns:$true -
↳NoRebootCompletion:$true

# create test user01 and binduser
New-ADUser binduser -AccountPassword(Read-Host -AsSecureString "Input Password") -
↳Enabled $true
New-ADUser user01 -AccountPassword(Read-Host -AsSecureString "Input Password") -Enabled
↳$true
```

### 13.5.2 Configuration VyOS as OpenVPN Server

In this example OpenVPN will be setup with a client certificate and username / password authentication.

First a CA, a signed server and client certificate and a Diffie-Hellman parameter must be generated and installed. Please look [here](#) for more information.

Add the LDAP plugin configuration file `/config/auth/ldap-auth.config`

Check all possible settings [here](#)

```
<LDAP>
URL ldap://192.168.1.10
```

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```
BindDN bind_user@vyos.local
Password P4ssw0rd123
Timeout 15
TLSEnable no
FollowReferrals no
</LDAP>
<Authorization>
BaseDN "DC=vyos,DC=local"
SearchFilter "sAMAccountName=%u"
RequireGroup false
</Authorization>
```

Now generate all required certificates on the ovpn-server:

first the PCA

```
vyos@ovpn-server# run generate pki ca install OVPN-CA
```

after this create a signed server and a client certificate

```
vyos@ovpn-server# run generate pki certificate sign OVPN-CA install SRV
vyos@ovpn-server# run generate pki certificate sign OVPN-CA install CLIENT
```

and last the DH Key

```
vyos@ovpn-server# run generate pki dh install DH
```

after all these steps the config look like this:

```
set pki ca OVPN-CA certificate
→ 'MIIFnTCCA4WgAwIBAgIUIPFIXvCxYdavCnSPFNjr6lUtlsswDQYJKoZIhvcNAQELBQAwVzELMAkGA1UEBhMCROIxZARBgNVBAGM
→ az1C22Sbp3wPJLfgOmy0K3TA5qVsx/c/8gatsatMkCsekGnK5BPzCDD5eCCLo//
→ B25HF06fBYRNvHvVyCUx7QEXw4FHFNG88zCIizx114AGtVwZfGGG9xCc53xjLPUH6iqTXme41cCFFQlqXwZ7fuySieSdoV8SAsJT
→ EyauQMY/
→ LC4tLc6moPaNlTwa9Hjv8s6xUqpzNptDoUHK0qKuw2JRFnno5SCQ788KkKNGVWBy2o3BGoewfHFhAdr61CXeLpmuneuhi96GcM031
→ RchtHRC6rtFavHJjB2cUcCkhhQofUE6IR2dYJZ1cw0WY5CI3bXHf43BpvDgmuxI1NGirTq8wf5RCWzDJJgmkQpYhUYE8x4faF4gTo
→ QD+EIV9xXgOk14+BbnHKWbZ7Ou5emewFuE/
→ bjl79oNjklpXdc4soRkCPCTEGK3zDBdmUtCYk1DwIDAQABo2EwXzAPBgNVHRMBAf8EBTADAQH/MA4GA1UdDwEB/
→ wQEAWIBhjAdBgNVHSUEFjAUBgggrBgEFBQCDAgYIKwYBBQUHAWewHQYDVR00BBYEFp5NDac/
→ yC+mQmaTpZDUv9GZMGMBMA0GCSqSgSIb3DQEBCwUAA4ICAQDEqpF2ibwYFxsF1XDIPS5/
→ Gs0sZTZBuByNm5d2+jTy07d5a1ZUdbvobbwhxZ0hWasmFNyPLr4TYmZm5zF+effSi0xjyRuEoVU+Fe8rZmpRIF/
→ +6+nYX5r9vMI4QxGjeeyP200HJ85Kvz182CTsITrM15Vw/kVVjAVzFI5Gm/
→ Qo1a1AoFQza9rAL4kDqaUszjHjPbysvDpGF+NLPjiYDHXcty/
→ BC48bnuzAeEM60SGZ7EXvf810X8Ys07z39w6780A/3rbZvFhCYMKp/
→ +p5xBRDjnX91dM6DJw73RwYQ1KHbHk9wWUwnL1giL71jzp/
→ y40j6SSK2Pqv+On080J6Zg06WIQx9xYcXr108Xh9FotUrlG7GYPI3Udf95t6SjuydDhULAVD01MBx1De9DHW1k1q1p0XaHzg926tY
→ lda6dcuwJjA2Dx5JI6L0u9ureQmQAtxvnoTCtf+hRliX/IkskZCKs34SjNiCnBuw/
→ DNfdOpfaABm7y+tWiXBwnu5l/
→ K8poXcQYQByyZj6YMmpgsbVPr5KNsLW0gRA81M6IPof8qxvnrkzazhiQWh1YHSjnaHtA3z5/
→ BdgwHVICuFyrIOlbkKyJ0jKcKBSddMwIV0tsnpyli2xEPZKu1tAQFAavXrK/RGYyH0Z3e0aRSV8h1P8i/
→ mf7p0I45cJiBCqPg=='
set pki ca OVPN-CA private key
→ 'MIIJQwIBADANBgkqhkiG9w0BAQEFAASCCS0wggkpAgEAAoICAQDg45vAzS6xNqU+Pa7wk1Imt1/
```

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```

→ az1C22Sbp3wPjLfgOmy0K3TA5qVsx/c/8gatsatMkCsekGnK5BPzCdd5eCCLo//
→ B25HF06fBYRNVhVvYCuX7QEXw4FHFNG88zCIizx114AGtVwZfGGG9xCc53xjLPUh6iqTXme41cCFFQlqXwZ7fuySieSdoV8SAsJT
→ EyauQMY/
→ LC4tLc6moPaNlTwa9Hjv8s6xUqpzNptDoUHK0qKuw2JRFnno5SCQ788KkKngVWBy2o3BGoewfHfHAdR61CXeLpmuneuhi96GcM031
→ RchtHRC6rtFavHjJ2cUcCkhhQofUE6IR2dYJZ1cw0WY5CI3bXHf43BpVdGmuxI1NGirTq8wf5RCWzDJJgmkQpYhUYe8x4faF4gTo
→ QD+EIV9xXgOk14+BbnHKWbZ70u5emewFuE/
→ bjl79oNjklpXdc4soRkCPCTEGK3zDBdmUtCyk1DwIDAQABAOICACVsewzYmD6RU2pKJYSPX4p11a06ADqNZHZi0GR4K+FyXUqDiHT
→ WWeUC6j5ZcH4XH+Gg0yumfCgNsnyNhDlyUNHIjPZBT4Cywvg/QTwEfK8//
→ wEHYudT6aam0IIF1012UW8VgmEiAwMN5Kz476lNqjbgg3efujmJaQhpnULKE2q3V51BC8qhe05JdafDOEE11vOmGj/
→ ARYcbCQhoFJQpDzyTLB8RuEj0cTce7oVXwwTUF104wcmoMCHNvsJxqKwFrER5m+giu83NcKTT13yRl9LVg094XoGDFtRgmW1dd60I
→ 2/mHh6kjv7pvpWdDhjkf+dWZ0frx2YyF5/dUgGG6e94hz0wRunEu4JVK10Qr+Vfsqt/
→ STVDA3vbhaMdMuIR2Ir00koYiqGBdiEGVx82lf4uDu2TXveqKUADXU5SchjP0JZpBAN04RVoxFpY2r1tEh/
→ sRBu9wY+Fjk4FqdjJomsbmFwhyG/j2VvKkVsq5itsxG/
→ Rg1nTtHE2LN+R6LUquujtn94rIaz6lukEr7Yq9y14Prj5A7tYnuHbcN36b0A3xN7bxXeX6w12naVp0KZPmey6W4HNeN00fTLh8Bp
→ X0THkcDiozCy1IjChL4+GxxA0dp+NBisplvbFWZFAHMnbJx4cc7qMR9k8DDSHNQVgfV6nBa4xBvjBp+san000LV4p+fQZW+n6VMz
→ s2b16P8M1dpik2WhW0GdxHyK3sgZWXIrnkTlQg3EMPb2sPhFZm6pQKpxXw18gGgFzEx4mEpHxHm/
→ igZPVRTnyfGwkPmHu3caF59IWHq4jsUAxRQperRgStAoIBAQDjnJ4dZgcnI4PxiDKDKXeb5ZgjnIL0eyxMZoLtaVYn021LG0uM1AC
→ vmpiYFdPo9aGaVR/fr+yPZ0h4S9wFShRBtDZapjAlds68ROQsvF/
→ fdU4kqtfyIAst1lwtqMPEtmiZjxVubE0h2YEXOpwIEFcu3+MUvqtCd8X/
→ T+VyF4ZQqn64NvYvkoWpfiIkMOgSCbc4agYuPs4Cy1QvN6oLXp+0b8mSzp+ot35n11BGTSY214/
→ 9k6sIzWY7x23GS2g3AUJ2kYUTpQIq2pow8Sc8ptxLwZSQZrAoIBABqHw7E3UDp8D09XmHidVDR1dbC0diyBvuKn8Fm2jABGctwSN
→ 8mRbQU31usnfAkb25ccI3SwH2vtVPGiJSqae1j0yZoDWg2g02UDZ+xiqFFFQRua2hirmBPj8y2rDT3ArN2CQfkWweSNVzcQmxXwC
→ ECggEBAlH17i7k/YwOrsx3aCyGy+ZC39LjDbGtYhiwIGSRy0NmsDsc09nv/
→ TB23FHeufPaSaKNJnzEvMH8TSYcskBop2NclK0ptv08heEQ8MADu3uZHRVna1LQkkHPfUzw6+HjKuSkky1kTcs0/
→ gSjbsPJ0I0JAU9becU2NJj4/4HZpqheNUMRpUXBnRcQNI3DSm3cjSCWwYAAq0/JM5hi2dwK/
→ P5QEMWmuVGLr1f2FZ/Ybi00QWf61IoUuiZN78KYb7KQ0U2y8PaJlBgtBoQZkdaiWfmYNOt8d5NRVO+p8SWM/
→ QwFPpk1Hdora9GnsHARuxxLY17eKgZ2MS6jdsGPV00EUCggEBAPuNZ3peHYHio2EMb6wPnAFV2fAUajymwenr+Bmv5BlAnW7bE2bS
→ GedKiUyxP2UnaFS24mWpe44X3U1C+KJLqJg+zVGXryC7bvHs3N1K1I6H2pRY1fPAh1fUk2KAe+ZP5C7iWwtR6F1PpJ3JoS77qFVh
→ NA1CW3iFWIyG57oFMX1td3i3xJwhjd40M='
set pki certificate SRV certificate 'MIIftTCCA52gAwIBAgIUeZnSAMPohIvKL/1Fy/
→ pW2cV73HkwDQYJKoZIhvcNAQELBQAwVzELMAkGA1UEBhMCRC0IxZARAGBwMCI1NvbWUuU3RhdGUuXjAQBGNVBAcMCVNVbWUuQ21
→ tacarHvpchBKLigJ5FlqNNfJ2vnP87KfCmTA5tkWF7Mtuy990tHZt11vQ3Pim4d6XBongiqmaw7tZeWAIrV1L2/
→ VBjORUrLrQhkk9nSpCYfXoyUQzUKTY75PcwhYLKs6ZO/vPPSBuh97f3XR645Aauf7ZIk2NsUidP2uGZZ/
→ Sr5VC7ovH2l3zz1kIHPcinfvpPEVb5oTt7qEfffk4vnKjy9RY+H1hZowvcAp1zfLaOt/
→ dXaK6vfNutmWdHbYAlIals0EctTr+63ymxmupn7RBjgWtK7MgocGZnt6HKJ4J6teP3WgiSd+I9pdFG4wHZOSVL3axf3rBx7q09D
→ Snvfbly+SlhXw9Ebk368J6j6rhNUkxo/
→ M9fbfgxS0JnJhInRNAvRQW5CgQft9KyUdxR63BeSrngk2XYX+bDin0ig+VDpZcr6PgOBR8aNFsCPbXRwDy0bmuFnFYMzs/
→ 7ZmFQhzE6rQykHvVvAsyv7FYr1W0E02H4+Xe6bEVpE1fLcH8OCGY2cFuTfq1Ax6R4r+tdHYW1kzFLjwdh3uqTLF11zcbkAwd78E/
→ ItrfEadvgrYR9gfhX79AK0VHmZ/
→ hzrLFeGznnVcqqTKgq21dfmFQG2P13QvqS7tce5swM9N09ASVri fyVDuoL6jaW96wgeqR6eHMECAwEAAAN1MhMwDAYDVR0TAQH/
→ BA1wADA0BgNVHQ8BAf8EBAMCB4AwEwYDVR01BAwwCgYIKwYBBQUHAwEwHQYDVR0OBBYEFE1U3Zamfuv6ocYiF9q7H/
→ /U8h+AMB8GA1UdIwQYMBaAFP5NDac/yC+mQmaTpZDUv9GZMGMBMA0GCSqGSIb3DQEBCwUAAICAQBZwHvGj/
→ jziNFwXS2W1Q11I12YANmVhISP39AA7DNhXR+E1hXFs+U52ehurZoLti5Ytjd8PD0KcE58mw8CLsFQB/
→ +pni9EwJuAhpMb6XsmYEp0PeOH7C/q5e0c4TB/
→ NBsvEa5IdTmUoewmjubKeJ80HdRBMi77Me531SC6iskc9DGyixSLqQogQW4aiTposFJOW/
→ YugBy7kiuygmFNjv41uDbyRBb9131zh0qSSishLT4Bp5lXQNYWI4AU0JeyQcYaSHWCr0h6H9GN3Q0f/emc3/
→ 2Tee40fCEmsszJBRnQ3IISzU5xVL1fU02SJmpjvFT2MGfHAs7obrNbwifEoLZ6fQeGLE53a0Q5M9Xew5bdIerZ2rLo01hW33x5jYI
→ mjwfdRtsGChFzsLasB0Tj++mGMOXw3DSusppub17AE2b02u06J9Xm1bkcOC8EmDCF1Hetija4D3aunhtu6jRB0cR8DHVBqNae2YgUk
→ wzcBLjZa08KBCtrmTdr1wMXizPT+XcjAlzRNxvHiZFq0NG5Rnim+LH9tp90EHZ07EeVXV+LegnIKQqboIryY3K0w5Qx8ska+t1WrWH
→ '
set pki certificate SRV private key
→ 'MIIJQwIBADANBgkqhkiG9w0BAQEFAASCCS0wggkpaGAAoICAQCkNbnNwHksUz+1pxpEe+lyEEouKankWwo018na+c/

```

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```

→zsp8KZMDm2RYXsy25j33S0dm2XW9Dc+Kbh3pcE6eCJCZrDu1l5YAiu/
→Uvb9UGM5FSsutCGSSD2dKlXgXGjJRDO6RNjvk9zCFguRLpk7+889IG6H3t/ddHrjkBq5/tkiTY2xSJ0/
→a4ZnP9KvLUlul8faXfPPWQgc8KKd++k8RVvmh03uoR9+Ti+cqPL1Fj4fWFmjC9wCnXN8to6391dorq98261ubAMdtgCUhqWzQRy01
→daCJJ34j2l0UbjAdk5JUvdrF/
→esHHurT0Myf9Ke99uXL5KWFfD0RuTfrwnqPquE1STGj8z19t+DFLQmc2McidE0C9FBbkKBB9P0rJR3FHrcF5KeeCTZdhf5sOKdvSK
→tmYVCHMTqtDKQe9W8CzK/
→sViuVbQTTYfj5d7psRWkTV8twfw4IZjZx+5N+rUDHphiv610dhwWTMUuPB2He6pMsXXXNxuQDB3vwt8i2t8Rp2+DGthH2B+Ffv0CQ
→XdC+pLu0ITmzAz03T0BJWuJ/
→JU06gvqNpb3rCB6pHp4cwQIDAQABaoICAQCgNLAzhFX0E8hNbp1nBUltek0VGQUFnuLKaV1LZXwn8zXNCx1UW619N9e9eSw1uXzhu
→61JN9LxK1SvX3g00g4Jipq0MgvokeF5mdyuvqaC8PWU1k+vo9PaVwsguqy5cSDZbz3F6BcE4Lj693cavRmb5F52+E9yDI/
→P4IhCLKIt4QCgmxIC3XgA43fq75+SV21LUTjzc/
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→ABT5ZX1Z42IDv08mYaH3cquSALJG7yT4+M4AHSmFZ06IuNpTzAepBwd+HJXkzdWmJFPmKpx7c5cjl6sb5q0XGgVt0spN3Dahabi2Z
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→aPB5f61eiazCnuUuWrrycQVYLlELD0pj29mMxAJ0Nr1CIVboYp+YYA7dWNVSUT6T+EV6ASEC6jflb//
→UUUmCjOfxILGMkqvN2T7WguaPL0w21wLx0eDvQA/N8ZTiyKmE+GVRkDwGzC/
→yLeelgzyBgmyr15hfo7Q41VtAs06rzzExc4GasmgQe8z4Y0Gm7t3RDL3GXxBmonZtxNZt0vWvYs/
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set pki certificate CLIENT certificate
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→uCjcxpNnzIp0rhyYmDeqVat4GnTV7Sy48e/Uvcq71ZwBYJF4+yW4pylIU2Sh/

```

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```

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→vpoN+VusD/xEv2V0Ixm10YybA7BI/tixh9vwj3fdQXVLY3jSYjVBd5W0FPizbQZeD10ElvlLqZZyWrP/
→Wre7Nmi/gEOnhBXXmo034fff/vXf0JRpQsd2oDs24+4XwZYb8mbM31j7Nx8Yvhr+64='
set pki certificate CLIENT private key
→'MIIJRAIBADANBqkqhkiG9w0BAQEFAASCCS4wggkqAgEAAoICAQDRzStksHA20as4i9YF2JxyKuz+7xFBb0vHf1y2CdcSKXGE0V07
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→68VYKrkI5B7oH73Z/cl/xgEdI1hag4MLv1gon8wna4yCX/
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→rVl26BXtRPiNPimfwWkrYNYhESN7A5/
→hWcrNUhE4PI+Pjd74npimqs5TDSst2Jc6DiahdaZ6JNNzp2PMUXNbfsmcVgZx+qtVnNvXVMiEngPR1'
set pki dh DH parameters
→'MIIBCACAQEAzPOQWrWaIX2qt4sbV6bRbUnFx4jmeE+WXC8GIvuln4pIr1nt2Gc/
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→9GI1RuVdMcbCtEhg8ja7Y0g3fQjOSQJ9mqFo7sRoXyYQALD+MDEJ0xhnV7neCrgDi1pqn4xZLOR9DLARp0ad30VIvvnv0ay55wxFW
→J8Q+7YXmk4cN9tiVX4xR92edV04z/vhMkjsGKLSdm/
→E6EMusX+N0UhQ3dv7qDgeSS8vDsqBm8XJonumNZLvFbYt2ARGRZYL6DUwIBAg=='

```

Once all the required certificates and keys are installed, the remaining OpenVPN Server configuration can be carried out.

```

set interface ethernet eth1 address '192.168.1.1/24'
set interface ethernet eth2 address '198.51.100.254/24'
set interfaces openvpn vtun10 local-host '198.51.100.254'
set interfaces openvpn vtun10 local-port '1194'

```

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```

set interfaces openvpn vtun10 mode 'server'
set interfaces openvpn vtun10 openvpn-option '--plugin /usr/lib/openvpn/openvpn-auth-
↳ ldap.so /config/auth/ldap-auth.config'
set interfaces openvpn vtun10 persistent-tunnel
set interfaces openvpn vtun10 protocol 'udp'
set interfaces openvpn vtun10 server push-route '192.168.1.0/24'
set interfaces openvpn vtun10 server subnet '10.23.1.0/24'

set interfaces openvpn vtun10 tls ca-certificate OVPN-CA
set interfaces openvpn vtun10 tls certificate SRV
set interfaces openvpn vtun10 tls dh-params DH
set protocols static route 10.1.1.0/24 interface vtun10

```

### 13.5.3 Client configuration

One advantage of having the client certificate stored is the ability to create the client configuration.

```

vyos@ovpn-server:~$ generate openvpn client-config interface vtun10 ca OVPN-CA_
↳ certificate CLIENT

```

save the output to a file and import it in nearly all openvpn clients.

```

client
nobind
remote 198.51.100.254 1194
remote-cert-tls server
proto udp
dev tun
dev-type tun
persist-key
persist-tun
verb 3

# Encryption options

keysize 256
comp-lzo no

<ca>
-----BEGIN CERTIFICATE-----
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BQAwVzELMAkGA1UEBhMCR0IxExARBgNVBAgMC1NvbWUtU3RhdGUxEjAQBGNVBAcM
CVNvbWUtQ210eTENMA5GA1UECgwEVn1PUzEQMA4GA1UEAwwHdn1vcy5pbzAeFw0y
MzA1MTEwMjM4MjJaFw0zMzA1MDgxMjM4MjJaMFcxZjA1BgNVBAYTAkdCMRMwEQYD
VQIDApTb211LVN0YXR1MRIwEAYDVQQHDA1Tb211LUNpdHkxDTALBgNVBAoMBFZ5
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sJTT0sGCEUEcDEnNpn6tX3KWTzNuyFPECy8WCmNgWNyG2nmH+U7WRTX0ehZ5dZyU
5au7TxpRN4a+JtE0gNqcWJ+nh1A543q2pcRoQpPAzHFclgj8wG/EyauQMY/LC4tL

```

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V0tsnpnyli2xEPZKu1tAQFAavXrK/RGYyh0Z3e0aRSV8h1P8i/mf7p0I45cJiBCq
Pg==
```

-----END CERTIFICATE-----

</ca>

<cert>

-----BEGIN CERTIFICATE-----

```
MIIFsDCCA5igAwIBAgIU5zQgwzGsFjFecGxCwLXVsGCLMkAwDQYJKoZIhvcNAQEL
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jTGh4t4rIm0Su5gUsUrQaih85XDd0BPxViSNwfvDzJIgbvamudpfEaKsIun/uCjC
xpNnzIp0rhyYmDeqVat4GnTV7Sy48e/Uvcq71ZWbBYJF4+yW4pylIU2Sh/Uy2sAz
4C2M71F1FB7qsmcnPRsFFHf+r1NyD11kVI9k2371fTG/Kub9V0rOz4pvKz4Em5b4
```

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```
MUPdDbZ0qJ8hQ+atGE3ovFJIovA3NFb00tnyC4l+kG7dfjqFudOrnmDa+Qsya+2Y0
xBZBIRfuhlXhb6Y6Smsk9R6x0jBmcQTPS5ZmvKaTxQCFc53xMdQNASwjiI2L9rw4
BcqQfVmf/vpoN+VusD/XEv2V0Ixm10YybA7BI/tixh9vwj3fdQXVly3jSYjVbd5W
OFPizbQZeD10ElvlLqZzyWrP/Wre7Nmi/gEOnhBXXmo034ffF/vXf0JRpQsd2oDs
24+4XwZYb8mbM31j7Nx8Yvhr+64=
```

```
-----END CERTIFICATE-----
```

```
</cert>
```

```
<key>
```

```
-----BEGIN PRIVATE KEY-----
```

```
MIIJRAIBADANBgkqhkiG9w0BAQEFAASCCS4wggkqAgEAAoICAQRzSTksHA20as4
i9YF2JxyKuz+7xFBb0vHf1y2CdcSKXGE0V07rdgkxkWq+32WYnLu8dMqCuE86x7x
lX9a0DQuDUhleUV+pMEXa31gZr6SJI0ixrQkRBcoW/jxw6Z7CEu3HzfbnQtL6HK1
Zcf8TP7H3D+1Y2v7hafvU0HJ3iSMWMN+M5Bfk7TlWxN6T+VcV02QI/Bef6tTjYUz
HcxuDpeP9JwamX3WANY1Q3kkjSCTReY5Wil1xR89RCUXpk2A8fn+W3wlXCtkLPH1
PYwhQZQE4zLvTua4J0pzC0cBjYwbmdYI9rVkl8+HvcqOclKn9T1ITq593PNTEZY1
DRYq/gpMYECWpej9wK96uIn7SYodyvv4+KNfeJkPw7fxLfv0J/w1BZNhQdK0zHEM
CS0xAM8bU3ZgSXiaYqSDw0dLu1DGSzYf62kPLNxbG20LmDkbn+WEJQlR27YeHUW
vcWvqEW5u3qjQAIg1n5C4eQc7ndfqiH3QTGSmmW539BxHrh9CeSwSXqL2vBD8Vm
2DCT60R87yYKJCCpfriMXMvCIjUwPWBKCVaJwo5pa/DRLWeoayFW4nHTDUiN6Tk
EetDBYZB8AY01NpF8/uMMC8bc6v3NsSsPcqzmeOmVS8BgxavKz8Ke/z/a+pgyrG5
+oyLxjnh+9XTGb6HOJQmGPCPoSiMywIDAQABAoICACNXi396uWyCpXVBGSyi8Lfk
w2GupBmBxiI1Mkj4H2LP2G+nVS1Ye7C2NcY311AeBX56/jd23bqFYRERPGLUtPWN
B0UQyMQsvNpVISM8JR45Sg0xq+bwEXabB7SYlKZDKgsehXkuCJxZd625p153vGM
CKyzt0MBt4qCEsZQM7jpQr9ZLS1DSQV05InI1wKcnp1k2hX2WSZ0nZp7qYbjyyQ
6DsS4D/MpWFjnGsr4XDttXqz1YghTMHlWNPDCYtPN+3B04iPnj+h0qCdXZ28jLE
czAc+oDKtzPqEmv/TDAKe6Qu6x+VbkBPMg+mkoX4qfokRwCs19CGheR38PxdDx7A
gySv7K8hM8gFC0XEqNdjt86KG+N1Ps5Sru4QMrf8j9XXNPUvt0M8wsPVeWa5ubkv
7/h0HIERO0FpEFbzWnhBChPvVfObuuEj15Jnj3KUEncKQFU07mPP/BpysHo3v/p+
VTVoo2UkfVvjamnwQOUt3cV1PVC4FzVgksWJa4f75nGmDv8dafyPrCYciOh0qyhD
5Pw/EBJkKtDBYHaoxtAw9Ann4A5rvZaveLNPES0mo90pJwJbQcZyq9H+UGVnde3
9I4m5vHB5izZJ124Yd3fjRRkrf+/68VYKrki5B7oh73Z/cl/xgEdI1hag4MLv1go
n8wna4yCX/321YPTrDABAoIBAQPdHtvnvpOaoSjkJHUX4EGJkrp5R/mPfebzU20
v5pNICufv++2lsoUVCTDwgp4+7GngqY05vVyW/AS4pSrDx7kdWpFaUtJUUCcCHK/
5hYcvoorYtW1NR+XpiI28IqRp1P0L1+P0mUaRgpEcw6nEnc37XEuJVtB1M/yF2y
6xc+kZGjrZTmJeu0V5kkaGcX1AqUv2k0Lj3tEPQR/qj+kMX5hidROGuybNBESgA5
ELY6QVnpc0yNDyniWq+RIUyBOuXp7DpUbmUANFEEP8lwjZX+HqwTpSjTSFdcPrsm
orc9FpTXA9ktt1Z0ZxBzUvdcWbUeVsFqL0yICiShE7Ux10PBAoIBAQDmZGQ5roSK
KY+VnmjIq2+gx8zsMYeliQm0hnKrFw9MM8U+/XOpXlpNHx2ehrGwp/BbmlmrnQaR
cbLPJArTWSEywbWnG77g+zj0w+4BdsYyTtGGFj4tXVZhPPo/DID3FPLn9cSv8MIV
Wjzg1G/BZcxtCDBDRBhwhZHCPOfd0K/S7rvRBq7IsNNHMTGswWGRMaF+M/trZw7T
sQ0BX+5zZUy08VNBi/NgTV3yoQ8ynBefRt1dmNa2CKXPT+5R19cBtecFEyh3yo8
ryTtM22JzndzA8agQmNPNWmYGivvcNHNikTQ2qUvvc7Siny6j0+CmFdT9b164VP
yRJRfCw3jaOLaOIBAQCQ/10yShRO+myPsql+U0kQQ8Zeh0kPWTJclFbomf7MePffJ
Lj3waMvaZxfS9s9CvvKaCSY2YkTL7S1e5bWozCff27Q05jAgszwnkRGxj/AzAwpj
nCft40UkL7majm2vk+pm6ApjCYPXnqKbcOmBjxJWIoNRkLCDKqW6IOs+zQDRNwPK
Nb5GHfGeA1pKjfgJddg6+u95uEVmPcRBqQ79/5hUAoBUAW7jNNE5mHmZB08DPwCo
tUc82bCojNVkxLxsKPE2VWtWdq+1t9SoevBVZi12zGwPAtHndhQ1OgdONoWUGRT
1J3x1HYewrg1suY0d/GypC17WV4Vw5FS6wopg71BAoIBAQC63vDgTGpauk0p0Vya
b1tSmNzhM2dn4BhMiCu+eqzAzTk013sKBGrQJQ3cODoxDbSKSE61QN9D92nmVQzi
WKNxxmb1zS5sw7g15/nTnCG0Q/P0g3QZTZyzsEb1/s1YH9jKRnEr1+eEdDXu0sB2
```

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```

qIBAA6Th2ojMM7q/RrF3HD6Qo20ZpQb951bnZsJ48j2WDCCGAdnLCSne9zuqQsph
NOf9BUBxYpGcKgSquPJfxXXvjgYdVcvJyIfc+GNAZQaS750bY6eYdLaILDmQZk1R
unLuikCAWni86dvtMEU0qFi0E50vp7jWWNE4CnYSyAzgy3oBssyoG74AQp8addX
k/3zAoIBAQC8/7DglQGMcKnk4zX+7jCuc0p+qMcd5RdnfBKlRhcWYNRPup9jyDef
dkXCBTumCHXrIil/rJzP6b1IZZdC4xkheQpLXNUcceAidRWIrTypaXKkmhR0D74u
ckGiLXB4S84HYmIdw89ZiF0gB0yyZH5mZnqVMojwnGmWqcM2sr2N44bNQMfhD+nC
SgQmReYKKfMQCdvYmXRLQfseU0pFE0Gnh9jAmpn8qWMWxNDmFR/rVl26BXtRPiNP
imfwWkrYNYhESN7A5/hWcrNUhE4PI+Pjd74npimqs5TDSst2Jc6DiahdaZ6JNNzp
2PMUXNbfsmCVgZx+qtVNnVxVMiEngPRl
-----END PRIVATE KEY-----

```

&lt;/key&gt;

### 13.5.4 Monitoring

If the client is connect successfully you can check the output with

```

vyos@ovpn-server:~$ show openvpn server
OpenVPN status on vtun10

```

Client CN	Remote Host	Tunnel IP	Local Host	TX bytes	RX bytes
→ Connected Since					
→ -----					
client	198.51.100.1:55150	10.23.1.6	198.51.100.254:1194	4.7 KB	4.7 KB
→ 2023-05-11 12:47:11					

## BUILD VYOS

### 14.1 Prerequisites

There are different ways you can build VyOS.

Building using a *Docker* container, although not the only way, is the easiest way as all dependencies are managed for you. However, you can also set up your own build machine and run a *Native Build*.

---

**Note:** Starting with VyOS 1.2 the release model of VyOS has changed. VyOS is now **free as in speech, but not as in beer**. This means that while VyOS is still an open source project, the release ISOs are no longer free and can only be obtained via subscription, or by contributing to the community.

The source code remains public and an ISO can be built using the process outlined in this chapter.

The following includes the build process for VyOS 1.2 to the latest version.

---

This will guide you through the process of building a VyOS ISO using *Docker*. This process has been tested on clean installs of Debian Jessie, Stretch, and Buster.

#### 14.1.1 Native Build

To build VyOS natively you require a properly configured build host with the following Debian versions installed:

- Debian Jessie for VyOS 1.2 (crux)
- Debian Buster for VyOS 1.3 (equuleus)
- Debian Bookworm for VyOS 1.4 (sagitta)
- Debian Bookworm for the upcoming VyOS 1.5/circinus/current (subject to change) - aka the rolling release

To start, clone the repository to your local machine:

```
# For VyOS 1.2 (crux)
$ git clone -b crux --single-branch https://github.com/vyos/vyos-build

# For VyOS 1.3 (equuleus)
$ git clone -b equuleus --single-branch https://github.com/vyos/vyos-build

# For VyOS 1.4 (sagitta)
$ git clone -b sagitta --single-branch https://github.com/vyos/vyos-build

# For VyOS 1.5 (circinus,current)
```

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```

$ git clone -b current --single-branch https://github.com/vyos/vyos-build

$ cd vyos-build

# For VyOS 1.2 (crux) and VyOS 1.3 (equuleus)
$ ./configure --architecture amd64 --build-by "j.randomhacker@vyos.io"
$ sudo make iso

# For VyOS 1.4 (sagitta) and VyOS 1.5 (circinus,current)
$ sudo make clean
$ sudo ./build-vyos-image iso --architecture amd64 --build-by "j.randomhacker@vyos.io"

```

For the packages required, you can refer to the `docker/Dockerfile` file in the [repository](#). The `./build-vyos-image` script will also warn you if any dependencies are missing.

This will guide you through the process of building a VyOS ISO using Docker. This process has been tested on clean installs of Debian Bullseye (11) and Bookworm (12).

## 14.1.2 Docker

Installing [Docker](#) and prerequisites:

---

**Hint:** Due to the updated version of Docker, the following examples may become invalid.

---

```

# Add Docker's official GPG key:
sudo apt-get update
sudo apt-get install ca-certificates curl gnupg
sudo install -m 0755 -d /etc/apt/keyrings
curl -fsSL https://download.docker.com/linux/debian/gpg | sudo gpg --dearmor -o /etc/apt/
↪keyrings/docker.gpg
sudo chmod a+r /etc/apt/keyrings/docker.gpg

# Add the repository to Apt sources:
echo \
  "deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.gpg] https://
↪download.docker.com/linux/debian \
  $(. /etc/os-release && echo "$VERSION_CODENAME") stable" | \
  sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

sudo apt-get update
sudo apt-get install docker-ce docker-ce-cli containerd.io docker-buildx-plugin docker-
↪compose-plugin

```

To be able to use [Docker](#) without `sudo`, the current non-root user must be added to the `docker` group by calling: `sudo usermod -aG docker yourusername`.

---

**Hint:** Doing so grants privileges equivalent to the root user! It is recommended to remove the non-root user from the `docker` group after building the VyOS ISO. See also [Docker as non-root](#).

---

---

**Note:** The build process needs to be built on a local file system, building on SMB or NFS shares will result in the container failing to build properly! VirtualBox Drive Share is also not an option as block device operations are not implemented and the drive is always mounted as “nodev”

---

## Build Container

The container can be built by hand or by fetching the pre-built one from DockerHub. Using the pre-built containers from the [VyOS DockerHub organisation](#) will ensure that the container is always up-to-date. A rebuild is triggered once the container changes (please note this will take 2-3 hours after pushing to the vyos-build repository).

## Dockerhub

To manually download the container from DockerHub, run:

```
$ docker pull vyos/vyos-build:crux      # For VyOS 1.2
$ docker pull vyos/vyos-build:equuleus # For VyOS 1.3
$ docker pull vyos/vyos-build:sagitta  # For VyOS 1.4
$ docker pull vyos/vyos-build:current  # For VyOS 1.5 rolling release
```

## Build from source

The container can also be built directly from source:

```
# For VyOS 1.2 (crux)
$ git clone -b crux --single-branch https://github.com/vyos/vyos-build
# For VyOS 1.3 (equuleus)
$ git clone -b equuleus --single-branch https://github.com/vyos/vyos-build
# For VyOS 1.4 (sagitta)
$ git clone -b sagitta --single-branch https://github.com/vyos/vyos-build
# For VyOS 1.5 (circinus,current)
$ git clone -b current --single-branch https://github.com/vyos/vyos-build

$ cd vyos-build
$ docker build -t vyos/vyos-build:crux docker      # For VyOS 1.2
$ docker build -t vyos/vyos-build:equuleus docker # For VyOS 1.3
$ docker build -t vyos/vyos-build:sagitta docker  # For VyOS 1.4
$ docker build -t vyos/vyos-build:current docker  # For VyOS 1.5 rolling release
```

---

**Note:** VyOS has switched to Debian (12) Bookworm in its current branch, Due to software version updates, it is recommended to use the official Docker Hub image to build VyOS ISO.

---

## Tips and Tricks

You can create yourself some handy Bash aliases to always launch the latest - per release train (*current* or *crux*) - container. Add the following to your `.bash_aliases` file:

```
alias vybld='docker pull vyos/vyos-build:current && docker run --rm -it \
-v "$(pwd)":/vyos \
-v "$HOME/.gitconfig":/etc/gitconfig \
-v "$HOME/.bash_aliases":/home/vyos_bld/.bash_aliases \
-v "$HOME/.bashrc":/home/vyos_bld/.bashrc \
-w /vyos --privileged --sysctl net.ipv6.conf.lo.disable_ipv6=0 \
-e GOSU_UID=$(id -u) -e GOSU_GID=$(id -g) \
vyos/vyos-build:current bash'

alias vybld_crux='docker pull vyos/vyos-build:crux && docker run --rm -it \
-v "$(pwd)":/vyos \
-v "$HOME/.gitconfig":/etc/gitconfig \
-v "$HOME/.bash_aliases":/home/vyos_bld/.bash_aliases \
-v "$HOME/.bashrc":/home/vyos_bld/.bashrc \
-w /vyos --privileged --sysctl net.ipv6.conf.lo.disable_ipv6=0 \
-e GOSU_UID=$(id -u) -e GOSU_GID=$(id -g) \
vyos/vyos-build:crux bash'
```

Now you are prepared with two new aliases `vybld` and `vybld_crux` to spawn your development containers in your current working directory.

---

**Note:** Some VyOS packages (namely `vyos-1x`) come with build-time tests which verify some of the internal library calls that they work as expected. Those tests are carried out through the Python `Unittest` module. If you want to build the `vyos-1x` package (which is our main development package) you need to start your Docker container using the following argument: `--sysctl net.ipv6.conf.lo.disable_ipv6=0`, otherwise those tests will fail.

---

## 14.2 Build ISO

Now as you are aware of the prerequisites we can continue and build our own ISO from source. For this we have to fetch the latest source code from GitHub. Please note as this will differ for both *current* and *crux*.

```
# For VyOS 1.2 (crux)
$ git clone -b crux --single-branch https://github.com/vyos/vyos-build

# For VyOS 1.3 (equuleus)
$ git clone -b equuleus --single-branch https://github.com/vyos/vyos-build

# For VyOS 1.4 (sagitta)
$ git clone -b sagitta --single-branch https://github.com/vyos/vyos-build

# For VyOS 1.5 (circinus,current)
$ git clone -b current --single-branch https://github.com/vyos/vyos-build
```

Now a fresh build of the VyOS ISO can begin. Change directory to the `vyos-build` directory and run:

```

$ cd vyos-build
# For VyOS 1.2 (crux)
$ docker run --rm -it --privileged -v $(pwd):/vyos -w /vyos vyos/vyos-build:crux bash

# For VyOS 1.3 (equuleus)
$ docker run --rm -it --privileged -v $(pwd):/vyos -w /vyos vyos/vyos-build:equuleus bash

# For VyOS 1.4 (sagitta)
$ docker run --rm -it --privileged -v $(pwd):/vyos -w /vyos vyos/vyos-build:sagitta bash

# For VyOS 1.5 (current)
$ docker run --rm -it --privileged -v $(pwd):/vyos -w /vyos vyos/vyos-build:current bash

```

```

# For MacOS (crux, equuleus, sagitta)
$ git clone https://github.com/vyos/vyos-utils-misc
$ cd build-tools/macos-build

# For VyOS 1.2 (crux)
$ os=jessie64 branch=crux make build

# For VyOS 1.3 (equuleus)
$ os=buster64 branch=equuleus make build

# For VyOS 1.4 (sagitta)
$ os=buster64 branch=sagitta make build

```

Start the build:

```

# For VyOS 1.2 (crux) and VyOS 1.3 (equuleus)
vyos_bld@8153428c7e1f:/vyos$ ./configure --architecture amd64 --build-by "j.
↳randomhacker@vyos.io"
vyos_bld@8153428c7e1f:/vyos$ sudo make iso

# For VyOS 1.4 (sagitta) For VyOS 1.5 (circinus,current)
vyos_bld@8153428c7e1f:/vyos$ sudo make clean
vyos_bld@8153428c7e1f:/vyos$ sudo ./build-vyos-image iso --architecture amd64 --build-by
↳"j.randomhacker@vyos.io"

```

When the build is successful, the resulting iso can be found inside the build directory as `live-image-[architecture].hybrid.iso`.

Good luck!

---

**Hint:** Building VyOS on Windows WSL2 with Docker integrated into WSL2 will work like a charm. No problems are known so far!

---

## 14.2.1 Customize

This ISO can be customized with the following list of configure options. The full and current list can be generated with `./build-vyos-image --help`:

```
$ vyos_bld@8153428c7e1f:/vyos$ sudo ./build-vyos-image --help
I: Checking if packages required for VyOS image build are installed
usage: build-vyos-image [-h] [--architecture ARCHITECTURE]
[--build-by BUILD_BY] [--debian-mirror DEBIAN_MIRROR]
[--debian-security-mirror DEBIAN_SECURITY_MIRROR]
[--pbuilder-debian-mirror PBUILDER_DEBIAN_MIRROR]
[--vyos-mirror VYOS_MIRROR] [--build-type BUILD_TYPE]
[--version VERSION] [--build-comment BUILD_COMMENT] [--debug] [--dry-run]
[--custom-apt-entry CUSTOM_APT_ENTRY] [--custom-apt-key CUSTOM_APT_KEY]
[--custom-package CUSTOM_PACKAGE]
    [build_flavor]

positional arguments:
build_flavor          Build flavor

optional arguments:
-h, --help            show this help message and exit
--architecture ARCHITECTURE
                        Image target architecture (amd64 or arm64)
--build-by BUILD_BY  Builder identifier (e.g. jrandomhacker@example.net)
--debian-mirror DEBIAN_MIRROR
                        Debian repository mirror
--debian-security-mirror DEBIAN_SECURITY_MIRROR
                        Debian security updates mirror
--pbuilder-debian-mirror PBUILDER_DEBIAN_MIRROR
                        Debian repository mirror for pbuilder env bootstrap
--vyos-mirror VYOS_MIRROR
                        VyOS package mirror
--build-type BUILD_TYPE
                        Build type, release or development
--version VERSION    Version number (release builds only)
--build-comment BUILD_COMMENT
                        Optional build comment
--debug              Enable debug output
--dry-run            Check build configuration and exit
--custom-apt-entry CUSTOM_APT_ENTRY
                        Custom APT entry
--custom-apt-key CUSTOM_APT_KEY
                        Custom APT key file
--custom-package CUSTOM_PACKAGE
                        Custom package to install from repositories
```

## ISO Build Issues

There are (rare) situations where building an ISO image is not possible at all due to a broken package feed in the background. APT is not very good at reporting the root cause of the issue. Your ISO build will likely fail with a more or less similar looking error message:

```
The following packages have unmet dependencies:
vyos-1x : Depends: accel-ppp but it is not installable
E: Unable to correct problems, you have held broken packages.
P: Begin unmounting filesystems...
P: Saving caches...
Reading package lists...
Building dependency tree...
Reading state information...
Del frr-pythontools 7.5-20210215-00-g8a5d3b7cd-0 [38.9 kB]
Del accel-ppp 1.12.0-95-g59f8e1b [475 kB]
Del frr 7.5-20210215-00-g8a5d3b7cd-0 [2671 kB]
Del frr-snmp 7.5-20210215-00-g8a5d3b7cd-0 [55.1 kB]
Del frr-rpki-rtrlib 7.5-20210215-00-g8a5d3b7cd-0 [37.3 kB]
make: *** [Makefile:30: iso] Error 1
(10:13) vyos_bld ece068908a5b:/vyos [current] #
```

To debug the build process and gain additional information of what could be the root cause, you need to use *chroot* to change into the build directory. This is explained in the following step by step procedure:

```
vyos_bld ece068908a5b:/vyos [current] # sudo chroot build/chroot /bin/bash
```

We now need to mount some required, volatile filesystems

```
(live)root@ece068908a5b:/# mount -t proc none /proc
(live)root@ece068908a5b:/# mount -t sysfs none /sys
(live)root@ece068908a5b:/# mount -t devtmpfs none /dev
```

We now are free to run any command we would like to use for debugging, e.g. re-installing the failed package after updating the repository.

```
(live)root@ece068908a5b:/# apt-get update; apt-get install vyos-1x
Get:1 file:/root/packages ./ InRelease
Ign:1 file:/root/packages ./ InRelease
Get:2 file:/root/packages ./ Release [1235 B]
Get:2 file:/root/packages ./ Release [1235 B]
Get:3 file:/root/packages ./ Release.gpg
Ign:3 file:/root/packages ./ Release.gpg
Hit:4 http://repo.powerdns.com/debian buster-rec-43 InRelease
Hit:5 http://repo.saltstack.com/py3/debian/10/amd64/archive/3002.2 buster InRelease
Hit:6 http://deb.debian.org/debian bullseye InRelease
Hit:7 http://deb.debian.org/debian buster InRelease
Hit:8 http://deb.debian.org/debian-security buster/updates InRelease
Hit:9 http://deb.debian.org/debian buster-updates InRelease
Hit:10 http://deb.debian.org/debian buster-backports InRelease
Hit:11 http://dev.packages.vyos.net/repositories/current current InRelease
Reading package lists... Done
N: Download is performed unsandboxed as root as file '/root/packages/./InRelease' couldn
↳ 't be accessed by user '_apt'. - pkgAcquire::Run (13: Permission denied)
```

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```

Reading package lists... Done
Building dependency tree
Reading state information... Done
Some packages could not be installed. This may mean that you have
requested an impossible situation or if you are using the unstable
distribution that some required packages have not yet been created
or been moved out of Incoming.
The following information may help to resolve the situation:

The following packages have unmet dependencies:
vyos-1x : Depends: accel-ppp but it is not installable
E: Unable to correct problems, you have held broken packages.

```

Now it's time to fix the package mirror and rerun the last step until the package installation succeeds again!

## 14.2.2 Linux Kernel

The Linux kernel used by VyOS is heavily tied to the ISO build process. The file `data/defaults.json` hosts a JSON definition of the kernel version used `kernel_version` and the `kernel_flavor` of the kernel which represents the kernel's `LOCAL_VERSION`. Both together form the kernel version variable in the system:

```

vyos@vyos:~$ uname -r
6.1.52-amd64-vyos

```

- Accel-PPP
- Intel NIC drivers
- Inter QAT

Each of those modules holds a dependency on the kernel version and if you are lucky enough to receive an ISO build error which sounds like:

```

I: Create initramfs if it does not exist.
Extra argument '6.1.52-amd64-vyos'
Usage: update-initramfs {-c|-d|-u} [-k version] [-v] [-b directory]
Options:
-k version    Specify kernel version or 'all'
-c           Create a new initramfs
-u           Update an existing initramfs
-d           Remove an existing initramfs
-b directory Set alternate boot directory
-v           Be verbose
See update-initramfs(8) for further details.
E: config/hooks/live/17-gen_initramfs.chroot failed (exit non-zero). You should check ↵
↵ for errors.

```

The most obvious reasons could be:

- `vyos-build` repo is outdated, please `git pull` to update to the latest release kernel version from us.
- You have your own custom kernel `*.deb` packages in the `packages` folder but neglected to create all required out-of-tree modules like Accel-PPP, Intel QAT or Intel NIC drivers

## Building The Kernel

The kernel build is quite easy, most of the required steps can be found in the `vyos-build/packages/linux-kernel/Jenkinsfile` but we will walk you through it.

Clone the kernel source to `vyos-build/packages/linux-kernel/`:

```
$ cd vyos-build/packages/linux-kernel/
$ git clone https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux.git
```

Check out the required kernel version - see `vyos-build/data/defaults.json` file (example uses kernel 4.19.146):

```
$ cd vyos-build/packages/linux-kernel/linux
$ git checkout v4.19.146
Checking out files: 100% (61536/61536), done.
Note: checking out 'v4.19.146'.
```

You are in 'detached HEAD' state. You can look around, make experimental changes and commit them, and you can discard any commits you make in this state without impacting any branches by performing another checkout.

If you want to create a new branch to retain commits you create, you may do so (now or later) by using `-b` with the checkout command again. Example:

```
git checkout -b <new-branch-name>
```

```
HEAD is now at 015e94d0e37b Linux 4.19.146
```

Now we can use the helper script `build-kernel.sh` which does all the necessary voodoo by applying required patches from the `vyos-build/packages/linux-kernel/patches` folder, copying our kernel configuration `x86_64_vyos_defconfig` to the right location, and finally building the Debian packages.

**Note:** Building the kernel will take some time depending on the speed and quantity of your CPU/cores and disk speed. Expect 20 minutes (or even longer) on lower end hardware.

```
(18:59) vyos_bld 412374ca36b8:/vyos/vyos-build/packages/linux-kernel [current] # ./build-
↪kernel.sh
I: Copy Kernel config (x86_64_vyos_defconfig) to Kernel Source
I: Apply Kernel patch: /vyos/vyos-build/packages/linux-kernel/patches/kernel/0001-VyOS-
↪Add-linkstate-IP-device-attribute.patch
patching file Documentation/networking/ip-sysctl.txt
patching file include/linux/inetdevice.h
patching file include/linux/ipv6.h
patching file include/uapi/linux/ip.h
patching file include/uapi/linux/ipv6.h
patching file net/ipv4/devinet.c
Hunk #1 succeeded at 2319 (offset 1 line).
patching file net/ipv6/addrconf.c
patching file net/ipv6/route.c
I: Apply Kernel patch: /vyos/vyos-build/packages/linux-kernel/patches/kernel/0002-VyOS-
↪add-inotify-support-for-stackable-fileSystems-o.patch
patching file fs/notify/inotify/Kconfig
patching file fs/notify/inotify/inotify_user.c
```

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```

patching file fs/overlayfs/super.c
Hunk #2 succeeded at 1713 (offset 9 lines).
Hunk #3 succeeded at 1739 (offset 9 lines).
Hunk #4 succeeded at 1762 (offset 9 lines).
patching file include/linux/inotify.h
I: Apply Kernel patch: /vyos/vyos-build/packages/linux-kernel/patches/kernel/0003-RFC-
↳ builddeb-add-linux-tools-package-with-perf.patch
patching file scripts/package/builddeb
I: make x86_64_vyos_defconfig
  HOSTCC  scripts/basic/fixdep
  HOSTCC  scripts/kconfig/conf.o
  YACC    scripts/kconfig/zconf.tab.c
  LEX     scripts/kconfig/zconf.lex.c
  HOSTCC  scripts/kconfig/zconf.tab.o
  HOSTLD  scripts/kconfig/conf
#
# configuration written to .config
#
I: Generate environment file containing Kernel variable
I: Build Debian Kernel package
  UPD     include/config/kernel.release
/bin/sh ./scripts/package/mkdebian
dpkg-buildpackage -r"fakeroot -u" -a$(cat debian/arch) -b -nc -uc
dpkg-buildpackage: info: source package linux-4.19.146-amd64-vyos
dpkg-buildpackage: info: source version 4.19.146-1
dpkg-buildpackage: info: source distribution buster
dpkg-buildpackage: info: source changed by vyos_bld <christian@poessinger.com>
dpkg-buildpackage: info: host architecture amd64
dpkg-buildpackage: warning: debian/rules is not executable; fixing that
  dpkg-source --before-build .
  debian/rules build
make KERNELRELEASE=4.19.146-amd64-vyos ARCH=x86          KBUILD_BUILD_VERSION=1 KBUILD_
↳ SRC=
  SYSTBL  arch/x86/include/generated/asm/syscalls_32.h
...
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory

```

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```

↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: binaries to analyze should already be installed in their package
↳ 's directory
dpkg-shlibdeps: warning: package could avoid a useless dependency if /vyos/vyos-build/
↳ packages/linux-kernel/linux/debian/toolstmp/usr/bin/trace /vyos/vyos-build/packages/
↳ linux-kernel/linux/debian/toolstmp/usr/bin/perf were not linked against libcrypto.so.1.
↳ 1 (they use none of the library's symbols)
dpkg-shlibdeps: warning: package could avoid a useless dependency if /vyos/vyos-build/
↳ packages/linux-kernel/linux/debian/toolstmp/usr/bin/trace /vyos/vyos-build/packages/
↳ linux-kernel/linux/debian/toolstmp/usr/bin/perf were not linked against libcrypto.so.1.
↳ (they use none of the library's symbols)
dpkg-deb: building package 'linux-tools-4.19.146-amd64-vyos' in './linux-tools-4.19.146-
↳ amd64-vyos_4.19.146-1_amd64.deb'.
  dpkg-genbuildinfo --build=binary
  dpkg-genchanges --build=binary >./linux-4.19.146-amd64-vyos_4.19.146-1_amd64.changes
dpkg-genchanges: warning: package linux-image-4.19.146-amd64-vyos-dbg in control file.
↳ but not in files list
dpkg-genchanges: info: binary-only upload (no source code included)
  dpkg-source --after-build .
dpkg-buildpackage: info: binary-only upload (no source included)

```

In the end you will be presented with the kernel binary packages which you can then use in your custom ISO build process, by placing all the \*.deb files in the vyos-build/packages folder where they will be used automatically when building VyOS as documented above.

## Firmware

If you upgrade your kernel or include new drivers you may need new firmware. Build a new vyos-linux-firmware package with the included helper scripts.

```

$ cd vyos-build/packages/linux-kernel
$ git clone https://git.kernel.org/pub/scm/linux/kernel/git/firmware/linux-firmware.git
$ ./build-linux-firmware.sh
$ cp vyos-linux-firmware_*.deb ../

```

This tries to automatically detect which blobs are needed based on which drivers were built. If it fails to find the correct files you can add them manually to vyos-build/packages/linux-kernel/build-linux-firmware.sh:

```
ADD_FW_FILES="iwlwifi* ath11k/QCA6390/*/*.bin"
```

## Building Out-Of-Tree Modules

Building the kernel is one part, but now you also need to build the required out-of-tree modules so everything is lined up and the ABIs match. To do so, you can again take a look at `vyos-build/packages/linux-kernel/Jenkinsfile` to see all of the required modules and their selected versions. We will show you how to build all the current required modules.

### Accel-PPP

First, clone the source code and check out the appropriate version by running:

```
$ cd vyos-build/packages/linux-kernel
$ git clone https://github.com/accel-ppp/accel-ppp.git
```

We again make use of a helper script and some patches to make the build work. Just run the following command:

```
$ ./build-accel-ppp.sh
I: Build Accel-PPP Debian package
CMake Deprecation Warning at CMakeLists.txt:3 (cmake_policy):
  The OLD behavior for policy CMP0003 will be removed from a future version
  of CMake.

  The cmake-policies(7) manual explains that the OLD behaviors of all
  policies are deprecated and that a policy should be set to OLD only under
  specific short-term circumstances. Projects should be ported to the NEW
  behavior and not rely on setting a policy to OLD.

-- The C compiler identification is GNU 8.3.0
...
CPack: Create package using DEB
CPack: Install projects
CPack: - Run preinstall target for: accel-ppp
CPack: - Install project: accel-ppp
CPack: Create package
CPack: - package: /vyos/vyos-build/packages/linux-kernel/accel-ppp/build/accel-ppp.deb
↳ generated.
```

After compiling the packages you will find yourself the newly generated `*.deb` binaries in `vyos-build/packages/linux-kernel` from which you can copy them to the `vyos-build/packages` folder for inclusion during the ISO build.

### Intel NIC

The Intel NIC drivers do not come from a Git repository, instead we just fetch the tarballs from our mirror and compile them.

Simply use our wrapper script to build all of the driver modules.

```
./build-intel-drivers.sh
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
```

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```

          Dload Upload  Total   Spent    Left  Speed
100  490k  100  490k    0    0   648k    0  --:--:--  --:--:--  --:--:--   648k
I: Compile Kernel module for Intel ixgbe driver

...

I: Building Debian package vyos-intel-iavf
Doing `require 'backports'` is deprecated and will not load any backport in the next
↳major release.
Require just the needed backports instead, or 'backports/latest'.
Debian packaging tools generally labels all files in /etc as config files, as mandated
↳by policy, so fpm defaults to this behavior for deb packages. You can disable this
↳default behavior with --deb-no-default-config-files flag {:level=>:warn}
Created package {:path=>"vyos-intel-iavf_4.0.1-0_amd64.deb"}
I: Cleanup iavf source

```

After compiling the packages you will find yourself the newly generated \*.deb binaries in vyos-build/packages/linux-kernel from which you can copy them to the vyos-build/packages folder for inclusion during the ISO build.

## Intel QAT

The Intel QAT (Quick Assist Technology) drivers do not come from a Git repository, instead we just fetch the tarballs from 01.org, Intel's open-source website.

Simply use our wrapper script to build all of the driver modules.

```

$ ./build-intel-qat.sh
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
          Dload  Upload  Total   Spent    Left     Speed
100 5065k  100 5065k    0    0  1157k    0  0:00:04  0:00:04  --:--:--  1157k
I: Compile Kernel module for Intel qat driver
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a thread-safe mkdir -p... /bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes

...

I: Building Debian package vyos-intel-qat
Doing `require 'backports'` is deprecated and will not load any backport in the next
↳major release.
Require just the needed backports instead, or 'backports/latest'.
Debian packaging tools generally labels all files in /etc as config files, as mandated
↳by policy, so fpm defaults to this behavior for deb packages. You can disable this
↳default behavior with --deb-no-default-config-files flag {:level=>:warn}
Created package {:path=>"vyos-intel-qat_1.7.1.4.9.0-00008-0_amd64.deb"}
I: Cleanup qat source

```

After compiling the packages you will find yourself the newly generated \*.deb binaries in vyos-build/packages/linux-kernel from which you can copy them to the vyos-build/packages folder for inclusion during the ISO

build.

### 14.2.3 Packages

If you are brave enough to build yourself an ISO image containing any modified package from our GitHub organisation - this is the place to be.

Any “modified” package may refer to an altered version of e.g. `vyos-1x` package that you would like to test before filing a pull request on GitHub.

Building an ISO with any customized package is in no way different than building a regular (customized or not) ISO image. Simply place your modified `*.deb` package inside the `packages` folder within `vyos-build`. The build process will then pickup your custom package and integrate it into your ISO.

### 14.2.4 Troubleshooting

Debian APT is not very verbose when it comes to errors. If your ISO build breaks for whatever reason and you suspect it's a problem with APT dependencies or installation you can add this small patch which increases the APT verbosity during ISO build.

```
diff --git i/scripts/live-build-config w/scripts/live-build-config
index 1b3b454..3696e4e 100755
--- i/scripts/live-build-config
+++ w/scripts/live-build-config
@@ -57,7 +57,8 @@ lb config noauto \
     --firmware-binary false \
     --updates true \
     --security true \
-     --apt-options "--yes -oAcquire::Check-Valid-Until=false" \
+     --apt-options "--yes -oAcquire::Check-Valid-Until=false -oDebug::BuildDeps=true \
+↪-oDebug::pkgDepCache::AutoInstall=true \
+     -oDebug::pkgDepCache::Marker=true -
+↪-oDebug::pkgProblemResolver=true -oDebug::Acquire::gpgv=true" \
     --apt-indices false
     "${@}"
.....
```

### 14.2.5 Virtualization Platforms

#### QEMU

Run the following command after building the ISO image.

```
$ make qemu
```

## VMware

Run the following command after building the QEMU image.

```
$ make vmware
```

## 14.3 Packages

VyOS itself comes with a bunch of packages that are specific to our system and thus cannot be found in any Debian mirror. Those packages can be found at the [VyOS GitHub project](#) in their source format can easily be compiled into a custom Debian (\*.deb) package.

The easiest way to compile your package is with the above mentioned *Docker* container, it includes all required dependencies for all VyOS related packages.

Assume we want to build the vyos-1x package on our own and modify it to our needs. We first need to clone the repository from GitHub.

```
$ git clone https://github.com/vyos/vyos-1x
```

### 14.3.1 Build

Launch Docker container and build package

```
# For VyOS 1.3 (equuleus, current)
$ docker run --rm -it --privileged -v $(pwd):/vyos -w /vyos vyos/vyos-build:current bash

# Change to source directory
$ cd vyos-1x

# Build DEB
$ dpkg-buildpackage -uc -us -tc -b
```

After a minute or two you will find the generated DEB packages next to the vyos-1x source directory:

```
# ls -al ../vyos-1x*.deb
-rw-r--r-- 1 vyos_bld vyos_bld 567420 Aug  3 12:01 ../vyos-1x_1.3dev0-1847-gb6dcb0a8_all.
↳ deb
-rw-r--r-- 1 vyos_bld vyos_bld  3808 Aug  3 12:01 ../vyos-1x-vmware_1.3dev0-1847-
↳ gb6dcb0a8_amd64.deb
```

### 14.3.2 Install

To take your newly created package on a test drive you can simply SCP it to a running VyOS instance and install the new \*.deb package over the current running one.

Just install using the following commands:

```
vyos@vyos:~$ dpkg --install /tmp/vyos-1x_1.3dev0-1847-gb6dcb0a8_all.deb
(Reading database ... 58209 files and directories currently installed.)
Preparing to unpack .../vyos-1x_1.3dev0-1847-gb6dcb0a8_all.deb ...
```

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```
Unpacking vyos-1x (1.3dev0-1847-gb6dcb0a8) over (1.3dev0-1847-gb6dcb0a8) ...
Setting up vyos-1x (1.3dev0-1847-gb6dcb0a8) ...
Processing triggers for rsyslog (8.1901.0-1) ...
```

You can also place the generated \*.deb into your ISO build environment to include it in a custom iso, see *Linux Kernel* for more information.

**Warning:** Any packages in the packages directory will be added to the iso during build, replacing the upstream ones. Make sure you delete them (both the source directories and built deb packages) if you want to build an iso from purely upstream packages.

## DEVELOPMENT

All VyOS source code is hosted on GitHub under the VyOS organization which can be found here: <https://github.com/vyos>

Our code is split into several modules. VyOS is composed of multiple individual packages, some of them are forks of upstream packages and are periodically synced with upstream, so keeping the whole source under a single repository would be very inconvenient and slow. There is now an ongoing effort to consolidate all VyOS-specific framework/config packages into `vyos-lx` package, but the basic structure is going to stay the same, just with fewer and fewer packages while the base code is rewritten from Perl/BASH into Python using and XML based interface definition for the CLI.

The repository that contains all the ISO build scripts is: <https://github.com/vyos/vyos-build>

The README.md file will guide you to use the this top level repository.

### 15.1 Submit a Patch

Patches are always more than welcome. To have a clean and easy to maintain repository we have some guidelines when working with Git. A clean repository eases the automatic generation of a changelog file.

A good approach for writing commit messages is actually to have a look at the file(s) history by invoking `git log path/to/file.txt`.

#### 15.1.1 Prepare patch/commit

In a big system, such as VyOS, that is comprised of multiple components, it's impossible to keep track of all the changes and bugs/feature requests in one's head. We use a bugtracker known as [Phabricator](#) for it ("issue tracker" would be a better term, but this one stuck).

The information is used in three ways:

- Keep track of the progress (what we've already done in this branch and what we still need to do).
- Prepare release notes for upcoming releases
- Help future maintainers of VyOS (it could be you!) to find out why certain things have been changed in the codebase or why certain features have been added

To make this approach work, every change must be associated with a task number (prefixed with **T**) and a component. If there is no bug report/feature request for the changes you are going to make, you have to create a [Phabricator](#) task first. Once there is an entry in [Phabricator](#), you should reference its id in your commit message, as shown below:

- `ddclient: T1030: auto create runtime directories`
- `Jenkins: add current Git commit ID to build description`

If there is no [Phabricator](#) reference in the commits of your pull request, we have to ask you to amend the commit message. Otherwise we will have to reject it.

## Writing good commit messages

The format should be and is inspired by: <https://git-scm.com/book/ch5-2.html> It is also worth reading <https://chris.beams.io/posts/git-commit/>

- A single, short, summary of the commit (recommended 50 characters or less, not exceeding 80 characters) containing a prefix of the changed component and the corresponding [Phabricator](#) reference e.g. `snmp: T1111:` or `ethernet: T2222:` - multiple components could be concatenated as in `snmp: ethernet: T3333`
- In some contexts, the first line is treated as the subject of an email and the rest of the text as the body. The blank line separating the summary from the body is critical (unless you omit the body entirely); tools like `rebase` can get confused if you run the two together.
- Followed by a message which describes all the details like:
  - What/why/how something has been changed, makes everyone's life easier when working with `git bisect`
  - All text of the commit message should be wrapped at 72 characters if possible which makes reading commit logs easier with `git log` on a standard terminal (which happens to be 80x25)
  - If applicable a reference to a previous commit should be made linking those commits nicely when browsing the history: After commit `abcd12ef` ("`snmp: this is a headline`") a `Python import` statement is missing, throwing the following exception: `ABCDEF`
- Always use the `-x` option to the `git cherry-pick` command when back or forward porting an individual commit. This automatically appends the line: (`cherry picked from commit <ID>`) to the original authors commit message making it easier when bisecting problems.
- Every change set must be consistent (self containing)! Do not fix multiple bugs in a single commit. If you already worked on multiple fixes in the same file use `git add -patch` to only add the parts related to the one issue into your upcoming commit.

Limits:

- We only accept bugfixes in packages other than <https://github.com/vyos/vyos-1x> as no new functionality should use the old style templates (`node.def` and `Perl/BASH` code. Use the new style XML/Python interface instead.

Please submit your patches using the well-known GitHub pull-request against our repositories found in the VyOS GitHub organisation at <https://github.com/vyos>

### 15.1.2 Determine source package

Suppose you want to make a change in the `webproxy` script but yet you do not know which of the many VyOS packages ship this file. You can determine the VyOS package name in question by using Debian's `dpkg -S` command of your running VyOS installation.

```
vyos@vyos:~$ dpkg -S /opt/vyatta/sbin/vyatta-update-webproxy.pl
vyatta-webproxy: /opt/vyatta/sbin/vyatta-update-webproxy.pl
```

This means the file in question (`/opt/vyatta/sbin/vyatta-update-webproxy.pl`) is located in the `vyatta-webproxy` package which can be found here: <https://github.com/vyos/vyatta-webproxy>

### 15.1.3 Fork Repository and submit Patch

Forking the repository and submitting a GitHub pull-request is the preferred way of submitting your changes to VyOS. You can fork any VyOS repository to your very own GitHub account by just appending `/fork` to any repository's URL on GitHub. To e.g. fork the `vyos-1x` repository, open the following URL in your favourite browser: <https://github.com/vyos/vyos-1x/fork>

You then can proceed with cloning your fork or add a new remote to your local repository:

- Clone: `git clone https://github.com/<user>/vyos-1x.git`
- Fork: `git remote add myfork https://github.com/<user>/vyos-1x.git`

In order to record you as the author of the fix please identify yourself to Git by setting up your name and email. This can be done local for this one and only repository `git config` or globally using `git config --global`.

```
git config --global user.name "J. Random Hacker"
git config --global user.email "jrhacker@example.net"
```

Make your changes and save them. Do the following for all changes files to record them in your created Git commit:

- Add file to Git index using `git add myfile`, or for a whole directory: `git add somedir/*`
- Commit the changes by calling `git commit`. Please use a meaningful commit headline (read above) and don't forget to reference the [Phabricator ID](#).
- Submit the patch `git push` and create the GitHub pull-request.

### 15.1.4 Attach patch to Phabricator task

Follow the above steps on how to “Fork repository to submit a Patch”. Instead of uploading “pushing” your changes to GitHub you can export the patches/ commits and send it to [maintainers@vyos.net](mailto:maintainers@vyos.net) or attach it directly to the bug (preferred over email)

- Export last commit to patch file: `git format-patch` or export the last two commits into its appropriate patch files: `git format-patch -2`

## 15.2 Coding Guidelines

Like any other project we have some small guidelines about our source code, too. The rules we have are not there to punish you - the rules are in place to help us all. By having a consistent coding style it becomes very easy for new and also longtime contributors to navigate through the sources and all the implied logic of any one source file..

Python 3 **shall** be used. How long can we keep Python 2 alive anyway? No considerations for Python 2 compatibility **should** be taken at any time.

## 15.2.1 Formatting

- Python: Tabs **shall not** be used. Every indentation level should be 4 spaces
- XML: Tabs **shall not** be used. Every indentation level should be 2 spaces

---

**Note:** There are extensions to e.g. VIM (xmllint) which will help you to get your indentation levels correct. Add to following to your .vimrc file: `au FileType xml setlocal equalprg=xmllint\ --format\ --recover\ -\ 2>/dev/null` now you can call the linter using `gg=G` in command mode.

---

## Text generation

Template processor **should** be used for generating config files. Built-in string formatting **may** be used for simple line-oriented formats where every line is self-contained, such as iptables rules. Template processor **must** be used for structured, multi-line formats such as those used by ISC DHCPd.

The default template processor for VyOS code is Jinja2.

## 15.2.2 Summary

When modifying the source code, remember these rules of the legacy elimination campaign:

- No new features in Perl
- No old style command definitions
- No code incompatible with Python3

## 15.3 Python

The switch to the Python programming language for new code is not merely a change of the language, but a chance to rethink and improve the programming approach.

Let's face it: VyOS is full of spaghetti code where logic for reading the VyOS config, generating daemon configs, and restarting processes is all mixed up.

Python (or any other language, for that matter) does not provide automatic protection from bad design, so we need to also devise design guidelines and follow them to keep the system extensible and maintainable.

But we are here to assist you and want to guide you through how you can become a good VyOS contributor. The rules we have are not there to punish you - the rules are in place to help us all. What does it mean? By having a consistent coding style it becomes very easy for new contributors and also longtime contributors to navigate through the sources and all the implied logic of the spaghetti code.

Please use the following template as good starting point when developing new modules or even rewrite a whole bunch of code in the new style XML/Python interface.

### 15.3.1 Configuration Script Structure and Behaviour

Your configuration script or operation mode script which is also written in Python3 should have a line break on 80 characters. This seems to be a bit odd nowadays but as some people also work remotely or program using vi(m) this is a fair good standard which I hope we can rely on.

In addition this also helps when browsing the GitHub codebase on a mobile device if you happen to be a crazy scientist.

```
#!/usr/bin/env python3
#
# Copyright (C) 2020 VyOS maintainers and contributors
#
# This program is free software; you can redistribute it and/or modify
# it under the terms of the GNU General Public License version 2 or later as
# published by the Free Software Foundation.
#
# This program is distributed in the hope that it will be useful,
# but WITHOUT ANY WARRANTY; without even the implied warranty of
# MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
# GNU General Public License for more details.
#
# You should have received a copy of the GNU General Public License
# along with this program. If not, see <http://www.gnu.org/licenses/>.

import sys

from vyos.config import Config
from vyos import ConfigError

def get_config():
    if config:
        conf = config
    else:
        conf = Config()

    # Base path to CLI nodes
    base = ['...', '...']
    # Convert the VyOS config to an abstract internal representation
    config_data = conf.get_config_dict(base, key_mangling=('-', '_'), get_first_key=True)
    return config_data

def verify(config):
    # Verify that configuration is valid
    if invalid:
        raise ConfigError("Descriptive message")
    return True

def generate(config):
    # Generate daemon configs
    pass

def apply(config):
    # Apply the generated configs to the live system
    pass
```

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```
try:
    c = get_config()
    verify(c)
    generate(c)
    apply(c)
except ConfigError as e:
    print(e)
    sys.exit(1)
```

The `get_config()` function must convert the VyOS config to an abstract, internal representation. No other function is allowed to call the `vyos.config.Config` object method directly. The rationale for it is that when config reads are mixed with other logic, it's very hard to change the config syntax since you need to weed out every occurrence of the old syntax. If syntax-specific code is confined to a single function, the rest of the code can be left untouched as long as the internal representation remains compatible.

Another advantage is testability of the code. Mocking the entire config subsystem is hard, while constructing an internal representation by hand is way simpler.

The `verify()` function takes your internal representation of the config and checks if it's valid, otherwise it must raise `ConfigError` with an error message that describes the problem and possibly suggests how to fix it. It must not make any changes to the system. The rationale for it is again testability and, in the future when the config backend is ready and every script is rewritten in this fashion, ability to execute commit dry run (“commit test” like in JunOS) and abort commit before making any changes to the system if an error is found in any component.

The `generate()` function generates config files for system components.

The `apply()` function applies the generated configuration to the live system. It should use non-disruptive reload whenever possible. It may execute disruptive operations such as daemon process restart if a particular component does not support non-disruptive reload, or when the expected service degradation is minimal (for example, in case of auxiliary services such as LLDPd). In case of high impact services such as VPN daemon and routing protocols, when non-disruptive reload is supported for some but not all types of configuration changes, scripts authors should make effort to determine if a configuration change can be done in a non-disruptive way and only resort to disruptive restart if it cannot be avoided.

Unless absolutely necessary, configuration scripts should not modify the active configuration of system components directly. Whenever at all possible, scripts should generate a configuration file or files that can be applied with a single command such as reloading a service through `systemd` init. Inserting statements one by one is particularly discouraged, for example, when configuring netfilter rules, saving them to a file and loading it with `iptables-restore` should always be preferred to executing `iptables` directly.

The `apply()` and `generate()` functions may raise `ConfigError` if, for example, the daemon failed to start with the updated config. It shouldn't be a substitute for proper config checking in the `verify()` function. All reasonable effort should be made to verify that generated configuration is valid and will be accepted by the daemon, including, when necessary, cross-checks with other VyOS configuration subtrees.

Exceptions, including `VyOSError` (which is raised by `vyos.config.Config` on improper config operations, such as trying to use `list_nodes()` on a non-tag node) should not be silenced or caught and re-raised as config error. Sure this will not look pretty on user's screen, but it will make way better bug reports, and help users (and most VyOS users are IT professionals) do their own debugging as well.

For easy orientation we suggest you take a look on the `ntp.py` or `interfaces-bonding.py` (for tag nodes) implementation. Both files can be found in the `vyos-1x` repository.

## 15.4 XML (used for CLI definitions)

The bash (or better vbash) completion in VyOS is defined in *templates*. Templates are text files (called *node.def*) stored in a directory tree. The directory names define the command names, and template files define the command behaviour. Before VyOS 1.2 (crux) this files were created by hand. After a complex redesign process the new style template are automatically generated from a XML input file.

XML interface definitions for VyOS come with a RelaxNG schema and are located in the *vyos-1x* module. This schema is a slightly modified schema from *VyConf* alias VyOS 2.0 So VyOS 1.2.x interface definitions will be reusable in Nextgen VyOS Versions with very minimal changes.

The great thing about schemas is not only that people can know the complete grammar for certain, but also that it can be automatically verified. The *scripts/build-command-templates* script that converts the XML definitions to old style templates also verifies them against the schema, so a bad definition will cause the package build to fail. I do agree that the format is verbose, but there is no other format now that would allow this. Besides, a specialized XML editor can alleviate the issue with verbosity.

Example:

```
<?xml version="1.0"?>
<!-- Cron configuration -->
<interfaceDefinition>
  <node name="system">
    <children>
      <node name="task-scheduler">
        <properties>
          <help>Task scheduler settings</help>
        </properties>
        <children>
          <tagNode name="task" owner="{vyos_conf_scripts_dir}/task_scheduler.py">
            <properties>
              <help>Scheduled task</help>
              <valueHelp>
                <format>&lt;string&gt;</format>
                <description>Task name</description>
              </valueHelp>
              <priority>999</priority>
            </properties>
            <children>
              <leafNode name="crontab-spec">
                <properties>
                  <help>UNIX crontab time specification string</help>
                </properties>
              </leafNode>
              <leafNode name="interval">
                <properties>
                  <help>Execution interval</help>
                  <valueHelp>
                    <format>&lt;minutes&gt;</format>
                    <description>Execution interval in minutes</description>
                  </valueHelp>
                  <valueHelp>
                    <format>&lt;minutes&gt;m</format>
                    <description>Execution interval in minutes</description>
                  </valueHelp>
                </properties>
              </leafNode>
            </children>
          </tagNode>
        </children>
      </node>
    </children>
  </node>
</interfaceDefinition>
```

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```

    </valueHelp>
    <valueHelp>
      <format>&lt;hours&gt;h</format>
      <description>Execution interval in hours</description>
    </valueHelp>
    <valueHelp>
      <format>&lt;days&gt;d</format>
      <description>Execution interval in days</description>
    </valueHelp>
    <constraint>
      <regex>[1-9]([0-9]*)([mhd]{0,1})</regex>
    </constraint>
  </properties>
</leafNode>
<node name="executable">
  <properties>
    <help>Executable path and arguments</help>
  </properties>
  <children>
    <leafNode name="path">
      <properties>
        <help>Path to executable</help>
      </properties>
    </leafNode>
    <leafNode name="arguments">
      <properties>
        <help>Arguments passed to the executable</help>
      </properties>
    </leafNode>
  </children>
</node>
</children>
</tagNode>
</children>
</node>
</children>
</node>
</interfaceDefinition>

```

Command definitions are purely declarative, and cannot contain any logic. All logic for generating config files for target applications, restarting services and so on is implemented in configuration scripts instead.

### 15.4.1 GNU Preprocessor

XML interface definition files use the *xml.in* file extension which was implemented in T1843. XML interface definitions tend to have a lot of duplicated code in areas such as:

- VIF (incl. VIF-S/VIF-C)
- Address
- Description
- Enabled/Disabled

Instead of supplying all those XML nodes multiple times there are now include files with predefined features. Brief overview:

- IPv4, IPv6 and DHCP(v6) address assignment
- IPv4, IPv6 address assignment
- VLAN (VIF) definition
- MAC address assignment

All interface definition XML input files (.in suffix) will be sent to the GCC preprocess and the output is stored in the *build/interface-definitions* folder. The previously mentioned *scripts/build-command-templates* script operates on the *build/interface-definitions* folder to generate all required CLI nodes.

```
$ make interface_definitions
install -d -m 0755 build/interface-definitions
install -d -m 0755 build/op-mode-definitions
Generating build/interface-definitions/intel_qat.xml from interface-definitions/intel_
↳ qat.xml.in
Generating build/interface-definitions/interfaces-bonding.xml from interface-definitions/
↳ interfaces-bonding.xml.in
Generating build/interface-definitions/cron.xml from interface-definitions/cron.xml.in
Generating build/interface-definitions/pppoe-server.xml from interface-definitions/pppoe-
↳ server.xml.in
Generating build/interface-definitions/mdns-repeater.xml from interface-definitions/mdns-
↳ repeater.xml.in
Generating build/interface-definitions/tftp-server.xml from interface-definitions/tftp-
↳ server.xml.in
[...]
```

## 15.4.2 Guidelines

### Use of numbers

Use of numbers in command names **should** be avoided unless a number is a part of a protocol name or similar. Thus, protocols `ospfv3` is perfectly fine, but something like `server-1` is questionable at best.

### Help String

To ensure uniform look and feel, and improve readability, we should follow a set of guidelines consistently.

### Capitalization and punctuation

The first word of every help string **must** be capitalized. There **must not** be a period at the end of help strings.

Rationale: this seems to be the unwritten standard in network device CLIs, and a good aesthetic compromise.

Examples:

- Good: “Frobnication algorithm”
- Bad: “frobnication algorithm”
- Bad: “Frobnication algorithm.”

- Horrible: “frobnciation algorithm.”

### Use of abbreviations and acronyms

Abbreviations and acronyms **must** be capitalized.

Examples:

- Good: “TCP connection timeout”
- Bad: “tcp connection timeout”
- Horrible: “Tcp connection timeout”

Acronyms also **must** be capitalized to visually distinguish them from normal words:

Examples:

- Good: RADIUS (as in remote authentication for dial-in user services)
- Bad: radius (unless it’s about the distance between a center of a circle and any of its points)

Some abbreviations are traditionally written in mixed case. Generally, if it contains words “over” or “version”, the letter **should** be lowercase. If there’s an accepted spelling (especially if defined by an RFC or another standard), it **must** be followed.

Examples:

- Good: PPPoE, IPsec
- Bad: PPPOE, IPSEC
- Bad: pppoe, ipsec

### Use of verbs

Verbs **should** be avoided. If a verb can be omitted, omit it.

Examples:

- Good: “TCP connection timeout”
- Bad: “Set TCP connection timeout”

If a verb is essential, keep it. For example, in the help text of `set system ipv6 disable-forwarding`, “Disable IPv6 forwarding on all interfaces” is a perfectly justified wording.

### Prefer infinitives

Verbs, when they are necessary, **should** be in their infinitive form.

Examples:

- Good: “Disable IPv6 forwarding”
- Bad: “Disables IPv6 forwarding”

### 15.4.3 Migrating old CLI

Old concept/syntax	New syntax	Notes
mynode/node.def	<node name="mynode"> </node>	Leaf nodes (nodes with values) use <leafNode> tag instead
mynode/node.tag , tag:	<tagNode name="mynode"> </node>	
help: My node	<properties> <help>My node</help>	
val_help: <format>; some string	<properties> <value- Help> <format> format </format> <description> some string </descrip- tion>	Do not add angle brackets around the format, they will be inserted automatically
syntax:expression: pattern	<properties> <constraint> <regex> ...	<constraintErrorMessage> will be displayed on failure
syntax:expression: \$VAR(@) in "foo", "bar", "baz"	None	Use regex
syntax:expression: exec ...	<properties> <constraint> <validator> <name ="foo" argument="bar">	"\${vyos_libexecdir}/validators/foo bar \$VAR(@)" will be executed, <constraintErrorMessage> will be displayed on failure
syntax:expression: (arith- metic expression)	None	External arithmetic validator may be added if there's demand, complex validation is better left to commit-time scripts
priority: 999	<properties> <prior- ity>999</priority>	Please leave a comment explaining why the priority was chosen (e.g. "after interfaces are configured")
multi:	<properties> <multi/>	Only applicable to leaf nodes
allowed: echo foo bar	<properties> <comple- tionHelp> <list> foo bar </list>	
allowed: cli-shell-api listNodes vpn ipsec esp- group	<properties> <comple- tionHelp> <path> vpn ipsec esp-group </path> ...	
allowed: /path/to/script	<properties> <com- pletionHelp> <script> </path/to/script </script> ...	
default:	None	Move default values to scripts
commit:expression:	None	All commit time checks should be in the verify() function of the script
begin:/create:/delete:	None	All logic should be in the scripts

## 15.5 C++ Backend Code

The CLI parser used in VyOS is a mix of bash, bash-completion helper and the C++ backend library [vyatta-cfg](<https://github.com/vyos/vyatta-cfg>). This section is a reference of common CLI commands and the respective entry point in the C/C++ code.

- `set`
  - <https://github.com/vyos/vyatta-cfg/blob/0f42786a0b3/src/cstore/cstore.cpp#L352>
  - <https://github.com/vyos/vyatta-cfg/blob/0f42786a0b3/src/cstore/cstore.cpp#L2549>
- `commit`
  - <https://github.com/vyos/vyatta-cfg/blob/0f42786a0b3/src/commit/commit-algorithm.cpp#L1252>

## 15.6 Continuous Integration

VyOS makes use of [Jenkins](#) as our Continuous Integration (CI) service. Our [VyOS CI](#) server is publicly accessible here: <https://ci.vyos.net>. You can get a brief overview of all required components shipped in a VyOS ISO.

To build our modules we utilize a CI/CD Pipeline script. Each and every VyOS component comes with it's own `Jenkinsfile` which is (more or less) a copy. The Pipeline utilizes the Docker container from the [Build ISO](#) section - but instead of building it from source on every run, we rather always fetch a fresh copy (if needed) from [Dockerhub](#).

Each module is build on demand if a new commit on the branch in question is found. After a successful run the resulting Debian Package(s) will be deployed to our Debian repository which is used during build time. It is located here: <http://dev.packages.vyos.net/repositories/>.

## ISSUES/FEATURE REQUESTS

### 16.1 Bug Report/Issue

Issues or bugs are found in any software project. VyOS is not an exception.

All issues should be reported to the developers. This lets the developers know what is not working properly. Without this sort of feedback every developer will believe that everything is working correctly.

#### 16.1.1 I have found a bug, what should I do?

When you believe you have found a bug, it is always a good idea to verify the issue prior to opening a bug request.

- Consult the [documentation](#) to ensure that you have configured your system correctly
- Get community support via [Slack](#) or our [Forum](#)

#### 16.1.2 Ensure the problem is reproducible

You should include the following information:

- A sequence of configuration commands or a complete configuration file required to recreate a setup where the bug occurs. Please avoid partial configs: a sequence of commands is easy to paste into the console, a complete config is easy to load in a VM, but a partial config is neither! At least not until we implement a “merge from the CLI” feature that allows pasting config file chunks into a session.
- The behavior you expect and how it’s different from the behavior you observe. Don’t just include command outputs or traffic dumps — try to explain at least briefly why they are wrong and what they should be.
- A sequence of actions that triggers the bug. We understand that it’s not always possible, but it makes developer’s job a lot easier and also allows any community member to independently confirm that the bug still exists or if it’s already fixed.
- If it’s a regression, tell us a VyOS version where the feature still worked correctly. It’s perfect if you can tell exactly which version broke it, but we understand that it’s not always easy or feasible — any working version is acceptable.

If you aren’t certain what the correct behavior is and if what you see is really a bug, or if you don’t have a reproducing procedure that reliably triggers it, please create a post on the forum or ask in the chat first — or, if you have a subscription, create a support ticket. Our team and community members can help you identify the bug and work around it, then create an actionable and testable bug report.

### 16.1.3 Report a Bug

In order to open up a bug-report/feature request you need to create yourself an account on VyOS [Phabricator](#). On the left side of the specific project (VyOS 1.2 or VyOS 1.3) you will find quick-links for opening a bug-report/feature request.

- Provide as much information as you can
- Which version of VyOS are you using? `run show version`
- How can we reproduce this Bug?

## 16.2 Feature Requests

You have an idea of how to make VyOS better or you are in need of a specific feature which all users of VyOS would benefit from? To send a feature request please search [Phabricator](#) to check if there is already a request pending. You can enhance it or if you don't find one, create a new one by use the quick link in the left side under the specific project.

You must create a task before you start working on a feature. Yes, even if it's a tiny feature — we use the task tracker to generate release notes, so it's essential that everything is reflected there.

You must include at least the following:

- A reasonably detailed description of the feature: what it is, how it's supposed to work, and how you'd use it. The maintainers aren't familiar with every feature of every protocol and tool, and community contributors who are looking for tasks to work on will also appreciate more information that helps them implement and test a feature.
- Proposed CLI syntax, if the feature requires new commands. Please include both configuration and operational mode commands, if both are required.

You should include the following information:

- Is the feature supported by the underlying component (FreeRangeRouting, nftables, Kea...) already?
- How you'd configure it by hand there?
- Are there any limitations (hardware support, resource usage)?
- Are there any adverse or non-obvious interactions with other features? Should it be mutually exclusive with anything?

It's fine if you cannot provide some of that information, but if you can, it makes the work of developers considerably simpler, so try to do the research to answer those questions.

## 16.3 Task auto-closing

There is a special status for tasks where all work on the side of maintainers and contributors is complete: "Needs reporter action".

We assign that status to:

- Feature requests that do not include required information and need clarification.
- Bug reports that lack reproducing procedures.
- Tasks that are implemented and tested by the implementation author, but require testing in the real-world environment that only the reporter can replicate (e.g., hardware we do not have, specific network conditions...).

This is what will happen when a task is set to "Needs reporter action":

- If there is no response from the reporter within two weeks, the task bot will add a comment (“Any news?”) to remind the reporter to reply.
- If there is no response after further two weeks, the task will be automatically closed.

We will not auto-close tasks with any other status and will not close tasks for the lack of maintainer activity!

## UPSTREAM PACKAGES

Many base system packages are pulled straight from Debian's main and contrib repositories, but there are exceptions. This chapter lists those exceptions and gives you a brief overview what we have done on those packages. If you only want to build yourself a fresh ISO you can completely skip this chapter. It may become interesting once you have a VyOS deep dive.

### 17.1 vyos-netplug

Due to issues in the upstream version that sometimes set interfaces down, a modified version is used.

The source is located at <https://github.com/vyos/vyos-netplug>

In the future, we may switch to using systemd infrastructure instead. Building it doesn't require a special procedure.

### 17.2 keepalived

Keepalived normally isn't updated to newer feature releases between Debian versions, so we are building it from source.

Debian does keep their package in git, but it's upstream tarball imported into git without its original commit history. To be able to merge new tags in, we keep a fork of the upstream repository with packaging files imported from Debian at <https://github.com/vyos/keepalived-upstream>

### 17.3 strongswan

Our StrongSWAN build differs from the upstream:

- strongswan-nm package build is disabled since we don't use NetworkManager
- Patches for DMVPN are merged in

The source is at <https://github.com/vyos/vyos-strongswan>

DMVPN patches are added by this commit: <https://github.com/vyos/vyos-strongswan/commit/1cf12b0f2f921bfc51affa3b81226>

Our op mode scripts use the python-vici module, which is not included in Debian's build, and isn't quite easy to integrate in that build. For this reason we debianize that module by hand now, using this procedure:

0. Install <https://pypi.org/project/stdeb/>
1. `cd vyos-strongswan`

2. `./configure --enable-python-eggs`
3. `cd src/libcharon/plugins/vici/python`
4. `make`
5. `python3 setup.py --command-packages=stdeb.command bdist_deb`

The package ends up in `deb_dist` dir.

## 17.4 mdns-repeater

This package doesn't exist in Debian. A debianized fork is kept at <https://github.com/vyos/mdns-repeater>

No special build procedure is required.

## 17.5 udp-broadcast-relay

This package doesn't exist in Debian. A debianized fork is kept at <https://github.com/vyos/udp-broadcast-relay>

No special build procedure is required.

## 17.6 hvinfo

A fork with packaging changes for VyOS is kept at <https://github.com/vyos/hvinfo>

The original repo is at <https://github.com/dmbaturin/hvinfo>

It's an Ada program and requires GNAT and gprbuild for building, dependencies are properly specified so just follow `debuild`'s suggestions.

## DEBUGGING

There are two flags available to aid in debugging configuration scripts. Since configuration loading issues will manifest during boot, the flags are passed as kernel boot parameters.

### 18.1 ISO image build

When having trouble compiling your own ISO image or debugging Jenkins issues you can follow the steps at *ISO Build Issues*.

### 18.2 System Startup

The system startup can be debugged (like loading in the configuration file from `/config/config.boot`). This can be achieved by extending the Kernel command-line in the bootloader.

#### 18.2.1 Kernel

- `vyos-debug` - Adding the parameter to the linux boot line will produce timing results for the execution of scripts during commit. If one is seeing an unexpected delay during manual or boot commit, this may be useful in identifying bottlenecks. The internal flag is `VYOS_DEBUG`, and is found in `vyatta-cfg`. Output is directed to `/var/log/vyatta/cfg-stdout.log`.
- `vyos-config-debug` - During development, coding errors can lead to a commit failure on boot, possibly resulting in a failed initialization of the CLI. In this circumstance, the kernel boot parameter `vyos-config-debug` will ensure access to the system as user `vyos`, and will log a Python stack trace to the file `/tmp/boot-config-trace`. File `boot-config-trace` will generate only if config loaded with a failure status.

### 18.3 Live System

A number of flags can be set up to change the behaviour of VyOS at runtime. These flags can be toggled using either environment variables or creating files.

For each feature, a file called `vyos.feature.debug` can be created to toggle the feature on. If a parameter is required it can be placed inside the file as its first line.

The file can be placed in `/tmp` for one time debugging (as the file will be removed on reboot) or placed in `'/config'` to stay permanently.

For example, `/tmp/vyos.ifconfig.debug` can be created to enable interface debugging.

It is also possible to set up the debugging using environment variables. In that case, the name will be (in uppercase) `VYOS_FEATURE_DEBUG`.

For example running, `export VYOS_IFCONFIG_DEBUG=""` on your `vbash`, will have the same effect as `touch /tmp/vyos.ifconfig.debug`.

- `ifconfig` - Once set, all commands used, and their responses received from the OS, will be presented on the screen for inspection.
- `command` - Once set, all commands used, and their responses received from the OS, will be presented on the screen for inspection.
- `developer` - Should a command fail, instead of printing a message to the user explaining how to report issues, the python interpreter will start a PDB post-mortem session to allow the developer to debug the issue. As the debugger will wait for input from the developer, it has the capacity to prevent a router to boot and therefore should only be permanently set up on production if you are ready to see the OS fail to boot.
- `log` - In some rare cases, it may be useful to see what the OS is doing, including during boot. This option sends all commands used by VyOS to a file. The default file is `/tmp/full-log` but it can be changed.

---

**Note:** In order to retrieve the debug output on the command-line you need to disable `vyos-configd` in addition. This can be run either one-time by calling `sudo systemctl stop vyos-configd` or make this reboot-safe by calling `sudo systemctl disable vyos-configd`.

---

### 18.3.1 FRR

Recent versions use the `vyos.frr` framework. The Python class is located inside our `vyos-1x:python/vyos/frr.py`. It comes with an embedded debugging/ (print style) debugger as `vyos.ifconfig` does.

To enable debugging just run: `$ touch /tmp/vyos.frr.debug`

### 18.3.2 Debugging Python Code with PDB

Sometimes it might be useful to debug Python code interactively on the live system rather than a IDE. This can be achieved using `pdb`.

Let us assume you want to debug a Python script that is called by an op-mode command. After you found the script by looking up the op-mode-definitions you can edit the script in the live system using e.g. `vi /usr/libexec/vyos/op_mode/show_xyz.py`

Insert the following statement right before the section where you want to investigate a problem (e.g. a statement you see in a backtrace): `import pdb; pdb.set_trace()` Optionally you can surrounded this statement by an `if` which only triggers under the condition you are interested in.

Once you run `show xyz` and your condition is triggered you should be dropped into the python debugger:

```
> /usr/libexec/vyos/op_mode/show_nat_translations.py(109)process()
-> rule_type = rule.get('type', '')
(Pdb)
```

You can type `help` to get an overview of the available commands, and `help command` to get more information on each command.

Useful commands are:

- examine variables using `pp(var)`

- continue execution using `cont`
- get a backtrace using `bt`

### 18.3.3 Config Migration Scripts

When writing a new configuration migrator it may happen that you see an error when you try to invoke it manually on a development system. This error will look like:

```
vyos@vyos:~$ /opt/vyatta/etc/config-migrate/migrate/ssh/0-to-1 /tmp/config.boot
Traceback (most recent call last):
  File "/opt/vyatta/etc/config-migrate/migrate/ssh/0-to-1", line 31, in <module>
    config = ConfigTree(config_file)
  File "/usr/lib/python3/dist-packages/vyos/configtree.py", line 134, in __init__
    raise ValueError("Failed to parse config: {0}".format(msg))
ValueError: Failed to parse config: Syntax error on line 240, character 1: Invalid
↪syntax.
```

The reason is that the configuration migration backend is rewritten and uses a new form of “magic string” which is applied on demand when real config migration is run on boot. When running individual migrators for testing, you need to convert the “magic string” on your own by:

```
vyos@vyos:~$ /usr/libexec/vyos/run-config-migration.py --virtual --set-vintage vyos /tmp/
↪config.boot
```

### 18.3.4 Configuration Error on System Boot

Being brave and running the latest rolling releases will sometimes trigger bugs due to corner cases we missed in our design. Those bugs should be filed via [Phabricator](#) but you can help us to narrow down the issue. Login to your VyOS system and change into configuration mode by typing `configure`. Now re-load your boot configuration by simply typing `load` followed by `return`.

You should now see a Python backtrace which will help us to handle the issue, please attach it to the [Phabricator](#) task.

### 18.3.5 Boot Timing

During the migration and extensive rewrite of functionality from Perl into Python a significant increase in the overall system boottime was noticed. The system boot time can be analysed and a graph can be generated in the end which shows in detail who called whom during the system startup phase.

This is done by utilizing the `systemd-bootchart` package which is now installed by default on the VyOS 1.3 (equuleus) branch. The configuration is also versioned so we get comparable results. `systemd-bootchart` is configured using this file: `bootchart.conf`

To enable boot time graphing change the Kernel commandline and add the following string: `init=/usr/lib/systemd/systemd-bootchart`

This can also be done permanently by changing `/boot/grub/grub.cfg`.

## 18.4 Priorities

VyOS CLI is all about priorities. Every CLI node has a corresponding `node.def` file and possibly an attached script that is executed when the node is present. Nodes can have a priority, and on system bootup - or any other `commit` to the config all scripts are executed from lowest to highest priority. This is good as this gives a deterministic behavior.

To debug issues in priorities or to see what's going on in the background you can use the `/opt/vyatta/sbin/priority.pl` script which lists to you the execution order of the scripts.

## TESTING

One of the major advantages introduced in VyOS 1.3 is an automated test framework. When assembling an ISO image multiple things can go wrong badly and publishing a faulty ISO makes no sense. The user is disappointed by the quality of the image and the developers get flodded with bug reports over and over again.

As the VyOS documentation is not only for users but also for the developers - and we keep no secret documentation - this section describes how the automated testing works.

### 19.1 Jenkins CI

Our **VyOS CI** system is based on Jenkins and builds all our required packages for VyOS 1.2 to 1.4. In addition to the package build, there is the `vyos-build` Job which builds and tests the VyOS ISO image which is published after a successful test drive.

We differentiate in two independent tests, which are both run in parallel by two separate QEmu instances which are launched via `make test` and `make testc` from within the `vyos-build` repository.

### 19.2 Smoketests

Smoketests executes predefined VyOS CLI commands and checks if the desired daemon/service configuration is rendered - that is how to put it “short”.

When an ISO image is assembled by the **VyOS CI**, the `BUILD_SMOKETEST` parameter is enabled by default, which will extend the ISO configuration line with the following packages:

```
def CUSTOM_PACKAGES = ''
  if (params.BUILD_SMOKETESTS)
    CUSTOM_PACKAGES = '--custom-package vyos-1x-smoketest'
```

So if you plan to build your own custom ISO image and want to make use of our smoketests, ensure that you have the `vyos-1x-smoketest` package installed.

The `make test` command from the `vyos-build` repository will launch a new QEmu instance and the ISO image is first installed to the virtual harddisk.

After its first boot into the newly installed system the main Smoketest script is executed, it can be found here: `/usr/bin/vyos-smoketest`

The script only searches for executable “test-cases” under `/usr/libexec/vyos/tests/smoke/cli/` and executes them one by one.

---

**Note:** As Smoketests will alter the system configuration and you are logged in remote you may loose your connection to the system.

---

---

**Note:** To enable smoketest debugging (print of the CLI set commands used) you can run: `touch /tmp/vyos.smoketest.debug`.

---

## 19.2.1 Manual Smoketest Run

On the other hand - as each test is contain in its own file - one can always execute a single Smoketest by hand by simply running the Python test scripts.

Example:

```
vyos@vyos:~$ /usr/libexec/vyos/tests/smoke/cli/test_protocols_bgp.py
test_bgp_01_simple (__main__.TestProtocolsBGP) ... ok
test_bgp_02_neighbors (__main__.TestProtocolsBGP) ... ok
test_bgp_03_peer_groups (__main__.TestProtocolsBGP) ... ok
test_bgp_04_afi_ipv4 (__main__.TestProtocolsBGP) ... ok
test_bgp_05_afi_ipv6 (__main__.TestProtocolsBGP) ... ok
test_bgp_06_listen_range (__main__.TestProtocolsBGP) ... ok
test_bgp_07_l2vpn_evpn (__main__.TestProtocolsBGP) ... ok
test_bgp_08_zebra_route_map (__main__.TestProtocolsBGP) ... ok
test_bgp_09_distance_and_flowspec (__main__.TestProtocolsBGP) ... ok
test_bgp_10_vrf_simple (__main__.TestProtocolsBGP) ... ok
test_bgp_11_confederation (__main__.TestProtocolsBGP) ... ok
test_bgp_12_v6_link_local (__main__.TestProtocolsBGP) ... ok
test_bgp_13_solo (__main__.TestProtocolsBGP) ... ok
```

```
-----
Ran 13 tests in 348.191s
```

```
OK
```

## 19.2.2 Interface based tests

Our smoketests not only test daemons and serives, but also check if what we configure for an interface works. Thus there is a common base classed named: `base_interfaces_test.py` which holds all the common code that an interface supports and is tested.

Those common tests consists out of:

- Add one or more IP addresses
- DHCP client and DHCPv6 prefix delegation
- MTU size
- IP and IPv6 options
- Port description
- Port disable

- VLANs (QinQ and regular 802.1q)
- ...

---

**Note:** When you are working on interface configuration and you also want to test if the Smoketests pass you would normally loose the remote SSH connection to your DUT (Device Under Test). To handle this issue, some of the interface based tests can be called with an environment variable beforehand to limit the number of interfaces used in the test. By default all interface e.g. all Ethernet interfaces are used.

---

```
vyos@vyos:~$ TEST_ETH="eth1 eth2" /usr/libexec/vyos/tests/smoke/cli/test_interfaces_
↳bonding.py
test_add_multiple_ip_addresses (__main__.BondingInterfaceTest) ... ok
test_add_single_ip_address (__main__.BondingInterfaceTest) ... ok
test_bonding_hash_policy (__main__.BondingInterfaceTest) ... ok
test_bonding_lacp_rate (__main__.BondingInterfaceTest) ... ok
test_bonding_min_links (__main__.BondingInterfaceTest) ... ok
test_bonding_remove_member (__main__.BondingInterfaceTest) ... ok
test_dhcpv6_client_options (__main__.BondingInterfaceTest) ... ok
test_dhcpv6pd_auto_sla_id (__main__.BondingInterfaceTest) ... ok
test_dhcpv6pd_manual_sla_id (__main__.BondingInterfaceTest) ... ok
test_interface_description (__main__.BondingInterfaceTest) ... ok
test_interface_disable (__main__.BondingInterfaceTest) ... ok
test_interface_ip_options (__main__.BondingInterfaceTest) ... ok
test_interface_ipv6_options (__main__.BondingInterfaceTest) ... ok
test_interface_mtu (__main__.BondingInterfaceTest) ... ok
test_ipv6_link_local_address (__main__.BondingInterfaceTest) ... ok
test_mtu_1200_no_ipv6_interface (__main__.BondingInterfaceTest) ... ok
test_span_mirror (__main__.BondingInterfaceTest) ... ok
test_vif_8021q_interfaces (__main__.BondingInterfaceTest) ... ok
test_vif_8021q_lower_up_down (__main__.BondingInterfaceTest) ... ok
test_vif_8021q_mtu_limits (__main__.BondingInterfaceTest) ... ok
test_vif_8021q_qos_change (__main__.BondingInterfaceTest) ... ok
test_vif_s_8021ad_vlan_interfaces (__main__.BondingInterfaceTest) ... ok
test_vif_s_protocol_change (__main__.BondingInterfaceTest) ... ok

-----
Ran 23 tests in 244.694s

OK
```

This will limit the *bond* interface test to only make use of *eth1* and *eth2* as member ports.

## 19.3 Config Load Tests

The other part of our tests are called “config load tests”. The config load tests will load - one after another - arbitrary configuration files to test if the configuration migration scripts work as designed and that a given set of functionality still can be loaded with a fresh VyOS ISO image.

The configurations are all derived from production systems and can not only act as a testcase but also as reference if one wants to enable a certain feature. The configurations can be found here: <https://github.com/vyos/vyos-1x/tree/current/smoketest/configs>

The entire test is controlled by the main wrapper script `/usr/bin/vyos-configtest` which behaves in the same way as the main `smoketest` script. It scans the folder for potential configuration files and issues a `load` command one after another.

### 19.3.1 Manual config load test

One is not bound to load all configurations one after another but can also load individual test configurations on his own.

```
vyos@vyos:~$ configure
load[edit]

vyos@vyos# load /usr/libexec/vyos/tests/config/ospf-small
Loading configuration from '/usr/libexec/vyos/tests/config/ospf-small'
Load complete. Use 'commit' to make changes effective.
[edit]
vyos@vyos# compare
[edit interfaces ethernet eth0]
-hw-id 00:50:56:bf:c5:6d
[edit interfaces ethernet eth1]
+duplex auto
-hw-id 00:50:56:b3:38:c5
+speed auto
[edit interfaces]
-ethernet eth2 {
-   hw-id 00:50:56:b3:9c:1d
-}
-vti vt1 {
-   address 192.0.2.1/30
-}
...

vyos@vyos# commit
vyos@vyos#
```

**Note:** Some of the configurations have preconditions which need to be met. Those most likely include generation of cryptographic keys before the config can be applied - you will get a commit error otherwise. If you are interested how those preconditions are fulfilled check the [vyos-build](#) repository and the `scripts/check-qemu-install` file.

## WRITE DOCUMENTATION

We encourage every VyOS user to help us improve our documentation as we have a deficit like most software projects. This not only helps you when reading but also everyone else.

If you are willing to contribute to our documentation this is the definite guide how to do so.

---

**Note:** In contrast to submitting code patches, there is no requirement that you open up a [Phabricator](#) task prior to submitting a Pull-Request to the documentation.

---

VyOS documentation is written in reStructuredText and generated to Read the Docs pages with Sphinx, as per the Python tradition. We welcome all sorts of contributions to the documentation. Not just new additions but also corrections to existing documentation.

The documentation source is kept in the Git repository at <https://github.com/vyos/vyos-documentation> and you can follow the instructions in the [README.md](#) to build and test your changes.

You can either install Sphinx and build the documentation locally, or use the [Dockerfile](#) to build it in a container.

### 20.1 Guidelines

There are a few things to keep in mind when contributing to the documentation, for the sake of consistency and readability.

The following is a quick summary of the rules:

- Use American English at all times. It's always a good idea to run your text through a grammar and spell checker, such as [Grammarly](#).
- Don't forget to update `index.rst` when adding a new node.
- Try not to exceed 80 characters per line, but don't break URLs over this.
- Properly quote commands, filenames and brief code snippets with double backticks.
- Use literal blocks for longer snippets.
- Leave a newline before and after a header.
- Indent with two spaces.
- When in doubt, follow the style of existing documentation.

And finally, remember that the reStructuredText files aren't exclusively for generating HTML and PDF. They should be human-readable and easily perused from a console.

## 20.2 Page content

All RST files must follow the same TOC Level syntax and have to start with

```
#####  
Title  
#####
```

The configuration mode folder and the articles cover the specific level of the commands. The exact level depends on the command. This should provide stability for URLs used in the forum or blogpost.

For example:

- `set firewall zone` is written in `firewall/zone.rst`
- `set interfaces ethernet` is written in `interfaces/ethernet.rst`

In the configuration part of the page, all possible configuration options should be documented. Use `.. cfgcmd::` described above.

Related operation command must be documented in the next part of the article. Use `::opcmd..` for these commands.

Each page must contain the following parts:

### 20.2.1 1. Theoretical information

Theoretical information required for users to understand the next document sections:

- a simple explanation of what is this page about, why or when it is required to be used
- references to standards, RFCs

### 20.2.2 2. Configuration description

Describe CLI items related to the service or use case. Each config line or section must be explained, using information provided in the 1st part of the page.

### 20.2.3 3. Configuration examples

Practical examples of the service or use case configuration. They must contain topology maps (if applicable) and short descriptions.

### 20.2.4 4. Known issues

This section must contain a list of:

- known issues or potential problems for the service or use case
- workarounds for known issues (if any exist)

## 20.2.5 5. Debugging

Described procedures for debugging a service:

- how to collect logs or other debugging information (like *show* commands output)
- how to read and what to search for in logs and collected information
- what are indicators of good and bad states in debugging outputs

## 20.3 Style Guide

### 20.3.1 Formatting and Sphinxmarkup

#### TOC Level

We use the following syntax for Headlines.

```
#####
Title
#####

*****
Chapters
*****

Sections
=====

Subsections
-----

Subsubsections
^^^^^^^^^^^^^^^^^^

Paragraphs
*****
```

#### Cross-References

A plugin will be used to generate a reference label for each headline. To reference a page or a section in the documentation use the `:ref:` command.

For example, you want to reference the headline **VLAN** in the **ethernet.rst** page. The plugin generates the label based on the headline and the file path.

```
:ref:`configuration/interfaces/ethernet:vlan`
```

to use an alternative hyperlink use it this way:

```
:ref:`Check out VLAN<configuration/interfaces/ethernet:vlan>`
```

## handle build errors

The plugin will warn on build if a headline has a duplicate name in the same document. To prevent this warning, you have to put a custom link on top of the headline.

```
Section A
=====

Lorem ipsum dolor sit amet, consetetur sadipscing elitr

Example
-----

Lorem ipsum dolor sit amet, consetetur sadipscing elitr

Section B
=====

Lorem ipsum dolor sit amet, consetetur sadipscing elitr

.. _section B example:

Example
-----

Lorem ipsum dolor sit amet, consetetur sadipscing elitr
```

## Address space

Note the following RFCs ([RFC 5737](#), [RFC 3849](#), [RFC 5389](#) and [RFC 7042](#)), which describe the reserved public IP addresses and autonomous system numbers for the documentation:

- 192.0.2.0/24
- 198.51.100.0/24
- 203.0.113.0/24
- 2001:db8::/32
- 16bit ASN: 64496 - 64511
- 32bit ASN: 65536 - 65551
- Unicast MAC Addresses: 00-53-00 to 00-53-FF
- Multicast MAC-Addresses: 90-10-00 to 90-10-FF

Please do not use other public address space.

## Line length

Limit all lines to a maximum of 80 characters.

Except in `.. code-block::` because it uses the html tag `<pre>` and renders the same line format from the source rst file.

## Autolinter

Each GitHub pull request is automatically linted to check the address space and line length.

Sometimes it is necessary to provide real IP addresses like in the *Configuration Blueprints*. For this, please use the sphinx comment syntax `.. stop_vyoslinter` to stop the linter and `.. start_vyoslinter` to start.

## Custom Sphinx-doc Markup

Custom commands have been developed for writing the documentation. Please make yourself comfortable with those commands as this eases the way we render the documentation.

### cfgcmd

When documenting CLI commands, use the `.. cfgcmd::` directive for all configuration mode commands. An explanation of the described command should be added below this statement. Replace all variable contents with `<value>` or something similar.

With those custom commands, it will be possible to render them in a more descriptive way in the resulting HTML/PDF manual.

```
.. cfgcmd:: protocols static arp <ipaddress> hwaddr <macaddress>
```

```
This will configure a static ARP entry, always resolving `192.0.2.100` to
`00:53:27:de:23:aa`.
```

For an inline configuration level command, use `:cfgcmd:`

```
:cfgcmd:`set interface ethernet eth0`
```

To extract a defaultvalue from the XML definitions add a `:defaultvalue:` to `.. cfgcmd::` directive. To have this feature locally, the `vyos-lx` submodule must be initialized before. Please be aware to not update the submodule in your PR.

```
.. cfgcmd:: set system conntrack table-size <1-50000000>
:defaultvalue:
```

```
The connection tracking table contains one entry for each connection being
tracked by the system.
```

## opcmd

When documenting operational level commands, use the `.. opcmd::` directive. An explanation of the described command should be added below this statement.

With those custom commands, it is possible to render them in a more descriptive way in the resulting HTML/PDF manual.

```
.. opcmd:: show protocols static arp
```

```
    Display all known ARP table entries spanning across all interfaces
```

For an inline operational level command, use `:opcmd:`

```
:opcmd:`add system image`
```

## cmdinclude

To minimize redundancy, there is a special include directive. It includes a txt file and replace the `{{ var0 }}` - `{{ var9 }}` with the correct value.

```
.. cmdinclude:: ../include/interface-address.txt
   :var0: ethernet
   :var1: eth1
```

the content of interface-address.txt looks like this

```
.. cfgcmd:: set interfaces {{ var0 }} <interface> address <address | dhcp |
   dhcpv6>
```

```
    Configure interface `<interface>` with one or more interface
    addresses.
```

```
    * **address** can be specified multiple times as IPv4 and/or IPv6
    address, e.g. 192.0.2.1/24 and/or 2001:db8::1/64
    * **dhcp** interface address is received by DHCP from a DHCP server
    on this segment.
    * **dhcpv6** interface address is received by DHCPv6 from a DHCPv6
    server on this segment.
```

```
    Example:
```

```
.. code-block:: none
```

```
    set interfaces {{ var0 }} {{ var1 }} address 192.0.2.1/24
    set interfaces {{ var0 }} {{ var1 }} address 192.0.2.2/24
    set interfaces {{ var0 }} {{ var1 }} address 2001:db8::ffff/64
    set interfaces {{ var0 }} {{ var1 }} address 2001:db8:100::ffff/64
```

## vytask

When referencing to VyOS Phabricator Tasks, there is a custom Sphinx Markup command called `vytask` that automatically renders to a proper Phabricator URL. This is heavily used in the *Changelog* section.

```
* :vytask:`T1605` Fixed regression in L2TP/IPsec server
* :vytask:`T1613` Netflow/sFlow captures IPv6 traffic correctly
```

## 20.4 Forking Workflow

The Forking Workflow is fundamentally different from other popular Git workflows. Instead of using a single server-side repository to act as the “central” codebase, it gives every developer their own server-side repository. This means that each contributor has not one, but two Git repositories: a private local one and a public server-side one.

The main advantage of the Forking Workflow is that contributions can be integrated without the need for everybody to push to a single central repository. Developers push to their own server-side repositories, and only the project maintainer can push to the official repository. This allows the maintainer to accept commits from any developer without giving them write access to the official codebase.

---

**Note:** Updates to our documentation should be delivered by a GitHub pull-request. This requires you already have a GitHub account.

---

- Fork this project on GitHub <https://github.com/vyos/vyos-documentation/fork>
- Clone fork to local machine, then change to that directory `$ cd vyos-documentation`
- Install the requirements `$ pip install -r requirements.txt` (or something similar)
- Create a new branch for your work, use a descriptive name of your work: `$ git checkout -b <branch-name>`
- Make all your changes - please keep our commit rules in mind (*Prepare patch/commit*). This mainly applies to proper commit messages describing your change (how and why). Please check out the documentation of [Sphinx-doc](#) or [reStructuredText](#) if you are not familiar with it. This is used for writing our docs. Additional directives how to write in RST can be obtained from [reStructuredTextDirectives](#).
- Check your changes by locally building the documentation `$ make livehtml`. Sphinx will build the html files in the `docs/_build` folder. We provide you with a Docker container for an easy-to-use user experience. Check the [README.md](#) file of this repository.
- View modified files by calling `$ git status`. You will get an overview of all files modified by you. You can add individual files to the Git Index in the next step.
- Add modified files to Git index `$ git add path/to/filename` or add all unstaged files `$ git add ..` All files added to the Git index will be part of you following Git commit.
- Commit your changes with the message, `$ git commit -m "<commit message>"` or use `$ git commit -v` to have your configured editor launched. You can type in a commit message. Again please make yourself comfortable without rules (*Prepare patch/commit*).
- Push commits to your GitHub project: `$ git push -u origin <branch-name>`
- Submit pull-request. In GitHub visit the main repository and you should see a banner suggesting to make a pull request. Fill out the form and describe what you do.

- Once pull requests have been approved, you may want to locally update your forked repository too. First you'll have to add a second remote called *upstream* which points to our main repository. `$ git remote add upstream https://github.com/vyos/vyos-documentation.git`

Check your configured remote repositories:

```
$ git remote -v
origin    https://github.com/<username>/vyos-documentation.git (fetch)
origin    https://github.com/<username>/vyos.documentation.git (push)
upstream  https://github.com/vyos/vyos-documentation.git (fetch)
upstream  https://github.com/vyos/vyos-documentation.git (push)
```

Your remote repo on Github is called *origin*, while the original repo you have forked is called *upstream*. Now you can locally update your forked repo.

```
$ git fetch upstream
$ git checkout current
$ git merge upstream/current
```

- If you also want to update your fork on GitHub, use the following: `$ git push origin current`

## COVERAGE

Overview over all commands, which are documented in the `.. cfgcmd::` or `.. opcmd::` Directives.

The build process take all xml definition files from `vyos-1x` and a periodical export of all VyOS commands and extract each leaf command or executable command. After this the commands are compare and shown in the following two tables. The script compare only the fixed part of a command. All variables or values will be erase and then compare:

for example there are these two commands:

- documentation: `interfaces ethernet <interface> address <address | dhcp | dhcpv6>`
- xml: `interfaces ethernet <ethernet> address <address>`
- VyOS: `interfaces ethernet <text> address <value>`

Now the script erase all in between `<` and `>` and simply compare the strings.

### There are 3 kind of problems:

Not documented yet

- A XML command are not found in `.. cfgcmd::` or `.. opcmd::` Commands
- The command should be documented

Nothing found in XML Definitions

- `.. cfgcmd::` or `.. opcmd::` Command are not found in a XML command
- Maybe the command where changed in the XML Definition, the feature is not anymore in VyOS, or there is a typo

Nothing found in VyOS

- `.. cfgcmd::` or `.. opcmd::` Command are not found in a VyOS command
- Maybe the command where changed, the feature is not anymore in VyOS, or there is a typo

## 21.1 Configuration Commands

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	cluster dead-interval <value>

continues on next page

Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	cluster group <text> auto-failback <value>
×	not yet documented	Nothing found in XML Definitions	cluster group <text> monitor <value>
×	not yet documented	Nothing found in XML Definitions	cluster group <text> primary <value>
×	not yet documented	Nothing found in XML Definitions	cluster group <text> secondary <value>
×	not yet documented	Nothing found in XML Definitions	cluster group <text> service <value>
×	not yet documented	Nothing found in XML Definitions	cluster interface <value>
×	not yet documented	Nothing found in XML Definitions	cluster keepalive-interval <value>
×	not yet documented	Nothing found in XML Definitions	cluster mcast-group <value>
×	not yet documented	Nothing found in XML Definitions	cluster monitor-dead-interval <value>
×	not yet documented	Nothing found in XML Definitions	cluster pre-shared-secret <value>
×	<code>comment &lt;config node&gt; "comment text"</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>commit</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>commit-confirm &lt;minutes&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>compare &lt;saved   N&gt; &lt;M&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set container name &lt;name&gt; allow-host-networks</code>	container.xml.in: container name <name> allow-host-networks	container name <text> allow-host-networks
×	not yet documented	container.xml.in: container name <name> arguments	container name <text> arguments <value>
×	not yet documented	Nothing found in XML Definitions	container name <text> cap-add <value>
×	<code>set container name &lt;name&gt; capability &lt;text&gt;</code>	container.xml.in: container name <name> capability	Nothing found in VyOS
×	not yet documented	container.xml.in: container name <name> command	container name <text> command <value>
✓	<code>set container name &lt;name&gt; description &lt;text&gt;</code>	container.xml.in: container name <name> description	container name <text> description <value>
✓	<code>set container name &lt;name&gt; device &lt;devicename&gt; destination &lt;path&gt;</code>	container.xml.in: container name <name> device <device> destination	container name <text> device <text> destination <value>

continues on next page

Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set container name &lt;name&gt; device &lt;devicename&gt; source &lt;path&gt;</code>	container.xml.in: container name <name> device <device> source	container name <text> device <text> source <value>
✓	<code>set container name &lt;name&gt; disable</code>	container.xml.in: container name <name> disable	container name <text> dis- able
×	not yet documented	container.xml.in: container name <name> entrypoint	container name <text> en- trypoint <value>
✓	<code>set container name &lt;name&gt; environment &lt;key&gt; value &lt;value&gt;</code>	container.xml.in: container name <name> environment <environ- ment> value	container name <text> environment <text> value <value>
×	<code>set container name &lt;name&gt; gid &lt;number&gt;</code>	container.xml.in: container name <name> gid	Nothing found in VyOS
×	not yet documented	container.xml.in: container name <name> host-name	container name <text> host-name <value>
✓	<code>set container name &lt;name&gt; image</code>	container.xml.in: container name <name> image	container name <text> im- age <value>
×	not yet documented	container.xml.in: container name <name> label <label> value	Nothing found in VyOS
✓	<code>set container name &lt;name&gt; memory &lt;MB&gt;</code>	container.xml.in: container name <name> memory	container name <text> memory <value>
×	<code>set container name &lt;name&gt; network &lt;networkname&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set container name &lt;name&gt; network &lt;networkname&gt; address &lt;address&gt;</code>	container.xml.in: container name <name> network <network> address	container name <text> network <text> address <value>
✓	<code>set container name &lt;name&gt; port &lt;portname&gt; destination &lt;portnumber&gt;</code>	container.xml.in: container name <name> port <port> destination	container name <text> port <text> destination <value>
×	not yet documented	container.xml.in: container name <name> port <port> listen-address	container name <text> port <text> listen-address <value>
✓	<code>set container name &lt;name&gt; port &lt;portname&gt; protocol &lt;tcp   udp&gt;</code>	container.xml.in: container name <name> port <port> protocol	container name <text> port <text> protocol <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set container name &lt;name&gt; port &lt;portname&gt; source &lt;portnumber&gt;</code>	container.xml.in: container name <name> port <port> source	container name <text> port <text> source <value>
✓	<code>set container name &lt;name&gt; restart [no   on-failure   always]</code>	container.xml.in: container name <name> restart	container name <text> restart <value>
×	not yet documented	container.xml.in: container name <name> shared-memory	container name <text> shared-memory <value>
×	<code>set container name &lt;name&gt; uid &lt;number&gt;</code>	container.xml.in: container name <name> uid	Nothing found in VyOS
✓	<code>set container name &lt;name&gt; volume &lt;volumename&gt; destination &lt;path&gt;</code>	container.xml.in: container name <name> volume <volume> destination	container name <text> volume <text> destination <value>
✓	<code>set container name &lt;name&gt; volume &lt;volumename&gt; mode &lt;ro   rw&gt;</code>	container.xml.in: container name <name> volume <volume> mode	container name <text> volume <text> mode <value>
×	not yet documented	container.xml.in: container name <name> volume <volume> propagation	container name <text> volume <text> propagation <value>
✓	<code>set container name &lt;name&gt; volume &lt;volumename&gt; source &lt;path&gt;</code>	container.xml.in: container name <name> volume <volume> source	container name <text> volume <text> source <value>
×	<code>set container network &lt;name&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set container network &lt;name&gt; description</code>	container.xml.in: container network <network> description	container network <text> description <value>
✓	<code>set container network &lt;name&gt; prefix &lt;ipv4/ipv6&gt;</code>	container.xml.in: container network <network> prefix	container network <text> prefix <value>
✓	<code>set container network &lt;name&gt; vrf &lt;vname&gt;</code>	container.xml.in: container network <network> vrf	container network <text> vrf <value>
×	<code>set container registry &lt;name&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set container registry &lt;name&gt; authentication password</code>	container.xml.in: container registry <registry> authentication password	container registry <text> authentication password <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set container registry &lt;name&gt; authentication username</code>	container.xml.in: container registry <registry> authentication username	container registry <text> authentication username <value>
✓	<code>set container registry &lt;name&gt; disable</code>	container.xml.in: container registry <registry> disable	container registry <text> disable
×	<code>copy</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>delete</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>delete protocols static route 0.0.0.0/0</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>exit [discard]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge ...</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge forward filter default-action [accept   drop]</code>	firewall.xml.in: firewall bridge forward filter default-action	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall bridge forward filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall bridge forward filter description	Nothing found in VyOS
×	<code>set firewall bridge forward filter enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   return]</code>	firewall.xml.in: firewall bridge forward filter rule <rule> action	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; destination mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> destination mac-address	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; disable</code>	firewall.xml.in: firewall bridge forward filter rule <rule> disable	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> inbound-interface group	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> inbound-interface name	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> jump-target	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall bridge forward filter rule <rule> log	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> log-options group	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall bridge forward filter rule <rule> log-options level	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> log-options queue-threshold	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> log-options snapshot-length	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> outbound-interface group	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> outbound-interface name	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> queue	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall bridge forward filter rule <rule> queue-options	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> source mac-address	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; vlan id &lt;0-4096&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> vlan id	Nothing found in VyOS
×	<code>set firewall bridge forward filter rule &lt;1-999999&gt; vlan priority &lt;0-7&gt;</code>	firewall.xml.in: firewall bridge forward filter rule <rule> vlan priority	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; default-action [accept   continue   drop   jump   queue   return]</code>	firewall.xml.in: firewall bridge name <name> default-action	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; default-jump-target &lt;text&gt;</code>	firewall.xml.in: firewall bridge name <name> default-jump-target	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall bridge name <name> default-log	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall bridge name &lt;name&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall bridge name <name> description	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   return]</code>	firewall.xml.in: firewall bridge name <name> rule <rule> action	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; destination mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> destination mac-address	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; disable</code>	firewall.xml.in: firewall bridge name <name> rule <rule> disable	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> inbound-interface group	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> inbound-interface name	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> jump-target	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall bridge name <name> rule <rule> log	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> log-options group	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall bridge name <name> rule <rule> log-options level	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> log- options queue-threshold	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> log- options snapshot-length	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> outbound-interface group	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> outbound-interface name	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> queue	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall bridge name <name> rule <rule> queue-options	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> source mac-address	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; vlan id &lt;0-4096&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> vlan id	Nothing found in VyOS
×	<code>set firewall bridge name &lt;name&gt; rule &lt;1-999999&gt; vlan priority &lt;0-7&gt;</code>	firewall.xml.in: firewall bridge name <name> rule <rule> vlan priority	Nothing found in VyOS
×	<code>set firewall flowtable &lt;flow_table_name&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall flowtable <flowtable> descrip- tion	Nothing found in VyOS
×	<code>set firewall flowtable &lt;flow_table_name&gt; interface &lt;iface&gt;</code>	firewall.xml.in: firewall flowtable <flowtable> interface	Nothing found in VyOS
×	<code>set firewall flowtable &lt;flow_table_name&gt; offload &lt;hardware   software&gt;</code>	firewall.xml.in: firewall flowtable <flowtable> offload	Nothing found in VyOS
×	<code>set firewall flowtables ...</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall [ipv4   ipv4] forward filter rule &lt;1-999999&gt; action offload</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall [ipv4   ipv4] forward filter rule &lt;1-999999&gt; offload-target &lt;flowtable&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall global-options ..</code> .	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall global-options all-ping [enable   disable]</code>	firewall.xml.in: firewall global-options all- ping	firewall global-options all- ping <value>
✓	<code>set firewall global-options broadcast-ping [enable   disable]</code>	firewall.xml.in: firewall global-options broadcast-ping	firewall global-options broadcast-ping <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall global-options directed-broadcast	Nothing found in VyOS
✓	<i>set firewall global-options ip-src-route [enable   disable]</i>	firewall.xml.in: firewall global-options ip-src-route	firewall global-options ip-src-route <value>
✓	<i>set firewall global-options ipv6-receive-redirect [enable   disable]</i>	firewall.xml.in: firewall global-options ipv6-receive-redirects	firewall global-options ipv6-receive-redirects <value>
×	not yet documented	firewall.xml.in: firewall global-options ipv6-source-validation	Nothing found in VyOS
✓	<i>set firewall global-options ipv6-src-route [enable   disable]</i>	firewall.xml.in: firewall global-options ipv6-src-route	firewall global-options ipv6-src-route <value>
✓	<i>set firewall global-options log-martians [enable   disable]</i>	firewall.xml.in: firewall global-options log-martians	firewall global-options log-martians <value>
✓	<i>set firewall global-options receive-redirects [enable   disable]</i>	firewall.xml.in: firewall global-options receive-redirects	firewall global-options receive-redirects <value>
×	not yet documented	firewall.xml.in: firewall global-options resolver-cache	firewall global-options resolver-cache
×	not yet documented	firewall.xml.in: firewall global-options resolver-interval	firewall global-options resolver-interval <value>
✓	<i>set firewall global-options send-redirects [enable   disable]</i>	firewall.xml.in: firewall global-options send-redirects	firewall global-options send-redirects <value>
✓	<i>set firewall global-options source-validation [strict   loose   disable]</i>	firewall.xml.in: firewall global-options source-validation	firewall global-options source-validation <value>
×	<i>set firewall global-options state-policy established action [accept   drop   reject]</i>	firewall.xml.in: firewall global-options state-policy established action	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall global-options state-policy established log</code>	firewall.xml.in: firewall global-options state-policy established log	Nothing found in VyOS
×	<code>set firewall global-options state-policy established log-level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall global-options state-policy established log-level	Nothing found in VyOS
×	<code>set firewall global-options state-policy invalid action [accept   drop   reject]</code>	firewall.xml.in: firewall global-options state-policy invalid action	Nothing found in VyOS
×	<code>set firewall global-options state-policy invalid log</code>	firewall.xml.in: firewall global-options state-policy invalid log	Nothing found in VyOS
×	<code>set firewall global-options state-policy invalid log-level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall global-options state-policy invalid log-level	Nothing found in VyOS
×	<code>set firewall global-options state-policy related action [accept   drop   reject]</code>	firewall.xml.in: firewall global-options state-policy related action	Nothing found in VyOS
×	<code>set firewall global-options state-policy related log</code>	firewall.xml.in: firewall global-options state-policy related log	Nothing found in VyOS
×	<code>set firewall global-options state-policy related log-level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall global-options state-policy related log-level	Nothing found in VyOS
✓	<code>set firewall global-options syn-cookies [enable   disable]</code>	firewall.xml.in: firewall global-options syn-cookies	firewall global-options syn-cookies <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set firewall global-options twa-hazards-protection [enable   disable]</i>	firewall.xml.in: firewall global-options twa-hazards-protection	firewall global-options twa-hazards-protection <value>
✓	<i>set firewall group address-group &lt;name&gt; address [address   address range]</i>	firewall.xml.in: firewall group address-group <address-group> address	firewall group address-group <text> address <value>
✓	<i>set firewall group address-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group address-group <address-group> description	firewall group address-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group address-group <address-group> include	firewall group address-group <text> include <value>
✓	<i>set firewall group domain-group &lt;name&gt; address &lt;domain&gt;</i>	firewall.xml.in: firewall group domain-group <domain-group> address	firewall group domain-group <text> address <value>
✓	<i>set firewall group domain-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group domain-group <domain-group> description	firewall group domain-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group dynamic-group address-group <address-group> description	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall group dynamic-group ipv6-address-group <ipv6-address-group> description	Nothing found in VyOS
✓	<i>set firewall group interface-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group interface-group <interface-group> description	firewall group interface-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group interface-group <interface-group> include	firewall group interface-group <text> include <value>
✓	<i>set firewall group interface-group &lt;name&gt; interface &lt;text&gt;</i>	firewall.xml.in: firewall group interface-group <interface-group> interface	firewall group interface-group <text> interface <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set firewall group ipv6-address-group &lt;name&gt; address &lt;address&gt;</i>	firewall.xml.in: firewall group ipv6-address-group <ipv6-address-group> address	firewall group ipv6-address-group <text> address <value>
✓	<i>set firewall group ipv6-address-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group ipv6-address-group <ipv6-address-group> description	firewall group ipv6-address-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group ipv6-address-group <ipv6-address-group> include	firewall group ipv6-address-group <text> include <value>
✓	<i>set firewall group ipv6-network-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group ipv6-network-group <ipv6-network-group> description	firewall group ipv6-network-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group ipv6-network-group <ipv6-network-group> include	firewall group ipv6-network-group <text> include <value>
✓	<i>set firewall group ipv6-network-group &lt;name&gt; network &lt;CIDR&gt;</i>	firewall.xml.in: firewall group ipv6-network-group <ipv6-network-group> network	firewall group ipv6-network-group <text> network <value>
✓	<i>set firewall group mac-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group mac-group <mac-group> description	firewall group mac-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group mac-group <mac-group> include	firewall group mac-group <text> include <value>
✓	<i>set firewall group mac-group &lt;name&gt; mac-address &lt;mac-address&gt;</i>	firewall.xml.in: firewall group mac-group <mac-group> mac-address	firewall group mac-group <text> mac-address <value>
✓	<i>set firewall group network-group &lt;name&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall group network-group <network-group> description	firewall group network-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group network-group <network-group> include	firewall group network-group <text> include <value>
✓	<i>set firewall group network-group &lt;name&gt; network &lt;CIDR&gt;</i>	firewall.xml.in: firewall group network-group <network-group> network	firewall group network-group <text> network <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall group port-group &lt;name&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall group port-group <port-group> description	firewall group port-group <text> description <value>
×	not yet documented	firewall.xml.in: firewall group port-group <port-group> include	firewall group port-group <text> include <value>
✓	<code>set firewall group port-group &lt;name&gt; port [portname   portnumber   startport-endport]</code>	firewall.xml.in: firewall group port-group <port-group> port	firewall group port-group <text> port <value>
×	<code>set firewall ipv4 ...</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 [input   forward] filter rule &lt;1-999999&gt; action synproxy</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 [input   forward] filter rule &lt;1-999999&gt; protocol tcp</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 [input   forward] filter rule &lt;1-999999&gt; synproxy tcp mss &lt;501-65535&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 [input   forward] filter rule &lt;1-999999&gt; synproxy tcp window-scale &lt;1-14&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv4 forward filter default-action [accept   drop]</code>	firewall.xml.in: firewall ipv4 forward filter default-action	firewall ipv4 forward filter default-action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter description	firewall ipv4 forward filter description <value>
×	<code>set firewall ipv4 forward filter enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return   synproxy]</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> action	firewall ipv4 forward filter rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> add-address-to-group destination-address timeout	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> add-address-to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> add-address-to-group source-address timeout	Nothing found in VyOS
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> connection-mark	firewall ipv4 forward filter rule <text> connection-mark <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; connection-status nat [destination   source]</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> connection-status nat	firewall ipv4 forward filter rule <text> connection-status nat <value>
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; conntrack-helper &lt;module&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> conntrack-helper	Nothing found in VyOS
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> description	firewall ipv4 forward filter rule <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination address	firewall ipv4 forward filter rule <text> destination address <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination address-mask [address]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination address-mask	firewall ipv4 forward filter rule <text> destination address-mask <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination fqdn	firewall ipv4 forward filter rule <text> destination fqdn <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination geoip country-code	firewall ipv4 forward filter rule <text> destination geoip country-code <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination geoip inverse-match</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination geoip inverse-match	firewall ipv4 forward filter rule <text> destination geoip inverse-match
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination group address-group	firewall ipv4 forward filter rule <text> destination group address-group <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination group domain-group	firewall ipv4 forward filter rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination group dynamic-address-group	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination group mac-group	firewall ipv4 forward filter rule <text> destination group mac-group <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination group network-group	firewall ipv4 forward filter rule <text> destination group network-group <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination group port-group	firewall ipv4 forward filter rule <text> destination group port-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination mac-address	firewall ipv4 forward filter rule <text> destination mac-address <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> destination port	firewall ipv4 forward filter rule <text> destination port <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; disable</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> disable	firewall ipv4 forward filter rule <text> disable
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; dscp [0-63   start-end]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> dscp	firewall ipv4 forward filter rule <text> dscp <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> dscp-exclude	firewall ipv4 forward filter rule <text> dscp-exclude <value>
×	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> fragment match-frag	firewall ipv4 forward filter rule <text> fragment match-frag

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> fragment match-non-frag	firewall ipv4 forward filter rule <text> fragment match-non-frag
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; icmp [code   type] &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> icmp code	firewall ipv4 forward filter rule <text> icmp code <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> icmp type	firewall ipv4 forward filter rule <text> icmp type <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; icmp type-name &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> icmp type-name	firewall ipv4 forward filter rule <text> icmp type-name <value>
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> inbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> inbound-interface interface-name <value>
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> inbound-interface name	Nothing found in VyOS
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> ipsec match-ipsec	firewall ipv4 forward filter rule <text> ipsec match-ipsec

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> ipsec match-none	firewall ipv4 forward filter rule <text> ipsec match-none
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> jump-target	firewall ipv4 forward filter rule <text> jump-target <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> limit burst	firewall ipv4 forward filter rule <text> limit burst <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; limit rate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> limit rate	firewall ipv4 forward filter rule <text> limit rate <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; log</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> log	firewall ipv4 forward filter rule <text> log <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> log-options group	firewall ipv4 forward filter rule <text> log-options group <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> log-options level	firewall ipv4 forward filter rule <text> log-options level <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> log-options queue-threshold	firewall ipv4 forward filter rule <text> log-options queue-threshold <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> log-options snapshot-length	firewall ipv4 forward filter rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> mark	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> offload-target	Nothing found in VyOS
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> outbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> outbound-interface interface-name <value>
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> outbound-interface name	Nothing found in VyOS
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; packet-length &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> packet-length	firewall ipv4 forward filter rule <text> packet-length <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> packet-length-exclude	firewall ipv4 forward filter rule <text> packet-length-exclude <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> packet-type	firewall ipv4 forward filter rule <text> packet-type <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> protocol	firewall ipv4 forward filter rule <text> protocol <value>
✓	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv4 forward filter rule <rule> queue	firewall ipv4 forward filter rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> queue-options	firewall ipv4 forward filter rule <text> queue-options <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> recent count	firewall ipv4 forward filter rule <text> recent count <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> recent time	firewall ipv4 forward filter rule <text> recent time <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source address	firewall ipv4 forward filter rule <text> source address <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source address-mask	firewall ipv4 forward filter rule <text> source address-mask <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source fqdn	firewall ipv4 forward filter rule <text> source fqdn <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source geoip country-code	firewall ipv4 forward filter rule <text> source geoip country-code <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source geoip inverse-match	firewall ipv4 forward filter rule <text> source geoip inverse-match
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source group address-group	firewall ipv4 forward filter rule <text> source group address-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source group domain-group	firewall ipv4 forward filter rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source group mac-group	firewall ipv4 forward filter rule <text> source group mac-group <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source group network-group	firewall ipv4 forward filter rule <text> source group network-group <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source group port-group	firewall ipv4 forward filter rule <text> source group port-group <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source mac-address	firewall ipv4 forward filter rule <text> source mac-address <value>
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> source port	firewall ipv4 forward filter rule <text> source port <value>
×	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> state invalid <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 forward filter rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<i>set firewall ipv4 forward filter rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags ack	firewall ipv4 forward filter rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags cwr	firewall ipv4 forward filter rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags ecn	firewall ipv4 forward filter rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags fin	firewall ipv4 forward filter rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not ack	firewall ipv4 forward filter rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not cwr	firewall ipv4 forward filter rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not ecn	firewall ipv4 forward filter rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not fin	firewall ipv4 forward filter rule <text> tcp flags not fin

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not psh	firewall ipv4 forward filter rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not rst	firewall ipv4 forward filter rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not syn	firewall ipv4 forward filter rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags not urg	firewall ipv4 forward filter rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags psh	firewall ipv4 forward filter rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags rst	firewall ipv4 forward filter rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags syn	firewall ipv4 forward filter rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp flags urg	firewall ipv4 forward filter rule <text> tcp flags urg
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> tcp mss	firewall ipv4 forward filter rule <text> tcp mss <value>
✓	<b><i>set firewall ipv4 forward filter rule &lt;1-999999&gt; time startdate &lt;text&gt;</i></b>	firewall.xml.in: firewall ipv4 forward filter rule <rule> time startdate	firewall ipv4 forward filter rule <text> time startdate <value>
✓	<b><i>set firewall ipv4 forward filter rule &lt;1-999999&gt; time starttime &lt;text&gt;</i></b>	firewall.xml.in: firewall ipv4 forward filter rule <rule> time starttime	firewall ipv4 forward filter rule <text> time starttime <value>
✓	<b><i>set firewall ipv4 forward filter rule &lt;1-999999&gt; time stopdate &lt;text&gt;</i></b>	firewall.xml.in: firewall ipv4 forward filter rule <rule> time stopdate	firewall ipv4 forward filter rule <text> time stopdate <value>
✓	<b><i>set firewall ipv4 forward filter rule &lt;1-999999&gt; time stoptime &lt;text&gt;</i></b>	firewall.xml.in: firewall ipv4 forward filter rule <rule> time stoptime	firewall ipv4 forward filter rule <text> time stoptime <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; time weekdays &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 forward filter rule <rule> time weekdays	firewall ipv4 forward filter rule <text> time weekdays <value>
×	<code>set firewall ipv4 forward filter rule &lt;1-999999&gt; ttl &lt;eq   gt   lt&gt; &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> ttl eq	firewall ipv4 forward filter rule <text> ttl eq <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> ttl gt	firewall ipv4 forward filter rule <text> ttl gt <value>
×	not yet documented	firewall.xml.in: firewall ipv4 forward filter rule <rule> ttl lt	firewall ipv4 forward filter rule <text> ttl lt <value>
✓	<code>set firewall ipv4 input filter default-action [accept   drop]</code>	firewall.xml.in: firewall ipv4 input filter default-action	firewall ipv4 input filter default-action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter description	firewall ipv4 input filter description <value>
×	<code>set firewall ipv4 input filter enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return   synproxy]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> action	firewall ipv4 input filter rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> add-address-to-group destination-address timeout	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> add-address- to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> add-address- to-group source-address timeout	Nothing found in VyOS
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> connection- mark	firewall ipv4 input filter rule <text> connection- mark <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; connection-status nat [destination   source]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> connection- status nat	firewall ipv4 input filter rule <text> connection- status nat <value>
×	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; conntrack-helper &lt;module&gt;</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> conntrack- helper	Nothing found in VyOS
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> description	firewall ipv4 input filter rule <text> description <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination ad- dress	firewall ipv4 input filter rule <text> destination ad- dress <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; destination address-mask [address]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination address-mask	firewall ipv4 input filter rule <text> destination address-mask <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination fqdn	firewall ipv4 input filter rule <text> destination fqdn <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination geoip country-code	firewall ipv4 input filter rule <text> destination geoip country-code <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination geoip inverse-match</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination geoip inverse-match	firewall ipv4 input filter rule <text> destination geoip inverse-match
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination group address-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination group address-group	firewall ipv4 input filter rule <text> destination group address-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination group domain-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination group domain-group	firewall ipv4 input filter rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> destination group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination group mac-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination group mac-group	firewall ipv4 input filter rule <text> destination group mac-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination group network-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination group network-group	firewall ipv4 input filter rule <text> destination group network-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; destination group port-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination group port-group	firewall ipv4 input filter rule <text> destination group port-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> destination mac-address	firewall ipv4 input filter rule <text> destination mac-address <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> destination port	firewall ipv4 input filter rule <text> destination port <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; disable</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> disable	firewall ipv4 input filter rule <text> disable
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; dscp [0-63   start-end]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> dscp	firewall ipv4 input filter rule <text> dscp <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> dscp-exclude	firewall ipv4 input filter rule <text> dscp-exclude <value>
×	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> fragment match-frag	firewall ipv4 input filter rule <text> fragment match-frag
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> fragment match-non-frag	firewall ipv4 input filter rule <text> fragment match-non-frag
×	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; icmp [code   type] &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> icmp code	firewall ipv4 input filter rule <text> icmp code <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> icmp type	firewall ipv4 input filter rule <text> icmp type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; icmp type-name &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> icmp type-name	firewall ipv4 input filter rule <text> icmp type-name <value>
×	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 input filter rule <text> inbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 input filter rule <text> inbound-interface interface-name <value>
×	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> inbound-interface name	Nothing found in VyOS
×	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> ipsec match-ipsec	firewall ipv4 input filter rule <text> ipsec match-ipsec
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> ipsec match-none	firewall ipv4 input filter rule <text> ipsec match-none
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> jump-target	firewall ipv4 input filter rule <text> jump-target <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> limit burst	firewall ipv4 input filter rule <text> limit burst <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; limit rate &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> limit rate	firewall ipv4 input filter rule <text> limit rate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> log	firewall ipv4 input filter rule <text> log <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> log-options group	firewall ipv4 input filter rule <text> log-options group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> log-options level	firewall ipv4 input filter rule <text> log-options level <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> log-options queue-threshold	firewall ipv4 input filter rule <text> log-options queue-threshold <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> log-options snapshot-length	firewall ipv4 input filter rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> mark	Nothing found in VyOS
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; packet-length &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> packet-length	firewall ipv4 input filter rule <text> packet-length <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> packet-length-exclude	firewall ipv4 input filter rule <text> packet-length-exclude <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> packet-type	firewall ipv4 input filter rule <text> packet-type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> protocol	firewall ipv4 input filter rule <text> protocol <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> queue	firewall ipv4 input filter rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> queue-options	firewall ipv4 input filter rule <text> queue-options <value>
×	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> recent count	firewall ipv4 input filter rule <text> recent count <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> recent time	firewall ipv4 input filter rule <text> recent time <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source address	firewall ipv4 input filter rule <text> source address <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source address-mask	firewall ipv4 input filter rule <text> source address-mask <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source fqdn	firewall ipv4 input filter rule <text> source fqdn <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source geoip country-code	firewall ipv4 input filter rule <text> source geoip country-code <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source geoip inverse-match	firewall ipv4 input filter rule <text> source geoip inverse-match
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source group address-group	firewall ipv4 input filter rule <text> source group address-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source group domain-group	firewall ipv4 input filter rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source group mac-group	firewall ipv4 input filter rule <text> source group mac-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source group network-group	firewall ipv4 input filter rule <text> source group network-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source group port-group	firewall ipv4 input filter rule <text> source group port-group <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source mac-address	firewall ipv4 input filter rule <text> source mac-address <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> source port	firewall ipv4 input filter rule <text> source port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 input filter rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 input filter rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 input filter rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 input filter rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags ack	firewall ipv4 input filter rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags cwr	firewall ipv4 input filter rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags ecn	firewall ipv4 input filter rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags fin	firewall ipv4 input filter rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not ack	firewall ipv4 input filter rule <text> tcp flags not ack

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not cwr	firewall ipv4 input filter rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not ecn	firewall ipv4 input filter rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not fin	firewall ipv4 input filter rule <text> tcp flags not fin
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not psh	firewall ipv4 input filter rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not rst	firewall ipv4 input filter rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not syn	firewall ipv4 input filter rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags not urg	firewall ipv4 input filter rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags psh	firewall ipv4 input filter rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags rst	firewall ipv4 input filter rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags syn	firewall ipv4 input filter rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp flags urg	firewall ipv4 input filter rule <text> tcp flags urg
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> tcp mss	firewall ipv4 input fil- ter rule <text> tcp mss <value>
✓	<i>set firewall ipv4 input filter rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 input filter rule <rule> time startdate	firewall ipv4 input filter rule <text> time startdate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; time starttime &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> time starttime	firewall ipv4 input filter rule <text> time starttime <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; time stopdate &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> time stopdate	firewall ipv4 input filter rule <text> time stopdate <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; time stoptime &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> time stoptime	firewall ipv4 input filter rule <text> time stoptime <value>
✓	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; time weekdays &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 input filter rule <rule> time weekdays	firewall ipv4 input filter rule <text> time weekdays <value>
×	<code>set firewall ipv4 input filter rule &lt;1-999999&gt; ttl &lt;eq   gt   lt&gt; &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> ttl eq	firewall ipv4 input filter rule <text> ttl eq <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> ttl gt	firewall ipv4 input filter rule <text> ttl gt <value>
×	not yet documented	firewall.xml.in: firewall ipv4 input filter rule <rule> ttl lt	firewall ipv4 input filter rule <text> ttl lt <value>
✓	<code>set firewall ipv4 name &lt;name&gt; default-action [accept   drop   jump   queue   reject   return]</code>	firewall.xml.in: firewall ipv4 name <name> default-action	firewall ipv4 name <text> default-action <value>
✓	<code>set firewall ipv4 name &lt;name&gt; default-jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 name <name> default-jump-target	firewall ipv4 name <text> default-jump-target <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> default-log	Nothing found in VyOS
✓	<code>set firewall ipv4 name &lt;name&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 name <name> description	firewall ipv4 name <text> description <value>
×	<code>set firewall ipv4 name &lt;name&gt; enable-default-log</code>	Nothing found in XML Definitions	firewall ipv4 name <text> enable-default-log

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> action	firewall ipv4 name <text> rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> add-address-to-group destination-address time-out	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> add-address-to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> add-address-to-group source-address timeout	Nothing found in VyOS
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> connection-mark	firewall ipv4 name <text> rule <text> connection-mark <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; connection-status nat [destination   source]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> connection-status nat	firewall ipv4 name <text> rule <text> connection-status nat <value>
×	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; conntrack-helper &lt;module&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> conntrack-helper	Nothing found in VyOS
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> description	firewall ipv4 name <text> rule <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination address	firewall ipv4 name <text> rule <text> destination ad- dress <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination address-mask [address]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination address-mask	firewall ipv4 name <text> rule <text> destination address-mask <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination fqdn	firewall ipv4 name <text> rule <text> destination fqdn <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination geoup country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> desti- nation geoup country-code	firewall ipv4 name <text> rule <text> destination geoup country-code <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination geoup inverse-match</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination geoup inverse- match	firewall ipv4 name <text> rule <text> destination geoup inverse-match
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination group address- group	firewall ipv4 name <text> rule <text> destination group address-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination group domain- group	firewall ipv4 name <text> rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> des- tination group dynamic- address-group	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> desti- nation group mac-group	firewall ipv4 name <text> rule <text> destination group mac-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> des- tination group network- group	firewall ipv4 name <text> rule <text> destination group network-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> desti- nation group port-group	firewall ipv4 name <text> rule <text> destination group port-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination mac-address	firewall ipv4 name <text> rule <text> destination mac-address <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> destination port	firewall ipv4 name <text> rule <text> destination port <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; disable</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> disable	firewall ipv4 name <text> rule <text> disable
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; dscp [0-63   start-end]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> dscp	firewall ipv4 name <text> rule <text> dscp <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> dscp-exclude	firewall ipv4 name <text> rule <text> dscp-exclude <value>
×	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</code>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> fragment match-frag	firewall ipv4 name <text> rule <text> fragment match-frag
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> fragment match-non-frag	firewall ipv4 name <text> rule <text> fragment match-non-frag
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; icmp [code   type] &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> icmp code	firewall ipv4 name <text> rule <text> icmp code <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> icmp type	firewall ipv4 name <text> rule <text> icmp type <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; icmp type-name &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> icmp type-name	firewall ipv4 name <text> rule <text> icmp type- name <value>
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> inbound- interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> inbound- interface interface-name <value>
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> inbound-interface name	Nothing found in VyOS
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> ipsec match-ipsec	firewall ipv4 name <text> rule <text> ipsec match- ipsec
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> ipsec match-none	firewall ipv4 name <text> rule <text> ipsec match- none
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; jump-target &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> jump-target	firewall ipv4 name <text> rule <text> jump-target <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> limit burst	firewall ipv4 name <text> rule <text> limit burst <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; limit rate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> limit rate	firewall ipv4 name <text> rule <text> limit rate <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; log</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> log	firewall ipv4 name <text> rule <text> log <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> log-options group	firewall ipv4 name <text> rule <text> log-options group <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> log-options level	firewall ipv4 name <text> rule <text> log-options level <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> log- options queue-threshold	firewall ipv4 name <text> rule <text> log-options queue-threshold <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> log- options snapshot-length	firewall ipv4 name <text> rule <text> log-options snapshot-length <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> mark	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> offload-target	Nothing found in VyOS
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> outbound- interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> outbound- interface interface-name <value>
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> outbound-interface name	Nothing found in VyOS
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; packet-length &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> packet-length	firewall ipv4 name <text> rule <text> packet-length <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> packet-length-exclude	firewall ipv4 name <text> rule <text> packet-length- exclude <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> packet-type	firewall ipv4 name <text> rule <text> packet-type <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> protocol	firewall ipv4 name <text> rule <text> protocol <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> queue	firewall ipv4 name <text> rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> queue-options	firewall ipv4 name <text> rule <text> queue-options <value>
×	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> recent count	firewall ipv4 name <text> rule <text> recent count <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> recent time	firewall ipv4 name <text> rule <text> recent time <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source address	firewall ipv4 name <text> rule <text> source address <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source address-mask	firewall ipv4 name <text> rule <text> source address-mask <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source fqdn	firewall ipv4 name <text> rule <text> source fqdn <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source geoip country-code	firewall ipv4 name <text> rule <text> source geoip country-code <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source geoip inverse-match	firewall ipv4 name <text> rule <text> source geoip inverse-match
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source group address-group	firewall ipv4 name <text> rule <text> source group address-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source group domain-group	firewall ipv4 name <text> rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source group mac-group	firewall ipv4 name <text> rule <text> source group mac-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source group network-group	firewall ipv4 name <text> rule <text> source group network-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source group port-group	firewall ipv4 name <text> rule <text> source group port-group <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source mac-address	firewall ipv4 name <text> rule <text> source mac-address <value>
✓	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> source port	firewall ipv4 name <text> rule <text> source port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv4 name <name> rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 name <text> rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<code>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags ack	firewall ipv4 name <text> rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags cwr	firewall ipv4 name <text> rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags ecn	firewall ipv4 name <text> rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags fin	firewall ipv4 name <text> rule <text> tcp flags fin

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not ack	firewall ipv4 name <text> rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not cwr	firewall ipv4 name <text> rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not ecn	firewall ipv4 name <text> rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not fin	firewall ipv4 name <text> rule <text> tcp flags not fin
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not psh	firewall ipv4 name <text> rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not rst	firewall ipv4 name <text> rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not syn	firewall ipv4 name <text> rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags not urg	firewall ipv4 name <text> rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags psh	firewall ipv4 name <text> rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags rst	firewall ipv4 name <text> rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags syn	firewall ipv4 name <text> rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp flags urg	firewall ipv4 name <text> rule <text> tcp flags urg

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> tcp mss	firewall ipv4 name <text> rule <text> tcp mss <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> time startdate	firewall ipv4 name <text> rule <text> time startdate <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; time starttime &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> time starttime	firewall ipv4 name <text> rule <text> time starttime <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; time stopdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> time stopdate	firewall ipv4 name <text> rule <text> time stopdate <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; time stoptime &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> time stoptime	firewall ipv4 name <text> rule <text> time stoptime <value>
✓	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; time weekdays &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 name <name> rule <rule> time weekdays	firewall ipv4 name <text> rule <text> time weekdays <value>
×	<i>set firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt; ttl &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> ttl eq	firewall ipv4 name <text> rule <text> ttl eq <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> ttl gt	firewall ipv4 name <text> rule <text> ttl gt <value>
×	not yet documented	firewall.xml.in: firewall ipv4 name <name> rule <rule> ttl lt	firewall ipv4 name <text> rule <text> ttl lt <value>
✓	<i>set firewall ipv4 output filter default-action [accept   drop]</i>	firewall.xml.in: firewall ipv4 output filter default-action	firewall ipv4 output filter default-action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter description	firewall ipv4 output filter description <value>

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×	<i>set firewall ipv4 output filter enable-default-log</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return]</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> action	firewall ipv4 output filter rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> add-address-to-group destination-address timeout	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> add-address-to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> add-address-to-group source-address timeout	Nothing found in VyOS
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> connection-mark	firewall ipv4 output filter rule <text> connection-mark <value>
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; connection-status nat [destination   source]</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> connection-status nat	firewall ipv4 output filter rule <text> connection-status nat <value>
×	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; conntrack-helper &lt;module&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> conntrack-helper	Nothing found in VyOS
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> description	firewall ipv4 output filter rule <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination address	firewall ipv4 output filter rule <text> destination address <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination address-mask [address]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination address-mask	firewall ipv4 output filter rule <text> destination address-mask <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination fqdn	firewall ipv4 output filter rule <text> destination fqdn <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination geoip country-code	firewall ipv4 output filter rule <text> destination geoip country-code <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination geoip inverse-match</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination geoip inverse-match	firewall ipv4 output filter rule <text> destination geoip inverse-match
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination group address-group	firewall ipv4 output filter rule <text> destination group address-group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination group domain-group	firewall ipv4 output filter rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> destination group dynamic-address-group	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination group mac-group	firewall ipv4 output filter rule <text> destination group mac-group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination group network-group	firewall ipv4 output filter rule <text> destination group network-group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination group port-group	firewall ipv4 output filter rule <text> destination group port-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> destination mac-address	firewall ipv4 output filter rule <text> destination mac-address <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> destination port	firewall ipv4 output filter rule <text> destination port <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; disable</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> disable	firewall ipv4 output filter rule <text> disable
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; dscp [0-63   start-end]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> dscp	firewall ipv4 output filter rule <text> dscp <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> dscp-exclude	firewall ipv4 output filter rule <text> dscp-exclude <value>
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> fragment match-frag	firewall ipv4 output filter rule <text> fragment match-frag

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> fragment match-non-frag	firewall ipv4 output filter rule <text> fragment match-non-frag
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; icmp [code   type] &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> icmp code	firewall ipv4 output filter rule <text> icmp code <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> icmp type	firewall ipv4 output filter rule <text> icmp type <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; icmp type-name &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> icmp type-name	firewall ipv4 output filter rule <text> icmp type-name <value>
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> ipsec match-ipsec
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> ipsec match-none
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> jump-target	firewall ipv4 output filter rule <text> jump-target <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> limit burst	firewall ipv4 output filter rule <text> limit burst <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; limit rate &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> limit rate	firewall ipv4 output filter rule <text> limit rate <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> log	firewall ipv4 output filter rule <text> log <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> log-options group	firewall ipv4 output filter rule <text> log-options group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> log-options level	firewall ipv4 output filter rule <text> log-options level <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> log-options queue-threshold	firewall ipv4 output filter rule <text> log-options queue-threshold <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> log-options snapshot-length	firewall ipv4 output filter rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> mark	Nothing found in VyOS
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> outbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> outbound-interface interface-name <value>
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> outbound-interface name	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; packet-length &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> packet-length	firewall ipv4 output filter rule <text> packet-length <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> packet-length-exclude	firewall ipv4 output filter rule <text> packet-length-exclude <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> packet-type	firewall ipv4 output filter rule <text> packet-type <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> protocol	firewall ipv4 output filter rule <text> protocol <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> queue	firewall ipv4 output filter rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> queue-options	firewall ipv4 output filter rule <text> queue-options <value>
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> recent count	firewall ipv4 output filter rule <text> recent count <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> recent time	firewall ipv4 output filter rule <text> recent time <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source address	firewall ipv4 output filter rule <text> source address <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source address-mask	firewall ipv4 output filter rule <text> source address-mask <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source fqdn	firewall ipv4 output filter rule <text> source fqdn <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source geoip country-code	firewall ipv4 output filter rule <text> source geoip country-code <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source geoip inverse-match	firewall ipv4 output filter rule <text> source geoip inverse-match
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source group address-group	firewall ipv4 output filter rule <text> source group address-group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source group domain-group	firewall ipv4 output filter rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source group mac-group	firewall ipv4 output filter rule <text> source group mac-group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source group network-group	firewall ipv4 output filter rule <text> source group network-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source group port-group	firewall ipv4 output filter rule <text> source group port-group <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source mac-address	firewall ipv4 output filter rule <text> source mac-address <value>
✓	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> source port	firewall ipv4 output filter rule <text> source port <value>
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv4 output filter rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv4 output filter rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<code>set firewall ipv4 output filter rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags ack	firewall ipv4 output filter rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags cwr	firewall ipv4 output filter rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags ecn	firewall ipv4 output filter rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags fin	firewall ipv4 output filter rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not ack	firewall ipv4 output filter rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not cwr	firewall ipv4 output filter rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not ecn	firewall ipv4 output filter rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not fin	firewall ipv4 output filter rule <text> tcp flags not fin
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not psh	firewall ipv4 output filter rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not rst	firewall ipv4 output filter rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not syn	firewall ipv4 output filter rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags not urg	firewall ipv4 output filter rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags psh	firewall ipv4 output filter rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags rst	firewall ipv4 output filter rule <text> tcp flags rst

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags syn	firewall ipv4 output filter rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp flags urg	firewall ipv4 output filter rule <text> tcp flags urg
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> tcp mss	firewall ipv4 output filter rule <text> tcp mss <value>
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> time startdate	firewall ipv4 output filter rule <text> time startdate <value>
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; time starttime &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> time starttime	firewall ipv4 output filter rule <text> time starttime <value>
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; time stopdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> time stopdate	firewall ipv4 output filter rule <text> time stopdate <value>
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; time stoptime &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> time stoptime	firewall ipv4 output filter rule <text> time stoptime <value>
✓	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; time weekdays &lt;text&gt;</i>	firewall.xml.in: firewall ipv4 output filter rule <rule> time weekdays	firewall ipv4 output filter rule <text> time weekdays <value>
×	<i>set firewall ipv4 output filter rule &lt;1-999999&gt; ttl &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> ttl eq	firewall ipv4 output filter rule <text> ttl eq <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> ttl gt	firewall ipv4 output filter rule <text> ttl gt <value>
×	not yet documented	firewall.xml.in: firewall ipv4 output filter rule <rule> ttl lt	firewall ipv4 output filter rule <text> ttl lt <value>
×	<i>set firewall ipv6 ...</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set firewall ipv6 [input   forward] filter rule &lt;1-999999&gt; action synproxy</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv6 [input / forward] filter rule &lt;1-999999&gt; protocol tcp</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv6 [input / forward] filter rule &lt;1-999999&gt; synproxy tcp mss &lt;501-65535&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv6 [input / forward] filter rule &lt;1-999999&gt; synproxy tcp window-scale &lt;1-14&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 forward filter default-action [accept   drop]</code>	firewall.xml.in: firewall ipv6 forward filter default-action	firewall ipv6 forward filter default-action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter description	firewall ipv6 forward filter description <value>
×	<code>set firewall ipv6 forward filter enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return   synproxy]</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> action	firewall ipv6 forward filter rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> add-address-to-group destination-address timeout	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> add-address- to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> add-address- to-group source-address timeout	Nothing found in VyOS
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> connection- mark	firewall ipv6 forward fil- ter rule <text> connection- mark <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; connection-status nat [destination   source]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> connection- status nat	firewall ipv6 forward fil- ter rule <text> connection- status nat <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward fil- ter rule <rule> contrack- helper	Nothing found in VyOS
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> description	firewall ipv6 forward fil- ter rule <text> description <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination ad- dress	firewall ipv6 forward filter rule <text> destination ad- dress <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination address-mask [address]</i>	firewall.xml.in: firewall ipv6 forward fil- ter rule <rule> destination address-mask	firewall ipv6 forward fil- ter rule <text> destination address-mask <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</i>	firewall.xml.in: firewall ipv6 forward fil- ter rule <rule> destination fqdn	firewall ipv6 forward fil- ter rule <text> destination fqdn <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination geoip country-code	firewall ipv6 forward filter rule <text> destination geoip country-code <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination geoip inverse-match</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination geoip inverse-match	firewall ipv6 forward filter rule <text> destination geoip inverse-match
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination group address-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination group address-group	firewall ipv6 forward filter rule <text> destination group address-group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination group domain-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination group domain-group	firewall ipv6 forward filter rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination group mac-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination group mac-group	firewall ipv6 forward filter rule <text> destination group mac-group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination group network-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination group network-group	firewall ipv6 forward filter rule <text> destination group network-group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination group port-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination group port-group	firewall ipv6 forward filter rule <text> destination group port-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination mac-address	firewall ipv6 forward filter rule <text> destination mac-address <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> destination port	firewall ipv6 forward filter rule <text> destination port <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; disable</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> disable	firewall ipv6 forward filter rule <text> disable
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; dscp [0-63   start-end]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> dscp	firewall ipv6 forward filter rule <text> dscp <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> dscp-exclude	firewall ipv6 forward filter rule <text> dscp-exclude <value>
×	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> fragment match-frag	firewall ipv6 forward filter rule <text> fragment match-frag
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> fragment match-non-frag	firewall ipv6 forward filter rule <text> fragment match-non-frag
×	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; hop-limit &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> hop-limit eq	firewall ipv6 forward filter rule <text> hop-limit eq <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> hop-limit gt	firewall ipv6 forward filter rule <text> hop-limit gt <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> hop-limit lt	firewall ipv6 forward filter rule <text> hop-limit lt <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; icmpv6 [code   type] &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> icmpv6 code	firewall ipv6 forward filter rule <text> icmpv6 code <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> icmpv6 type	firewall ipv6 forward filter rule <text> icmpv6 type <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; icmpv6 type-name &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> icmpv6 type-name	firewall ipv6 forward filter rule <text> icmpv6 type-name <value>
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> inbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> inbound-interface interface-name <value>
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> inbound-interface name	Nothing found in VyOS
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> ipsec match-ipsec	firewall ipv6 forward filter rule <text> ipsec match-ipsec
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> ipsec match-none	firewall ipv6 forward filter rule <text> ipsec match-none

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> jump-target	firewall ipv6 forward filter rule <text> jump-target <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> limit burst	firewall ipv6 forward filter rule <text> limit burst <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; limit rate &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> limit rate	firewall ipv6 forward filter rule <text> limit rate <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> log	firewall ipv6 forward filter rule <text> log <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> log-options group	firewall ipv6 forward filter rule <text> log-options group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> log-options level	firewall ipv6 forward filter rule <text> log-options level <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> log-options queue-threshold	firewall ipv6 forward filter rule <text> log-options queue-threshold <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> log-options snapshot-length	firewall ipv6 forward filter rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> mark	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> offload-target	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> outbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> outbound-interface interface-name <value>
×	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> outbound-interface name	Nothing found in VyOS
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; packet-length &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> packet-length	firewall ipv6 forward filter rule <text> packet-length <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> packet-length-exclude	firewall ipv6 forward filter rule <text> packet-length-exclude <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> packet-type	firewall ipv6 forward filter rule <text> packet-type <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> protocol	firewall ipv6 forward filter rule <text> protocol <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> queue	firewall ipv6 forward filter rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> queue-options	firewall ipv6 forward filter rule <text> queue-options <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> recent count	firewall ipv6 forward filter rule <text> recent count <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> recent time	firewall ipv6 forward filter rule <text> recent time <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source address	firewall ipv6 forward filter rule <text> source address <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source address-mask	firewall ipv6 forward filter rule <text> source address-mask <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source fqdn	firewall ipv6 forward filter rule <text> source fqdn <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source geoip country-code	firewall ipv6 forward filter rule <text> source geoip country-code <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source geoip inverse-match	firewall ipv6 forward filter rule <text> source geoip inverse-match
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source group address-group	firewall ipv6 forward filter rule <text> source group address-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source group domain-group	firewall ipv6 forward filter rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source group mac-group	firewall ipv6 forward filter rule <text> source group mac-group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source group network-group	firewall ipv6 forward filter rule <text> source group network-group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source group port-group	firewall ipv6 forward filter rule <text> source group port-group <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source mac-address	firewall ipv6 forward filter rule <text> source mac-address <value>
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> source port	firewall ipv6 forward filter rule <text> source port <value>
×	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> state invalid <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 forward filter rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags ack	firewall ipv6 forward filter rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags cwr	firewall ipv6 forward filter rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags ecn	firewall ipv6 forward filter rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags fin	firewall ipv6 forward filter rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not ack	firewall ipv6 forward filter rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not cwr	firewall ipv6 forward filter rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not ecn	firewall ipv6 forward filter rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not fin	firewall ipv6 forward filter rule <text> tcp flags not fin

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not psh	firewall ipv6 forward filter rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not rst	firewall ipv6 forward filter rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not syn	firewall ipv6 forward filter rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags not urg	firewall ipv6 forward filter rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags psh	firewall ipv6 forward filter rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags rst	firewall ipv6 forward filter rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags syn	firewall ipv6 forward filter rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp flags urg	firewall ipv6 forward filter rule <text> tcp flags urg
×	not yet documented	firewall.xml.in: firewall ipv6 forward filter rule <rule> tcp mss	firewall ipv6 forward filter rule <text> tcp mss <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> time startdate	firewall ipv6 forward filter rule <text> time startdate <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; time starttime &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> time starttime	firewall ipv6 forward filter rule <text> time starttime <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; time stopdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> time stopdate	firewall ipv6 forward filter rule <text> time stopdate <value>
✓	<i>set firewall ipv6 forward filter rule &lt;1-999999&gt; time stoptime &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 forward filter rule <rule> time stoptime	firewall ipv6 forward filter rule <text> time stoptime <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 forward filter rule &lt;1-999999&gt; time weekdays &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 forward filter rule <rule> time weekdays	firewall ipv6 forward filter rule <text> time weekdays <value>
✓	<code>set firewall ipv6 input filter default-action [accept   drop]</code>	firewall.xml.in: firewall ipv6 input filter default-action	firewall ipv6 input filter default-action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter description	firewall ipv6 input filter description <value>
×	<code>set firewall ipv6 input filter enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return   synproxy]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> action	firewall ipv6 input filter rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> add-address-to-group destination-address timeout	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> add-address-to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> add-address-to-group source-address timeout	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> connection-mark	firewall ipv6 input filter rule <text> connection-mark <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; connection-status nat [destination / source]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> connection-status nat	firewall ipv6 input filter rule <text> connection-status nat <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> conntrack-helper	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> description	firewall ipv6 input filter rule <text> description <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination address [address / addressrange / CIDR]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination address	firewall ipv6 input filter rule <text> destination address <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination address-mask [address]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination address-mask	firewall ipv6 input filter rule <text> destination address-mask <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination fqdn	firewall ipv6 input filter rule <text> destination fqdn <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination geoip country-code	firewall ipv6 input filter rule <text> destination geoip country-code <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination geoip inverse-match</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination geoip inverse-match	firewall ipv6 input filter rule <text> destination geoip inverse-match
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination group address-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination group address-group	firewall ipv6 input filter rule <text> destination group address-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination group domain-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination group domain-group	firewall ipv6 input filter rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> destination group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination group mac-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination group mac-group	firewall ipv6 input filter rule <text> destination group mac-group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination group network-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination group network-group	firewall ipv6 input filter rule <text> destination group network-group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination group port-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination group port-group	firewall ipv6 input filter rule <text> destination group port-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> destination mac-address	firewall ipv6 input filter rule <text> destination mac-address <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; destination port [1-65535   portname / start-end]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> destination port	firewall ipv6 input filter rule <text> destination port <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; disable</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> disable	firewall ipv6 input filter rule <text> disable
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; dscp [0-63   start-end]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> dscp	firewall ipv6 input filter rule <text> dscp <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; dscp-exclude [0-63 / start-end]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> dscp-exclude	firewall ipv6 input filter rule <text> dscp-exclude <value>
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; fragment [match-frag / match-non-frag]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> fragment match-frag	firewall ipv6 input filter rule <text> fragment match-frag
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> fragment match-non-frag	firewall ipv6 input filter rule <text> fragment match-non-frag
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; hop-limit &lt;eq   gt   lt&gt; &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> hop-limit eq	firewall ipv6 input filter rule <text> hop-limit eq <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> hop-limit gt	firewall ipv6 input filter rule <text> hop-limit gt <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> hop-limit lt	firewall ipv6 input filter rule <text> hop-limit lt <value>
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; icmpv6 [code   type] &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> icmpv6 code	firewall ipv6 input filter rule <text> icmpv6 code <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> icmpv6 type	firewall ipv6 input filter rule <text> icmpv6 type <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; icmpv6 type-name &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> icmpv6 type-name	firewall ipv6 input filter rule <text> icmpv6 type-name <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 input filter rule <text> inbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 input filter rule <text> inbound-interface interface-name <value>
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> inbound-interface name	Nothing found in VyOS
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> ipsec match-ipsec	firewall ipv6 input filter rule <text> ipsec match-ipsec
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> ipsec match-none	firewall ipv6 input filter rule <text> ipsec match-none
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> jump-target	firewall ipv6 input filter rule <text> jump-target <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> limit burst	firewall ipv6 input filter rule <text> limit burst <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; limit rate &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> limit rate	firewall ipv6 input filter rule <text> limit rate <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> log	firewall ipv6 input filter rule <text> log <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> log-options group	firewall ipv6 input filter rule <text> log-options group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> log-options level	firewall ipv6 input filter rule <text> log-options level <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> log-options queue-threshold	firewall ipv6 input filter rule <text> log-options queue-threshold <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> log-options snapshot-length	firewall ipv6 input filter rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> mark	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; packet-length &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> packet-length	firewall ipv6 input filter rule <text> packet-length <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> packet-length-exclude	firewall ipv6 input filter rule <text> packet-length-exclude <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> packet-type	firewall ipv6 input filter rule <text> packet-type <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> protocol	firewall ipv6 input filter rule <text> protocol <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> queue	firewall ipv6 input filter rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> queue-options	firewall ipv6 input filter rule <text> queue-options <value>
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> recent count	firewall ipv6 input filter rule <text> recent count <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> recent time	firewall ipv6 input filter rule <text> recent time <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source address	firewall ipv6 input filter rule <text> source address <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source address-mask	firewall ipv6 input filter rule <text> source address-mask <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source fqdn	firewall ipv6 input filter rule <text> source fqdn <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source geoip country-code	firewall ipv6 input filter rule <text> source geoip country-code <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source geoip inverse-match	firewall ipv6 input filter rule <text> source geoip inverse-match

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source group address-group	firewall ipv6 input filter rule <text> source group address-group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source group domain-group	firewall ipv6 input filter rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source group mac-group	firewall ipv6 input filter rule <text> source group mac-group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source group network-group	firewall ipv6 input filter rule <text> source group network-group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source group port-group	firewall ipv6 input filter rule <text> source group port-group <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source mac-address	firewall ipv6 input filter rule <text> source mac-address <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> source port	firewall ipv6 input filter rule <text> source port <value>
×	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> state	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 input filter rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 input filter rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 input filter rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 input filter rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<i>set firewall ipv6 input filter rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags ack	firewall ipv6 input filter rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags cwr	firewall ipv6 input filter rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags ecn	firewall ipv6 input filter rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags fin	firewall ipv6 input filter rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not ack	firewall ipv6 input filter rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not cwr	firewall ipv6 input filter rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not ecn	firewall ipv6 input filter rule <text> tcp flags not ecn

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not fin	firewall ipv6 input filter rule <text> tcp flags not fin
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not psh	firewall ipv6 input filter rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not rst	firewall ipv6 input filter rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not syn	firewall ipv6 input filter rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags not urg	firewall ipv6 input filter rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags psh	firewall ipv6 input filter rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags rst	firewall ipv6 input filter rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags syn	firewall ipv6 input filter rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp flags urg	firewall ipv6 input filter rule <text> tcp flags urg
×	not yet documented	firewall.xml.in: firewall ipv6 input filter rule <rule> tcp mss	firewall ipv6 input filter rule <text> tcp mss <value>
✓	<i>set firewall ipv6 input filter rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 input filter rule <rule> time startdate	firewall ipv6 input filter rule <text> time startdate <value>
✓	<i>set firewall ipv6 input filter rule &lt;1-999999&gt; time starttime &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 input filter rule <rule> time starttime	firewall ipv6 input filter rule <text> time starttime <value>
✓	<i>set firewall ipv6 input filter rule &lt;1-999999&gt; time stopdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 input filter rule <rule> time stopdate	firewall ipv6 input filter rule <text> time stopdate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; time stoptime &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> time stoptime	firewall ipv6 input filter rule <text> time stoptime <value>
✓	<code>set firewall ipv6 input filter rule &lt;1-999999&gt; time weekdays &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 input filter rule <rule> time weekdays	firewall ipv6 input filter rule <text> time weekdays <value>
✓	<code>set firewall ipv6 name &lt;name&gt; default-action [accept   drop   jump   queue   reject   return]</code>	firewall.xml.in: firewall ipv6 name <name> default-action	firewall ipv6 name <text> default-action <value>
✓	<code>set firewall ipv6 name &lt;name&gt; default-jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> default-jump-target	firewall ipv6 name <text> default-jump-target <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> default-log	Nothing found in VyOS
✓	<code>set firewall ipv6 name &lt;name&gt; description &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> description	firewall ipv6 name <text> description <value>
×	<code>set firewall ipv6 name &lt;name&gt; enable-default-log</code>	Nothing found in XML Definitions	firewall ipv6 name <text> enable-default-log
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return]</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> action	firewall ipv6 name <text> rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> add-address-to-group destination-address time-out	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> add-address-to-group source-address address- group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> add-address-to-group source-address timeout	Nothing found in VyOS
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> connection-mark	firewall ipv6 name <text> rule <text> connection- mark <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; connection-status nat [destination   source]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> connection-status nat	firewall ipv6 name <text> rule <text> connection- status nat <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> conntrack-helper	Nothing found in VyOS
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> description	firewall ipv6 name <text> rule <text> description <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination address	firewall ipv6 name <text> rule <text> destination ad- dress <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination address-mask [address]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination address-mask	firewall ipv6 name <text> rule <text> destination address-mask <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination fqdn	firewall ipv6 name <text> rule <text> destination fqdn <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> desti- nation geoip country-code	firewall ipv6 name <text> rule <text> destination geoip country-code <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination geoip inverse-match</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination geoip inverse- match	firewall ipv6 name <text> rule <text> destination geoip inverse-match
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination group address-group &lt;name   !name&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination group address- group	firewall ipv6 name <text> rule <text> destination group address-group <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination group domain-group &lt;name   !name&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination group domain- group	firewall ipv6 name <text> rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> desti- nation group dynamic- address-group	Nothing found in VyOS
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination group mac-group &lt;name   !name&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> desti- nation group mac-group	firewall ipv6 name <text> rule <text> destination group mac-group <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination group network-group &lt;name   !name&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> desti- nation group network- group	firewall ipv6 name <text> rule <text> destination group network-group <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination group port-group &lt;name   !name&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> desti- nation group port-group	firewall ipv6 name <text> rule <text> destination group port-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination mac-address	firewall ipv6 name <text> rule <text> destination mac-address <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> destination port	firewall ipv6 name <text> rule <text> destination port <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; disable</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> disable	firewall ipv6 name <text> rule <text> disable
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; dscp [0-63   start-end]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> dscp	firewall ipv6 name <text> rule <text> dscp <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> dscp-exclude	firewall ipv6 name <text> rule <text> dscp-exclude <value>
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> fragment match-frag	firewall ipv6 name <text> rule <text> fragment match-frag
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> fragment match-non-frag	firewall ipv6 name <text> rule <text> fragment match-non-frag
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; hop-limit &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> hop-limit eq	firewall ipv6 name <text> rule <text> hop-limit eq <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> hop-limit gt	firewall ipv6 name <text> rule <text> hop-limit gt <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> hop-limit lt	firewall ipv6 name <text> rule <text> hop-limit lt <value>
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; icmpv6 [code   type] &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> icmpv6 code	firewall ipv6 name <text> rule <text> icmpv6 code <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> icmpv6 type	firewall ipv6 name <text> rule <text> icmpv6 type <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; icmpv6 type-name &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> icmpv6 type-name	firewall ipv6 name <text> rule <text> icmpv6 type- name <value>
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; inbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> inbound- interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> inbound- interface interface-name <value>
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; inbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> inbound-interface name	Nothing found in VyOS
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> ipsec match-ipsec	firewall ipv6 name <text> rule <text> ipsec match- ipsec

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> ipsec match-none	firewall ipv6 name <text> rule <text> ipsec match- none
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> jump-target	firewall ipv6 name <text> rule <text> jump-target <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> limit burst	firewall ipv6 name <text> rule <text> limit burst <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; limit rate &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> limit rate	firewall ipv6 name <text> rule <text> limit rate <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> log	firewall ipv6 name <text> rule <text> log <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> log-options group	firewall ipv6 name <text> rule <text> log-options group <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> log-options level	firewall ipv6 name <text> rule <text> log-options level <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> log- options queue-threshold	firewall ipv6 name <text> rule <text> log-options queue-threshold <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> log- options snapshot-length	firewall ipv6 name <text> rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> mark	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> offload-target	Nothing found in VyOS
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> outbound- interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> outbound- interface interface-name <value>
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> outbound-interface name	Nothing found in VyOS
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; packet-length &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> packet-length	firewall ipv6 name <text> rule <text> packet-length <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> packet-length-exclude	firewall ipv6 name <text> rule <text> packet-length- exclude <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> packet-type	firewall ipv6 name <text> rule <text> packet-type <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> protocol	firewall ipv6 name <text> rule <text> protocol <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; queue &lt;0-65535&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> queue	firewall ipv6 name <text> rule <text> queue <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> queue-options	firewall ipv6 name <text> rule <text> queue-options <value>
×	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> recent count	firewall ipv6 name <text> rule <text> recent count <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> recent time	firewall ipv6 name <text> rule <text> recent time <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source address	firewall ipv6 name <text> rule <text> source address <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source address-mask	firewall ipv6 name <text> rule <text> source address-mask <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source fqdn	firewall ipv6 name <text> rule <text> source fqdn <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source geoup country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source geoup country-code	firewall ipv6 name <text> rule <text> source geoup country-code <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source geoup inverse-match</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source geoup inverse-match	firewall ipv6 name <text> rule <text> source geoup inverse-match

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source group address-group	firewall ipv6 name <text> rule <text> source group address-group <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source group domain-group	firewall ipv6 name <text> rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source group mac-group	firewall ipv6 name <text> rule <text> source group mac-group <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source group network-group	firewall ipv6 name <text> rule <text> source group network-group <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source group port-group	firewall ipv6 name <text> rule <text> source group port-group <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source mac-address	firewall ipv6 name <text> rule <text> source mac-address <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> source port	firewall ipv6 name <text> rule <text> source port <value>
×	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> state	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 name <text> rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags ack	firewall ipv6 name <text> rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags cwr	firewall ipv6 name <text> rule <text> tcp flags cwr
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags ecn	firewall ipv6 name <text> rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags fin	firewall ipv6 name <text> rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not ack	firewall ipv6 name <text> rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not cwr	firewall ipv6 name <text> rule <text> tcp flags not cwr

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not ecn	firewall ipv6 name <text> rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not fin	firewall ipv6 name <text> rule <text> tcp flags not fin
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not psh	firewall ipv6 name <text> rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not rst	firewall ipv6 name <text> rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not syn	firewall ipv6 name <text> rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags not urg	firewall ipv6 name <text> rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags psh	firewall ipv6 name <text> rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags rst	firewall ipv6 name <text> rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags syn	firewall ipv6 name <text> rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp flags urg	firewall ipv6 name <text> rule <text> tcp flags urg
×	not yet documented	firewall.xml.in: firewall ipv6 name <name> rule <rule> tcp mss	firewall ipv6 name <text> rule <text> tcp mss <value>
✓	<i>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 name <name> rule <rule> time startdate	firewall ipv6 name <text> rule <text> time startdate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; time starttime &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> time starttime	firewall ipv6 name <text> rule <text> time starttime <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; time stopdate &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> time stopdate	firewall ipv6 name <text> rule <text> time stopdate <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; time stoptime &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> time stoptime	firewall ipv6 name <text> rule <text> time stoptime <value>
✓	<code>set firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt; time weekdays &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 name <name> rule <rule> time weekdays	firewall ipv6 name <text> rule <text> time weekdays <value>
✓	<code>set firewall ipv6 output filter default-action [accept   drop]</code>	firewall.xml.in: firewall ipv6 output filter default-action	firewall ipv6 output filter default-action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter default-log	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter description	firewall ipv6 output filter description <value>
×	<code>set firewall ipv6 output filter enable-default-log</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; action [accept   continue   drop   jump   queue   reject   return]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> action	firewall ipv6 output filter rule <text> action <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> add-address-to-group destination-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> add-address-to-group destination-address timeout	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> add-address- to-group source-address address-group	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> add-address- to-group source-address timeout	Nothing found in VyOS
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; connection-mark &lt;1-2147483647&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> connection- mark	firewall ipv6 output fil- ter rule <text> connection- mark <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; connection-status nat [destination   source]</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> connection- status nat	firewall ipv6 output fil- ter rule <text> connection- status nat <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output fil- ter rule <rule> conntrack- helper	Nothing found in VyOS
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; description &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> description	firewall ipv6 output fil- ter rule <text> description <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; destination address [address   addressrange   CIDR]</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination ad- dress	firewall ipv6 output filter rule <text> destination ad- dress <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; destination address-mask [address]</i>	firewall.xml.in: firewall ipv6 output fil- ter rule <rule> destination address-mask	firewall ipv6 output fil- ter rule <text> destination address-mask <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; destination fqdn &lt;fqdn&gt;</i>	firewall.xml.in: firewall ipv6 output fil- ter rule <rule> destination fqdn	firewall ipv6 output fil- ter rule <text> destination fqdn <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination geoip country-code	firewall ipv6 output filter rule <text> destination geoip country-code <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination geoip inverse-match</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination geoip inverse-match	firewall ipv6 output filter rule <text> destination geoip inverse-match
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination group address-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination group address-group	firewall ipv6 output filter rule <text> destination group address-group <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination group domain-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination group domain-group	firewall ipv6 output filter rule <text> destination group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> destination group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination group mac-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination group mac-group	firewall ipv6 output filter rule <text> destination group mac-group <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination group network-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination group network-group	firewall ipv6 output filter rule <text> destination group network-group <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; destination group port-group &lt;name / !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination group port-group	firewall ipv6 output filter rule <text> destination group port-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> destination mac-address	firewall ipv6 output filter rule <text> destination mac-address <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; destination port [1-65535   portname   start-end]</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> destination port	firewall ipv6 output filter rule <text> destination port <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; disable</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> disable	firewall ipv6 output filter rule <text> disable
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; dscp [0-63   start-end]</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> dscp	firewall ipv6 output filter rule <text> dscp <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; dscp-exclude [0-63   start-end]</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> dscp-exclude	firewall ipv6 output filter rule <text> dscp-exclude <value>
×	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; fragment [match-frag   match-non-frag]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> fragment match-frag	firewall ipv6 output filter rule <text> fragment match-frag
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> fragment match-non-frag	firewall ipv6 output filter rule <text> fragment match-non-frag
×	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; hop-limit &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> hop-limit eq	firewall ipv6 output filter rule <text> hop-limit eq <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> hop-limit gt	firewall ipv6 output filter rule <text> hop-limit gt <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> hop-limit lt	firewall ipv6 output filter rule <text> hop-limit lt <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; icmpv6 [code   type] &lt;0-255&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> icmpv6 code	firewall ipv6 output filter rule <text> icmpv6 code <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> icmpv6 type	firewall ipv6 output filter rule <text> icmpv6 type <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; icmpv6 type-name &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> icmpv6 type-name	firewall ipv6 output filter rule <text> icmpv6 type-name <value>
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; ipsec [match-ipsec   match-none]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> ipsec match-ipsec
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> ipsec match-none
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; jump-target &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> jump-target	firewall ipv6 output filter rule <text> jump-target <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; limit burst &lt;0-4294967295&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> limit burst	firewall ipv6 output filter rule <text> limit burst <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; limit rate &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> limit rate	firewall ipv6 output filter rule <text> limit rate <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; log</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> log	firewall ipv6 output filter rule <text> log <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; log-options group &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> log-options group	firewall ipv6 output filter rule <text> log-options group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; log-options level [emerg   alert   crit   err   warn   notice   info   debug]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> log-options level	firewall ipv6 output filter rule <text> log-options level <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; log-options queue-threshold &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> log-options queue-threshold	firewall ipv6 output filter rule <text> log-options queue-threshold <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; log-options snapshot-length &lt;0-9000&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> log-options snapshot-length	firewall ipv6 output filter rule <text> log-options snapshot-length <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> mark	Nothing found in VyOS
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; outbound-interface group &lt;iface_group&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> outbound-interface interface-group <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> outbound-interface interface-name <value>
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; outbound-interface name &lt;iface&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> outbound-interface name	Nothing found in VyOS
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; packet-length &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> packet-length	firewall ipv6 output filter rule <text> packet-length <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; packet-length-exclude &lt;text&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> packet-length-exclude	firewall ipv6 output filter rule <text> packet-length-exclude <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; packet-type [broadcast   host   multicast   other]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> packet-type	firewall ipv6 output filter rule <text> packet-type <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; protocol [&lt;text&gt;   &lt;0-255&gt;   all   tcp_udp]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> protocol	firewall ipv6 output filter rule <text> protocol <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; queue &lt;0-65535&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> queue	firewall ipv6 output filter rule <text> queue <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> queue-options	firewall ipv6 output filter rule <text> queue-options <value>
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; queue-options bypass</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; queue-options fanout</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; recent count &lt;1-255&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> recent count	firewall ipv6 output filter rule <text> recent count <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; recent time &lt;second   minute   hour&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> recent time	firewall ipv6 output filter rule <text> recent time <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source address [address   addressrange   CIDR]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source address	firewall ipv6 output filter rule <text> source address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source address-mask [address]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source address-mask	firewall ipv6 output filter rule <text> source address-mask <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source fqdn &lt;fqdn&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source fqdn	firewall ipv6 output filter rule <text> source fqdn <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source geoip country-code &lt;country&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source geoip country-code	firewall ipv6 output filter rule <text> source geoip country-code <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source geoip inverse-match</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source geoip inverse-match	firewall ipv6 output filter rule <text> source geoip inverse-match
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source group address-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source group address-group	firewall ipv6 output filter rule <text> source group address-group <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source group domain-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source group domain-group	firewall ipv6 output filter rule <text> source group domain-group <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> source group dynamic-address-group	Nothing found in VyOS
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source group mac-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source group mac-group	firewall ipv6 output filter rule <text> source group mac-group <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source group network-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source group network-group	firewall ipv6 output filter rule <text> source group network-group <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source group port-group &lt;name   !name&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source group port-group	firewall ipv6 output filter rule <text> source group port-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source mac-address &lt;mac-address&gt;</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source mac-address	firewall ipv6 output filter rule <text> source mac-address <value>
✓	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; source port [1-65535   portname   start-end]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> source port	firewall ipv6 output filter rule <text> source port <value>
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; state [established   invalid   new   related] [enable   disable]</code>	firewall.xml.in: firewall ipv6 output filter rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	firewall ipv6 output filter rule <text> state related <value>
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> synproxy tcp mss	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> synproxy tcp window-scale	Nothing found in VyOS
×	<code>set firewall ipv6 output filter rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags ack	firewall ipv6 output filter rule <text> tcp flags ack
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags cwr	firewall ipv6 output filter rule <text> tcp flags cwr

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags ecn	firewall ipv6 output filter rule <text> tcp flags ecn
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags fin	firewall ipv6 output filter rule <text> tcp flags fin
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not ack	firewall ipv6 output filter rule <text> tcp flags not ack
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not cwr	firewall ipv6 output filter rule <text> tcp flags not cwr
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not ecn	firewall ipv6 output filter rule <text> tcp flags not ecn
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not fin	firewall ipv6 output filter rule <text> tcp flags not fin
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not psh	firewall ipv6 output filter rule <text> tcp flags not psh
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not rst	firewall ipv6 output filter rule <text> tcp flags not rst
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not syn	firewall ipv6 output filter rule <text> tcp flags not syn
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags not urg	firewall ipv6 output filter rule <text> tcp flags not urg
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags psh	firewall ipv6 output filter rule <text> tcp flags psh
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags rst	firewall ipv6 output filter rule <text> tcp flags rst
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags syn	firewall ipv6 output filter rule <text> tcp flags syn
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp flags urg	firewall ipv6 output filter rule <text> tcp flags urg

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall ipv6 output filter rule <rule> tcp mss	firewall ipv6 output filter rule <text> tcp mss <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; time startdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> time startdate	firewall ipv6 output filter rule <text> time startdate <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; time starttime &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> time starttime	firewall ipv6 output filter rule <text> time starttime <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; time stopdate &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> time stopdate	firewall ipv6 output filter rule <text> time stopdate <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; time stoptime &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> time stoptime	firewall ipv6 output filter rule <text> time stoptime <value>
✓	<i>set firewall ipv6 output filter rule &lt;1-999999&gt; time weekdays &lt;text&gt;</i>	firewall.xml.in: firewall ipv6 output filter rule <rule> time weekdays	firewall ipv6 output filter rule <text> time weekdays <value>
×	<i>set firewall zone ...</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set firewall zone &lt;name&gt; default-action [drop   reject]</i>	firewall.xml.in: firewall zone <zone> default-action	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall zone <zone> default-log	Nothing found in VyOS
×	<i>set firewall zone &lt;name&gt; description</i>	firewall.xml.in: firewall zone <zone> description	Nothing found in VyOS
×	<i>set firewall zone &lt;name&gt; from &lt;name&gt; firewall ipv6-name &lt;rule-set&gt;</i>	firewall.xml.in: firewall zone <zone> from <from> firewall ipv6-name	Nothing found in VyOS
×	<i>set firewall zone &lt;name&gt; from &lt;name&gt; firewall name &lt;rule-set&gt;</i>	firewall.xml.in: firewall zone <zone> from <from> firewall name	Nothing found in VyOS
×	<i>set firewall zone &lt;name&gt; interface &lt;interface&gt;</i>	firewall.xml.in: firewall zone <zone> interface	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall zone <zone> intra-zone-filtering action	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: firewall zone <zone> intra-zone-filtering fire- wall ipv6-name	Nothing found in VyOS
×	not yet documented	firewall.xml.in: firewall zone <zone> intra-zone-filtering fire- wall name	Nothing found in VyOS
×	<i>set firewall zone</i> <i>&lt;name&gt; local-zone</i>	firewall.xml.in: firewall zone <zone> local-zone	Nothing found in VyOS
×	<i>generate system</i> <i>login username</i> <i>&lt;username&gt; otp-key</i> <i>hotp-time rate-limit</i> <i>&lt;1-10&gt; rate-time</i> <i>&lt;15-600&gt; window-size</i> <i>&lt;1-21&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability disable	high-availability disable
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> address	high-availability virtual- server <text> address <value>
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> algorithm	high-availability virtual- server <text> algorithm <value>
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> delay-loop	high-availability virtual- server <text> delay-loop <value>
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> forward-method	high-availability virtual- server <text> forward- method <value>
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> fwmark	high-availability virtual- server <text> fwmark <value>
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> persistence-timeout	high-availability virtual- server <text> persistence- timeout <value>
×	not yet documented	high-availability.xml.in: high-availability virtual- server <virtual-server> port	high-availability virtual- server <text> port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	high-availability.xml.in: high-availability virtual-server <virtual-server> protocol	high-availability virtual-server <text> protocol <value>
×	not yet documented	high-availability.xml.in: high-availability virtual-server <virtual-server> real-server <real-server> connection-timeout	high-availability virtual-server <text> real-server <text> connection-timeout <value>
×	not yet documented	high-availability.xml.in: high-availability virtual-server <virtual-server> real-server <real-server> health-check script	high-availability virtual-server <text> real-server <text> health-check script <value>
×	not yet documented	high-availability.xml.in: high-availability virtual-server <virtual-server> real-server <real-server> port	high-availability virtual-server <text> real-server <text> port <value>
✓	<i>set high-availability vrrp global-parameters garp interval &lt;0.000-1000&gt;</i>	high-availability.xml.in: high-availability vrrp global-parameters garp interval	high-availability vrrp global-parameters garp interval <value>
✓	<i>set high-availability vrrp global-parameters garp master-delay &lt;1-255&gt;</i>	high-availability.xml.in: high-availability vrrp global-parameters garp master-delay	high-availability vrrp global-parameters garp master-delay <value>
✓	<i>set high-availability vrrp global-parameters garp master-refresh &lt;1-600&gt;</i>	high-availability.xml.in: high-availability vrrp global-parameters garp master-refresh	high-availability vrrp global-parameters garp master-refresh <value>
✓	<i>set high-availability vrrp global-parameters garp master-refresh-repeat &lt;1-600&gt;</i>	high-availability.xml.in: high-availability vrrp global-parameters garp master-refresh-repeat	high-availability vrrp global-parameters garp master-refresh-repeat <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set</i> <i>high-availability</i> <i>vrrp</i> <i>global-parameters</i> <i>garp master-repeat</i> <i>&lt;1-600&gt;</i>	high-availability.xml.in: high-availability vrrp global-parameters garp master-repeat	high-availability vrrp global-parameters garp master-repeat <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp global-parameters startup-delay	high-availability vrrp global-parameters startup-delay <value>
×	<i>set</i> <i>high-availability</i> <i>vrrp</i> <i>global-parameters</i> <i>startup_delay</i> <i>&lt;1-600&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp global-parameters version	high-availability vrrp global-parameters version <value>
×	<i>set</i> <i>high-availability</i> <i>vrrp</i> <i>global-parameters</i> <i>version 2/3</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> address <address> interface	high-availability vrrp group <text> address <text> interface <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> advertise-interval	high-availability vrrp group <text> advertise-interval <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> authentication password	high-availability vrrp group <text> authentication password <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> authentication type	high-availability vrrp group <text> authentication type <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> description	high-availability vrrp group <text> description <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> disable	high-availability vrrp group <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	high-availability vrrp group <text> excluded-address <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> excluded-address <excluded-address> interface	Nothing found in VyOS
✓	<i>set high-availability vrrp group &lt;name&gt; garp interval &lt;0.000-1000&gt;</i>	high-availability.xml.in: high-availability vrrp group <group> garp interval	high-availability vrrp group <text> garp interval <value>
✓	<i>set high-availability vrrp group &lt;name&gt; garp master-delay &lt;1-255&gt;</i>	high-availability.xml.in: high-availability vrrp group <group> garp master-delay	high-availability vrrp group <text> garp master-delay <value>
✓	<i>set high-availability vrrp group &lt;name&gt; garp master-refresh &lt;1-600&gt;</i>	high-availability.xml.in: high-availability vrrp group <group> garp master-refresh	high-availability vrrp group <text> garp master-refresh <value>
✓	<i>set high-availability vrrp group &lt;name&gt; garp master-refresh-repeat &lt;1-600&gt;</i>	high-availability.xml.in: high-availability vrrp group <group> garp master-refresh-repeat	high-availability vrrp group <text> garp master-refresh-repeat <value>
✓	<i>set high-availability vrrp group &lt;name&gt; garp master-repeat &lt;1-600&gt;</i>	high-availability.xml.in: high-availability vrrp group <group> garp master-repeat	high-availability vrrp group <text> garp master-repeat <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> health-check failure-count	high-availability vrrp group <text> health-check failure-count <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> health-check interval	high-availability vrrp group <text> health-check interval <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> health-check ping	high-availability vrrp group <text> health-check ping <value>

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×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> health- check script	high-availability vrrp group <text> health-check script <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> hello- source-address	high-availability vrrp group <text> hello- source-address <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> interface	high-availability vrrp group <text> interface <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> no- preempt	high-availability vrrp group <text> no-preempt
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> peer- address	high-availability vrrp group <text> peer-address <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> preempt- delay	high-availability vrrp group <text> preempt- delay <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> priority	high-availability vrrp group <text> priority <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> rfc3768- compatibility	high-availability vrrp group <text> rfc3768- compatibility
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> track exclude-vrrp-interface	high-availability vrrp group <text> track exclude-vrrp-interface
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> track interface	high-availability vrrp group <text> track inter- face <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> transition- script backup	high-availability vrrp group <text> transition- script backup <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> transition- script fault	high-availability vrrp group <text> transition- script fault <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> transition- script master	high-availability vrrp group <text> transition- script master <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> transition- script stop	high-availability vrrp group <text> transition- script stop <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp group <group> vrid	high-availability vrrp group <text> vrid <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp snmp	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> health-check failure-count	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> health-check interval	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> health-check ping	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> health-check script	Nothing found in VyOS
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> member	high-availability vrrp sync-group <text> mem- ber <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> transition-script backup	high-availability vrrp sync-group <text> transition-script backup <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> transition-script fault	high-availability vrrp sync-group <text> transition-script fault <value>
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> transition-script master	high-availability vrrp sync-group <text> transition-script mas- ter <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	high-availability.xml.in: high-availability vrrp sync-group <sync-group> transition-script stop	high-availability vrrp sync-group <text> transition-script stop <value>
✓	<i>set interfaces bonding &lt;interface&gt; address &lt;address / dhcp / dhcpv6&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> address	interfaces bonding <text> address <value>
✓	<i>set interfaces bonding &lt;interface&gt; arp-monitor interval &lt;time&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> arp-monitor interval	interfaces bonding <text> arp-monitor interval <value>
✓	<i>set interfaces bonding &lt;interface&gt; arp-monitor target &lt;address&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> arp-monitor target	interfaces bonding <text> arp-monitor target <value>
✓	<i>set interfaces bonding &lt;interface&gt; description &lt;description&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> description	interfaces bonding <text> description <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options client-id	interfaces bonding <text> dhcp-options client-id <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options default-route-distance	interfaces bonding <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options host-name	interfaces bonding <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options mtu	interfaces bonding <text> dhcp-options mtu
✓	<i>set interfaces bonding &lt;interface&gt; dhcp-options no-default-route</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options no-default-route	interfaces bonding <text> dhcp-options no-default-route
✓	<i>set interfaces bonding &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options reject	interfaces bonding <text> dhcp-options reject <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces bonding &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcp-options vendor-class-id	interfaces bonding <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options duid	interfaces bonding <text> dhcpv6-options duid <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options no-release</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options no-release	interfaces bonding <text> dhcpv6-options no-release
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options parameters-only</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options parameters-only	interfaces bonding <text> dhcpv6-options parameters-only
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options pd <pd> interface <interface> address	interfaces bonding <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces bonding <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options pd <pd> length	interfaces bonding <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options rapid-commit</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options rapid-commit	interfaces bonding <text> dhcpv6-options rapid-commit

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; dhcpv6-options temporary</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> dhcpv6-options temporary	interfaces bonding <text> dhcpv6-options temporary
✓	<i>set interfaces bonding &lt;interface&gt; disable</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> disable	interfaces bonding <text> disable
×	<i>set interfaces bonding &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; disable-link-detect</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> disable-link-detect	interfaces bonding <text> disable-link-detect
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> evpn es-df-pref	Nothing found in VyOS
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> evpn es-id	Nothing found in VyOS
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> evpn es-sys-mac	Nothing found in VyOS
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> evpn uplink	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; hash-policy &lt;policy&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> hash-policy	interfaces bonding <text> hash-policy <value>
×	<i>set interfaces bonding &lt;interface&gt; mirror egress &lt;monitor-interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces bonding &lt;interface&gt; mirror ingress &lt;monitor-interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip adjust-mss	interfaces bonding <text> ip adjust-mss <value>
✓	<i>set interfaces bonding &lt;interface&gt; ip arp-cache-timeout</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip arp-cache-timeout	interfaces bonding <text> ip arp-cache-timeout <value>
✓	<i>set interfaces bonding &lt;interface&gt; ip disable-arp-filter</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip disable-arp-filter	interfaces bonding <text> ip disable-arp-filter
✓	<i>set interfaces bonding &lt;interface&gt; ip disable-forwarding</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip disable-forwarding	interfaces bonding <text> ip disable-forwarding
✓	<i>set interfaces bonding &lt;interface&gt; ip enable-arp-accept</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip enable-arp-accept	interfaces bonding <text> ip enable-arp-accept
✓	<i>set interfaces bonding &lt;interface&gt; ip enable-arp-announce</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip enable-arp-announce	interfaces bonding <text> ip enable-arp-announce
✓	<i>set interfaces bonding &lt;interface&gt; ip enable-arp-ignore</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip enable-arp-ignore	interfaces bonding <text> ip enable-arp-ignore
✓	<i>set interfaces bonding &lt;interface&gt; ip enable-directed-broadcast</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip enable-directed-broadcast	interfaces bonding <text> ip enable-directed-broadcast
✓	<i>set interfaces bonding &lt;interface&gt; ip enable-proxy-arp</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip enable-proxy-arp	interfaces bonding <text> ip enable-proxy-arp
✓	<i>set interfaces bonding &lt;interface&gt; ip proxy-arp-pvlan</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip proxy-arp-pvlan	interfaces bonding <text> ip proxy-arp-pvlan
✓	<i>set interfaces bonding &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ip source-validation	interfaces bonding <text> ip source-validation <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 accept-dad	interfaces bonding <text> ipv6 accept-dad <value>
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 address autoconf</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 address autoconf	interfaces bonding <text> ipv6 address autoconf
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 address eui64	interfaces bonding <text> ipv6 address eui64 <value>
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 address no-default-link-local</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 address no-default-link-local	interfaces bonding <text> ipv6 address no-default-link-local
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 adjust-mss	interfaces bonding <text> ipv6 adjust-mss <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 disable-forwarding</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 disable-forwarding	interfaces bonding <text> ipv6 disable-forwarding
✓	<i>set interfaces bonding &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 dup-addr-detect-transmits	interfaces bonding <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; lacp-rate &lt;slow/fast&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> lacp-rate	interfaces bonding <text> lacp-rate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> mac	interfaces bonding <text> mac <value>
✓	<i>set interfaces bonding &lt;interface&gt; member interface &lt;member&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> member interface	interfaces bonding <text> member interface <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> mii-mon-interval	interfaces bonding <text> mii-mon-interval <value>
✓	<i>set interfaces bonding &lt;interface&gt; min-links &lt;0-16&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> min-links	interfaces bonding <text> min-links <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> mirror egress	interfaces bonding <text> mirror egress <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> mirror ingress	interfaces bonding <text> mirror ingress <value>
✓	<i>set interfaces bonding &lt;interface&gt; mode &lt;802.3ad   active-backup   broadcast   round-robin   transmit-load-balance   adaptive-load-balance   xor-hash&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> mode	interfaces bonding <text> mode <value>
✓	<i>set interfaces bonding &lt;interface&gt; mtu &lt;mtu&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> mtu	interfaces bonding <text> mtu <value>
✓	<i>set interfaces bonding &lt;interface&gt; primary &lt;interface&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> primary	interfaces bonding <text> primary <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> redirect	interfaces bonding <text> redirect <value>
×	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> address	interfaces bonding <text> vif-s <text> address <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> descrip- tion	interfaces bonding <text> vif-s <text> description <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options client-id	interfaces bonding <text> vif-s <text> dhcp-options client-id <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options default-route- distance	interfaces bonding <text> vif-s <text> dhcp-options default-route-distance <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options host-name	interfaces bonding <text> vif-s <text> dhcp-options host-name <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options mtu	interfaces bonding <text> vif-s <text> dhcp-options mtu
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options no-default-route	interfaces bonding <text> vif-s <text> dhcp-options no-default-route
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options reject	interfaces bonding <text> vif-s <text> dhcp-options reject <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options user-class	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcp- options vendor-class-id	interfaces bonding <text> vif-s <text> dhcp-options vendor-class-id <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options duid	interfaces bonding <text> vif-s <text> dhcpv6- options duid <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options no-release	interfaces bonding <text> vif-s <text> dhcpv6- options no-release
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options parameters-only	interfaces bonding <text> vif-s <text> dhcpv6- options parameters-only
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options pd <pd> interface <interface> address	interfaces bonding <text> vif-s <text> dhcpv6- options pd <text> in- terface <text> address <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options pd <pd> interface <interface> sla-id	interfaces bonding <text> vif-s <text> dhcpv6- options pd <text> in- terface <text> sla-id <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options pd <pd> length	interfaces bonding <text> vif-s <text> dhcpv6- options pd <text> length <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options rapid-commit	interfaces bonding <text> vif-s <text> dhcpv6- options rapid-commit
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> dhcpv6- options temporary	interfaces bonding <text> vif-s <text> dhcpv6- options temporary

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> disable	interfaces bonding <text> vif-s <text> disable
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> disable- link-detect	interfaces bonding <text> vif-s <text> disable-link- detect
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip adjust-mss	interfaces bonding <text> vif-s <text> ip adjust-mss <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip arp- cache-timeout	interfaces bonding <text> vif-s <text> ip arp-cache- timeout <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip disable-arp-filter	interfaces bonding <text> vif-s <text> ip disable-arp- filter
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip disable-forwarding	interfaces bonding <text> vif-s <text> ip disable- forwarding
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip enable-arp-accept	interfaces bonding <text> vif-s <text> ip enable-arp- accept
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip enable-arp-announce	interfaces bonding <text> vif-s <text> ip enable-arp- announce
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip enable-arp-ignore	interfaces bonding <text> vif-s <text> ip enable-arp- ignore
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip enable-directed-broadcast	interfaces bonding <text> vif-s <text> ip enable- directed-broadcast

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip enable-proxy-arp	interfaces bonding <text> vif-s <text> ip enable- proxy-arp
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip proxy-arp-pvlan	interfaces bonding <text> vif-s <text> ip proxy-arp- pvlan
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ip source-validation	interfaces bonding <text> vif-s <text> ip source- validation <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 accept-dad	interfaces bonding <text> vif-s <text> ipv6 accept- dad <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 ad- dress autoconf	interfaces bonding <text> vif-s <text> ipv6 address autoconf
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 ad- dress eui64	interfaces bonding <text> vif-s <text> ipv6 address eui64 <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 ad- dress no-default-link-local	interfaces bonding <text> vif-s <text> ipv6 address no-default-link-local
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 adjust-mss	interfaces bonding <text> vif-s <text> ipv6 adjust- mss <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 base-reachable-time	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 disable-forwarding	interfaces bonding <text> vif-s <text> ipv6 disable- forwarding
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 dup-addr-detect-transmits	interfaces bonding <text> vif-s <text> ipv6 dup- addr-detect-transmits <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> mac	interfaces bonding <text> vif-s <text> mac <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> mirror egress	interfaces bonding <text> vif-s <text> mirror egress <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> mirror ingress	interfaces bonding <text> vif-s <text> mirror ingress <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> mtu	interfaces bonding <text> vif-s <text> mtu <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> protocol	interfaces bonding <text> vif-s <text> protocol <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> redirect	interfaces bonding <text> vif-s <text> redirect <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> address	interfaces bonding <text> vif-s <text> vif-c <text> address <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> description	interfaces bonding <text> vif-s <text> vif-c <text> description <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options client-id	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options client-id <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options default-route-distance	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options default- route-distance <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options host-name	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options host-name <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options mtu	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options mtu
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options no- default-route	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options no-default- route
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options re- ject	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options reject <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options user- class	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcp-options vendor-class-id	interfaces bonding <text> vif-s <text> vif-c <text> dhcp-options vendor- class-id <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options duid	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options duid <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options no-release	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options no-release
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options parameters-only	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options parameters-only
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <inter- face> address	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> address <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <inter- face> sla-id	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> sla-id <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> length	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> length <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options rapid-commit	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options rapid- commit
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> dhcpv6-options temporary	interfaces bonding <text> vif-s <text> vif-c <text> dhcpv6-options temporary
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> disable	interfaces bonding <text> vif-s <text> vif-c <text> disable
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> disable-link- detect	interfaces bonding <text> vif-s <text> vif-c <text> disable-link-detect
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip adjust-mss	interfaces bonding <text> vif-s <text> vif-c <text> ip adjust-mss <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip arp-cache- timeout	interfaces bonding <text> vif-s <text> vif-c <text> ip arp-cache-timeout <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip disable-arp- filter	interfaces bonding <text> vif-s <text> vif-c <text> ip disable-arp-filter
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip disable- forwarding	interfaces bonding <text> vif-s <text> vif-c <text> ip disable-forwarding

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip enable-arp- accept	interfaces bonding <text> vif-s <text> vif-c <text> ip enable-arp-accept
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip enable-arp- announce	interfaces bonding <text> vif-s <text> vif-c <text> ip enable-arp-announce
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip enable-arp- ignore	interfaces bonding <text> vif-s <text> vif-c <text> ip enable-arp-ignore
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bonding> vif-s <vif- s> vif-c <vif-c> ip enable-directed-broadcast	interfaces bonding <text> vif-s <text> vif-c <text> ip enable-directed-broadcast
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip enable-proxy- arp	interfaces bonding <text> vif-s <text> vif-c <text> ip enable-proxy-arp
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ip proxy-arp- pvlan	interfaces bonding <text> vif-s <text> vif-c <text> ip proxy-arp-pvlan
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bonding> vif-s <vif- s> vif-c <vif-c> ip source-validation	interfaces bonding <text> vif-s <text> vif-c <text> ip source-validation <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 accept-dad	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 accept-dad <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 address auto- conf	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 address autoconf
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 address eui64	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 address eui64 <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 address no- default-link-local	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 address no-default- link-local
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 adjust-mss	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 adjust-mss <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 base- reachable-time	Nothing found in VyOS
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 disable- forwarding	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 disable-forwarding
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 dup-addr- detect-transmits	interfaces bonding <text> vif-s <text> vif-c <text> ipv6 dup-addr-detect- transmits <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> ipv6 source- validation	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> mac	interfaces bonding <text> vif-s <text> vif-c <text> mac <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> mirror egress	interfaces bonding <text> vif-s <text> vif-c <text> mirror egress <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> mirror ingress	interfaces bonding <text> vif-s <text> vif-c <text> mirror ingress <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> mtu	interfaces bonding <text> vif-s <text> vif-c <text> mtu <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> redirect	interfaces bonding <text> vif-s <text> vif-c <text> redirect <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vif-c <vif-c> vrf	interfaces bonding <text> vif-s <text> vif-c <text> vrf <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif-s <vif-s> vrf	interfaces bonding <text> vif-s <text> vrf <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> address	interfaces bonding <text> vif <text> address <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; description &lt;description&gt;</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> description	interfaces bonding <text> vif <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options client-id	interfaces bonding <text> vif <text> dhcp-options client-id <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options default-route-distance	interfaces bonding <text> vif <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options host-name	interfaces bonding <text> vif <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options mtu	interfaces bonding <text> vif <text> dhcp-options mtu
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options no-default-route</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options no-default-route	interfaces bonding <text> vif <text> dhcp-options no-default-route
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options reject	interfaces bonding <text> vif <text> dhcp-options reject <value>
×	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcp-options vendor-class-id	interfaces bonding <text> vif <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options duid	interfaces bonding <text> vif <text> dhcpv6-options duid <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options no-release</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options no-release	interfaces bonding <text> vif <text> dhcpv6-options no-release
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options parameters-only	interfaces bonding <text> vif <text> dhcpv6-options parameters-only
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options pd <pd> interface <interface> address	interfaces bonding <text> vif <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces bonding <text> vif <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options pd <pd> length	interfaces bonding <text> vif <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options rapid-commit	interfaces bonding <text> vif <text> dhcpv6-options rapid-commit
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options temporary</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> dhcpv6-options temporary	interfaces bonding <text> vif <text> dhcpv6-options temporary
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; disable</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> disable	interfaces bonding <text> vif <text> disable
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; disable-link-detect</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> disable-link-detect	interfaces bonding <text> vif <text> disable-link-detect

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> egress-qos	interfaces bonding <text> vif <text> egress-qos <value>
×	not yet documented	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ingress-qos	interfaces bonding <text> vif <text> ingress-qos <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip adjust- mss	interfaces bonding <text> vif <text> ip adjust-mss <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip arp-cache-timeout</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip arp- cache-timeout	interfaces bonding <text> vif <text> ip arp-cache- timeout <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-arp-filter</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip disable- arp-filter	interfaces bonding <text> vif <text> ip disable-arp- filter
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-forwarding</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip disable- forwarding	interfaces bonding <text> vif <text> ip disable- forwarding
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-accept</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip enable- arp-accept	interfaces bonding <text> vif <text> ip enable-arp- accept
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-announce</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip enable- arp-announce	interfaces bonding <text> vif <text> ip enable-arp- announce
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-ignore</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip enable- arp-ignore	interfaces bonding <text> vif <text> ip enable-arp- ignore
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-directed-broad</i>	inter- faces_bonding.xml.in: interfaces bonding <bond- ing> vif <vif> ip enable- directed-broadcast	interfaces bonding <text> vif <text> ip enable- directed-broadcast

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-proxy-arp</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ip enable-proxy-arp	interfaces bonding <text> vif <text> ip enable-proxy-arp
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ip proxy-arp-pvlan	interfaces bonding <text> vif <text> ip proxy-arp-pvlan
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ip source-validation	interfaces bonding <text> vif <text> ip source-validation <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 accept-dad	interfaces bonding <text> vif <text> ipv6 accept-dad <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address autoconf</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 address autoconf	interfaces bonding <text> vif <text> ipv6 address autoconf
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 address eui64	interfaces bonding <text> vif <text> ipv6 address eui64 <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 address no-default-link-local	interfaces bonding <text> vif <text> ipv6 address no-default-link-local
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 adjust-mss	interfaces bonding <text> vif <text> ipv6 adjust-mss <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 base-reachable-time	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 disable-forwarding</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 disable-forwarding	interfaces bonding <text> vif <text> ipv6 disable-forwarding
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 dup-addr-detect-transmits	interfaces bonding <text> vif <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> mac	interfaces bonding <text> vif <text> mac <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> mirror egress	interfaces bonding <text> vif <text> mirror egress <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> mirror ingress	interfaces bonding <text> vif <text> mirror ingress <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> mtu	interfaces bonding <text> vif <text> mtu <value>
×	not yet documented	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> redirect	interfaces bonding <text> vif <text> redirect <value>
✓	<i>set interfaces bonding &lt;interface&gt; vif &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vif <vif> vrf	interfaces bonding <text> vif <text> vrf <value>
✓	<i>set interfaces bonding &lt;interface&gt; vrf &lt;vrf&gt;</i>	inter-faces_bonding.xml.in: interfaces bonding <bonding> vrf	interfaces bonding <text> vrf <value>
✓	<i>set interfaces bridge &lt;interface&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> address	interfaces bridge <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; aging &lt;time&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> aging	interfaces bridge <text> aging <value>
✓	<i>set interfaces bridge &lt;interface&gt; description &lt;description&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> description	interfaces bridge <text> description <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options client-id	interfaces bridge <text> dhcp-options client-id <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options default- route-distance	interfaces bridge <text> dhcp-options default- route-distance <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options host-name	interfaces bridge <text> dhcp-options host-name <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options mtu	interfaces bridge <text> dhcp-options mtu
✓	<i>set interfaces bridge &lt;interface&gt; dhcp-options no-default-route</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options no-default- route	interfaces bridge <text> dhcp-options no-default- route
✓	<i>set interfaces bridge &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options reject	interfaces bridge <text> dhcp-options reject <value>
×	<i>set interfaces bridge &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcp-options vendor- class-id	interfaces bridge <text> dhcp-options vendor- class-id <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options duid	interfaces bridge <text> dhcpv6-options duid <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options no-release</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options no-release	interfaces bridge <text> dhcpv6-options no-release
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options parameters-only</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options parameters-only	interfaces bridge <text> dhcpv6-options parameters-only
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options pd <pd> interface <interface> ad- dress	interfaces bridge <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options pd <pd> interface <interface> sla- id	interfaces bridge <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options pd <pd> length	interfaces bridge <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options rapid-commit</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options rapid- commit	interfaces bridge <text> dhcpv6-options rapid- commit
✓	<i>set interfaces bridge &lt;interface&gt; dhcpv6-options temporary</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> dhcpv6-options temporary	interfaces bridge <text> dhcpv6-options temporary
✓	<i>set interfaces bridge &lt;interface&gt; disable</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> disable	interfaces bridge <text> disable
×	<i>set interfaces bridge &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; disable-link-detect</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> disable-link-detect	interfaces bridge <text> disable-link-detect
✓	<i>set interfaces bridge &lt;interface&gt; enable-vlan</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> enable-vlan	interfaces bridge <text> enable-vlan
✓	<i>set interfaces bridge &lt;interface&gt; forwarding-delay &lt;delay&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> forwarding-delay	interfaces bridge <text> forwarding-delay <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; hello-time &lt;interval&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> hello-time	interfaces bridge <text> hello-time <value>
✓	<i>set interfaces bridge &lt;interface&gt; igmp querier</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> igmp querier	interfaces bridge <text> igmp querier
✓	<i>set interfaces bridge &lt;interface&gt; igmp snooping</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> igmp snooping	interfaces bridge <text> igmp snooping
✓	<i>set interfaces bridge &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip adjust-mss	interfaces bridge <text> ip adjust-mss <value>
✓	<i>set interfaces bridge &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip arp-cache-timeout	interfaces bridge <text> ip arp-cache-timeout <value>
✓	<i>set interfaces bridge &lt;interface&gt; ip disable-arp-filter</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip disable-arp-filter	interfaces bridge <text> ip disable-arp-filter
✓	<i>set interfaces bridge &lt;interface&gt; ip disable-forwarding</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip disable-forwarding	interfaces bridge <text> ip disable-forwarding
✓	<i>set interfaces bridge &lt;interface&gt; ip enable-arp-accept</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip enable-arp-accept	interfaces bridge <text> ip enable-arp-accept
✓	<i>set interfaces bridge &lt;interface&gt; ip enable-arp-announce</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip enable-arp-announce	interfaces bridge <text> ip enable-arp-announce
✓	<i>set interfaces bridge &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip enable-arp-ignore	interfaces bridge <text> ip enable-arp-ignore
✓	<i>set interfaces bridge &lt;interface&gt; ip enable-directed-broad</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip enable-directed-broadcast	interfaces bridge <text> ip enable-directed-broadcast
✓	<i>set interfaces bridge &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip enable-proxy-arp	interfaces bridge <text> ip enable-proxy-arp
✓	<i>set interfaces bridge &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip proxy-arp-pvlan	interfaces bridge <text> ip proxy-arp-pvlan

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ip source-validation	interfaces bridge <text> ip source-validation <value>
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 accept-dad	interfaces bridge <text> ipv6 accept-dad <value>
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 address autoconf</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 address autoconf	interfaces bridge <text> ipv6 address autoconf
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 address eui64	interfaces bridge <text> ipv6 address eui64 <value>
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 address no-default- link-local	interfaces bridge <text> ipv6 address no-default- link-local
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 adjust-mss	interfaces bridge <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 disable-forwarding	interfaces bridge <text> ipv6 disable-forwarding
✓	<i>set interfaces bridge &lt;interface&gt; ipv6 dup-addr-detect-trans &lt;n&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 dup-addr-detect- transmits	interfaces bridge <text> ipv6 dup-addr-detect- transmits <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> mac	interfaces bridge <text> mac <value>
✓	<i>set interfaces bridge &lt;interface&gt; max-age &lt;time&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> max-age	interfaces bridge <text> max-age <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces bridge &lt;interface&gt; member interface &lt;member&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; member interface &lt;member&gt; allowed-vlan &lt;vlan-id&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> member interface <inter- face> allowed-vlan	interfaces bridge <text> member interface <text> allowed-vlan <value>
✓	<i>set interfaces bridge &lt;interface&gt; member interface &lt;member&gt; cost &lt;cost&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> member interface <inter- face> cost	interfaces bridge <text> member interface <text> cost <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> member interface <inter- face> isolated	interfaces bridge <text> member interface <text> isolated
✓	<i>set interfaces bridge &lt;interface&gt; member interface &lt;member&gt; native-vlan &lt;vlan-id&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> member interface <inter- face> native-vlan	interfaces bridge <text> member interface <text> native-vlan <value>
✓	<i>set interfaces bridge &lt;interface&gt; member interface &lt;member&gt; priority &lt;priority&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> member interface <inter- face> priority	interfaces bridge <text> member interface <text> priority <value>
✓	<i>set interfaces bridge &lt;interface&gt; mirror egress &lt;monitor-interface&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> mirror egress	interfaces bridge <text> mirror egress <value>
✓	<i>set interfaces bridge &lt;interface&gt; mirror ingress &lt;monitor-interface&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> mirror ingress	interfaces bridge <text> mirror ingress <value>
✓	<i>set interfaces bridge &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> mtu	interfaces bridge <text> mtu <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> priority	interfaces bridge <text> priority <value>
×	<i>set interfaces bridge &lt;interface&gt; protocol &lt;802. 1ad/802.1q&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> protocol	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> redirect	interfaces bridge <text> redirect <value>
✓	<i>set interfaces bridge &lt;interface&gt; stp</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> stp	interfaces bridge <text> stp
×	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> address	interfaces bridge <text> vif <text> address <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; description &lt;description&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> description	interfaces bridge <text> vif <text> description <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options client-id	interfaces bridge <text> vif <text> dhcp-options client-id <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options default-route-distanc &lt;distance&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options default-route-distance	interfaces bridge <text> vif <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options host-name	interfaces bridge <text> vif <text> dhcp-options host-name <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options mtu	interfaces bridge <text> vif <text> dhcp-options mtu
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options no-default-route</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options no- default-route	interfaces bridge <text> vif <text> dhcp-options no-default-route

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options re- ject	interfaces bridge <text> vif <text> dhcp-options re- ject <value>
×	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcp-options vendor-class-id	interfaces bridge <text> vif <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options duid	interfaces bridge <text> vif <text> dhcpv6-options duid <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options no-release</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options no-release	interfaces bridge <text> vif <text> dhcpv6-options no-release
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options parameters-only	interfaces bridge <text> vif <text> dhcpv6-options parameters-only
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options pd <pd> interface <inter- face> address	interfaces bridge <text> vif <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options pd <pd> interface <inter- face> sla-id	interfaces bridge <text> vif <text> dhcpv6-options pd <text> interface <text> sla-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options pd <pd> length	interfaces bridge <text> vif <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options rapid-commit	interfaces bridge <text> vif <text> dhcpv6-options rapid-commit
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options temporary</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> dhcpv6-options temporary	interfaces bridge <text> vif <text> dhcpv6-options temporary
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; disable</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> disable	interfaces bridge <text> vif <text> disable
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; disable-link-detect</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> disable-link- detect	interfaces bridge <text> vif <text> disable-link- detect
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> egress-qos	interfaces bridge <text> vif <text> egress-qos <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ingress-qos	interfaces bridge <text> vif <text> ingress-qos <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip adjust-mss	interfaces bridge <text> vif <text> ip adjust-mss <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip arp-cache-timeout</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip arp-cache- timeout	interfaces bridge <text> vif <text> ip arp-cache- timeout <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-arp-filter</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip disable-arp- filter	interfaces bridge <text> vif <text> ip disable-arp- filter
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-forwarding</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip disable- forwarding	interfaces bridge <text> vif <text> ip disable- forwarding

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-accept</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip enable-arp-accept	interfaces bridge <text> vif <text> ip enable-arp-accept
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-announce</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip enable-arp-announce	interfaces bridge <text> vif <text> ip enable-arp-announce
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-ignore</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip enable-arp-ignore	interfaces bridge <text> vif <text> ip enable-arp-ignore
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-directed-broad</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip enable-directed-broadcast	interfaces bridge <text> vif <text> ip enable-directed-broadcast
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-proxy-arp</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip enable-proxy-arp	interfaces bridge <text> vif <text> ip enable-proxy-arp
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip proxy-arp-pvlan	interfaces bridge <text> vif <text> ip proxy-arp-pvlan
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ip source-validation	interfaces bridge <text> vif <text> ip source-validation <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 accept-dad	interfaces bridge <text> vif <text> ipv6 accept-dad <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address autoconf</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 address autoconf	interfaces bridge <text> vif <text> ipv6 address autoconf
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 address eui64	interfaces bridge <text> vif <text> ipv6 address eui64 <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 address no-default-link-local	interfaces bridge <text> vif <text> ipv6 address no-default-link-local

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 adjust-mss	interfaces bridge <text> vif <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 disable-forwarding</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 disable-forwarding	interfaces bridge <text> vif <text> ipv6 disable-forwarding
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 dup-addr-detect-transmits	interfaces bridge <text> vif <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> mac	interfaces bridge <text> vif <text> mac <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> mirror egress	interfaces bridge <text> vif <text> mirror egress <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> mirror ingress	interfaces bridge <text> vif <text> mirror ingress <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> mtu	interfaces bridge <text> vif <text> mtu <value>
×	not yet documented	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> redirect	interfaces bridge <text> vif <text> redirect <value>
✓	<i>set interfaces bridge &lt;interface&gt; vif &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vif <vif> vrf	interfaces bridge <text> vif <text> vrf <value>
✓	<i>set interfaces bridge &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_bridge.xml.in: interfaces bridge <bridge> vrf	interfaces bridge <text> vrf <value>
✓	<i>set interfaces dummy &lt;interface&gt; address &lt;address&gt;</i>	interfaces_dummy.xml.in: interfaces dummy <dummy> address	interfaces dummy <text> address <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces dummy &lt;interface&gt; description &lt;description&gt;</i>	interfaces_dummy.xml.in: interfaces dummy <dummy> description	interfaces dummy <text> description <value>
✓	<i>set interfaces dummy &lt;interface&gt; disable</i>	interfaces_dummy.xml.in: interfaces dummy <dummy> disable	interfaces dummy <text> disable
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> ip disable-forwarding	interfaces dummy <text> ip disable-forwarding
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> ip source-validation	interfaces dummy <text> ip source-validation <value>
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> ipv6 address eui64	interfaces dummy <text> ipv6 address eui64 <value>
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> ipv6 address no-default-link-local	interfaces dummy <text> ipv6 address no-default-link-local
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> ipv6 disable-forwarding	interfaces dummy <text> ipv6 disable-forwarding
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> mirror egress	interfaces dummy <text> mirror egress <value>
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> mirror ingress	interfaces dummy <text> mirror ingress <value>
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> mtu	interfaces dummy <text> mtu <value>
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> netns	interfaces dummy <text> netns <value>
×	not yet documented	interfaces_dummy.xml.in: interfaces dummy <dummy> redirect	interfaces dummy <text> redirect <value>
✓	<i>set interfaces dummy &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_dummy.xml.in: interfaces dummy <dummy> vrf	interfaces dummy <text> vrf <value>
✓	<i>set interfaces ethernet &lt;interface&gt; address &lt;address&gt;   dhcp   dhcpv6</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> address	interfaces ethernet <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; description &lt;description&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> description	interfaces ethernet <text> description <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options client-id	interfaces ethernet <text> dhcp-options client-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options default-route-distance	interfaces ethernet <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options host-name	interfaces ethernet <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options mtu	interfaces ethernet <text> dhcp-options mtu
✓	<i>set interfaces ethernet &lt;interface&gt; dhcp-options no-default-route</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options no-default-route	interfaces ethernet <text> dhcp-options no-default-route
✓	<i>set interfaces ethernet &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options reject	interfaces ethernet <text> dhcp-options reject <value>
×	<i>set interfaces ethernet &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcp-options vendor-class-id	interfaces ethernet <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options duid	interfaces ethernet <text> dhcpv6-options duid <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options no-release</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options no-release	interfaces ethernet <text> dhcpv6-options no-release
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options parameters-only</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options parameters-only	interfaces ethernet <text> dhcpv6-options parameters-only
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options pd <pd> interface <interface> address	interfaces ethernet <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces ethernet <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options pd <pd> length	interfaces ethernet <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options rapid-commit</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options rapid-commit	interfaces ethernet <text> dhcpv6-options rapid-commit
✓	<i>set interfaces ethernet &lt;interface&gt; dhcpv6-options temporary</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> dhcpv6-options temporary	interfaces ethernet <text> dhcpv6-options temporary
✓	<i>set interfaces ethernet &lt;interface&gt; disable</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> disable	interfaces ethernet <text> disable
✓	<i>set interfaces ethernet &lt;interface&gt; disable-flow-control</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> disable-flow-control	interfaces ethernet <text> disable-flow-control
✓	<i>set interfaces ethernet &lt;interface&gt; disable-link-detect</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> disable-link-detect	interfaces ethernet <text> disable-link-detect

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; duplex &lt;auto   full   half&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> duplex	interfaces ethernet <text> duplex <value>
✓	<i>set interfaces ethernet &lt;interface&gt; eapol ca-certificate &lt;name&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> eapol ca-certificate	interfaces ethernet <text> eapol ca-certificate <value>
✓	<i>set interfaces ethernet &lt;interface&gt; eapol certificate &lt;name&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> eapol certificate	interfaces ethernet <text> eapol certificate <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> eapol passphrase	interfaces ethernet <text> eapol passphrase <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> hw-id	interfaces ethernet <text> hw-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip adjust-mss	interfaces ethernet <text> ip adjust-mss <value>
✓	<i>set interfaces ethernet &lt;interface&gt; ip arp-cache-timeout</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip arp-cache-timeout	interfaces ethernet <text> ip arp-cache-timeout <value>
✓	<i>set interfaces ethernet &lt;interface&gt; ip disable-arp-filter</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip disable-arp-filter	interfaces ethernet <text> ip disable-arp-filter
✓	<i>set interfaces ethernet &lt;interface&gt; ip disable-forwarding</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip disable-forwarding	interfaces ethernet <text> ip disable-forwarding
✓	<i>set interfaces ethernet &lt;interface&gt; ip enable-arp-accept</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip enable-arp-accept	interfaces ethernet <text> ip enable-arp-accept
✓	<i>set interfaces ethernet &lt;interface&gt; ip enable-arp-announce</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip enable-arp-announce	interfaces ethernet <text> ip enable-arp-announce
✓	<i>set interfaces ethernet &lt;interface&gt; ip enable-arp-ignore</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ip enable-arp-ignore	interfaces ethernet <text> ip enable-arp-ignore

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; ip enable-directed-broad</i>	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> ip enable-directed- broadcast	interfaces ethernet <text> ip enable-directed- broadcast
✓	<i>set interfaces ethernet &lt;interface&gt; ip enable-proxy-arp</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ip enable-proxy-arp	interfaces ethernet <text> ip enable-proxy-arp
✓	<i>set interfaces ethernet &lt;interface&gt; ip proxy-arp-pvlan</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ip proxy-arp-pvlan	interfaces ethernet <text> ip proxy-arp-pvlan
✓	<i>set interfaces ethernet &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ip source-validation	interfaces ethernet <text> ip source-validation <value>
✓	<i>set interfaces ethernet &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ipv6 accept-dad	interfaces ethernet <text> ipv6 accept-dad <value>
✓	<i>set interfaces ethernet &lt;interface&gt; ipv6 address autoconf</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ipv6 address auto- conf	interfaces ethernet <text> ipv6 address autoconf
✓	<i>set interfaces ethernet &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ipv6 address eui64	interfaces ethernet <text> ipv6 address eui64 <value>
✓	<i>set interfaces ethernet &lt;interface&gt; ipv6 address no-default-link-local</i>	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> ipv6 address no- default-link-local	interfaces ethernet <text> ipv6 address no-default- link-local
✓	<i>set interfaces ethernet &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ipv6 adjust-mss	interfaces ethernet <text> ipv6 adjust-mss <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ipv6 base-reachable- time	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set interfaces ethernet &lt;interface&gt; ipv6 disable-forwarding</code>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ipv6 disable-forwarding	interfaces ethernet <text> ipv6 disable-forwarding
✓	<code>set interfaces ethernet &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</code>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ipv6 dup-addr-detect-transmits	interfaces ethernet <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> ipv6 source-validation	Nothing found in VyOS
✓	<code>set interfaces ethernet &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</code>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> mac	interfaces ethernet <text> mac <value>
✓	<code>set interfaces ethernet &lt;interface&gt; mirror egress &lt;monitor-interface&gt;</code>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> mirror egress	interfaces ethernet <text> mirror egress <value>
✓	<code>set interfaces ethernet &lt;interface&gt; mirror ingress &lt;monitor-interface&gt;</code>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> mirror ingress	interfaces ethernet <text> mirror ingress <value>
✓	<code>set interfaces ethernet &lt;interface&gt; mtu &lt;mtu&gt;</code>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> mtu	interfaces ethernet <text> mtu <value>
×	<code>set interfaces ethernet &lt;interface&gt; offload &lt;gro   gso   lro   rps   sg   tso&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> offload gro	interfaces ethernet <text> offload gro
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> offload gso	interfaces ethernet <text> offload gso
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> offload hw-tc-offload	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> offload lro	interfaces ethernet <text> offload lro
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> offload rfs	interfaces ethernet <text> offload rfs
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> offload rps	interfaces ethernet <text> offload rps
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> offload sg	interfaces ethernet <text> offload sg
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> offload tso	interfaces ethernet <text> offload tso
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> redirect	interfaces ethernet <text> redirect <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ring-buffer rx	interfaces ethernet <text> ring-buffer rx <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> ring-buffer tx	interfaces ethernet <text> ring-buffer tx <value>
✓	<i>set interfaces ethernet &lt;interface&gt; speed &lt;auto   10   100   1000   2500   5000   10000   25000   40000   50000   100000&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> speed	interfaces ethernet <text> speed <value>
×	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> address	interfaces ethernet <text> vif-s <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> descrip- tion	interfaces ethernet <text> vif-s <text> description <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options client-id	interfaces ethernet <text> vif-s <text> dhcp-options client-id <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp-options default- route-distance	interfaces ethernet <text> vif-s <text> dhcp-options default-route-distance <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options host-name	interfaces ethernet <text> vif-s <text> dhcp-options host-name <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options mtu	interfaces ethernet <text> vif-s <text> dhcp-options mtu
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options no-default-route	interfaces ethernet <text> vif-s <text> dhcp-options no-default-route
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options reject	interfaces ethernet <text> vif-s <text> dhcp-options reject <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options user-class	Nothing found in VyOS
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> dhcp- options vendor-class-id	interfaces ethernet <text> vif-s <text> dhcp-options vendor-class-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options duid	interfaces ethernet <text> vif-s <text> dhcpv6- options duid <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options no-release	interfaces ethernet <text> vif-s <text> dhcpv6- options no-release
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options parameters-only	interfaces ethernet <text> vif-s <text> dhcpv6- options parameters-only
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options pd <pd> interface <interface> address	interfaces ethernet <text> vif-s <text> dhcpv6- options pd <text> in- terface <text> address <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options pd <pd> interface <interface> sla-id	interfaces ethernet <text> vif-s <text> dhcpv6- options pd <text> in- terface <text> sla-id <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options pd <pd> length	interfaces ethernet <text> vif-s <text> dhcpv6- options pd <text> length <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options rapid-commit	interfaces ethernet <text> vif-s <text> dhcpv6- options rapid-commit
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> dhcpv6- options temporary	interfaces ethernet <text> vif-s <text> dhcpv6- options temporary
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> disable	interfaces ethernet <text> vif-s <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> disable- link-detect	interfaces ethernet <text> vif-s <text> disable-link- detect
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip adjust-mss	interfaces ethernet <text> vif-s <text> ip adjust-mss <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip arp- cache-timeout	interfaces ethernet <text> vif-s <text> ip arp-cache- timeout <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip disable-arp-filter	interfaces ethernet <text> vif-s <text> ip disable-arp- filter
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip disable-forwarding	interfaces ethernet <text> vif-s <text> ip disable- forwarding
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip enable-arp-accept	interfaces ethernet <text> vif-s <text> ip enable-arp- accept
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip enable-arp-announce	interfaces ethernet <text> vif-s <text> ip enable-arp- announce
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip enable-arp-ignore	interfaces ethernet <text> vif-s <text> ip enable-arp- ignore
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip enable-directed-broadcast	interfaces ethernet <text> vif-s <text> ip enable- directed-broadcast

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip enable-proxy-arp	interfaces ethernet <text> vif-s <text> ip enable- proxy-arp
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip proxy-arp-pvlan	interfaces ethernet <text> vif-s <text> ip proxy-arp- pvlan
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ip source-validation	interfaces ethernet <text> vif-s <text> ip source- validation <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ipv6 accept-dad	interfaces ethernet <text> vif-s <text> ipv6 accept- dad <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> ipv6 ad- dress autoconf	interfaces ethernet <text> vif-s <text> ipv6 address autoconf
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> ipv6 ad- dress eui64	interfaces ethernet <text> vif-s <text> ipv6 address eui64 <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> ipv6 ad- dress no-default-link-local	interfaces ethernet <text> vif-s <text> ipv6 address no-default-link-local
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ipv6 adjust-mss	interfaces ethernet <text> vif-s <text> ipv6 adjust- mss <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ipv6 base-reachable-time	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ipv6 disable-forwarding	interfaces ethernet <text> vif-s <text> ipv6 disable- forwarding
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ipv6 dup-addr-detect-transmits	interfaces ethernet <text> vif-s <text> ipv6 dup- addr-detect-transmits <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> mac	interfaces ethernet <text> vif-s <text> mac <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> mirror egress	interfaces ethernet <text> vif-s <text> mirror egress <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> mirror ingress	interfaces ethernet <text> vif-s <text> mirror ingress <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> mtu	interfaces ethernet <text> vif-s <text> mtu <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> protocol	interfaces ethernet <text> vif-s <text> protocol <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> redirect	interfaces ethernet <text> vif-s <text> redirect <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; address &lt;address / dhcp   dhcpv6&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> address	interfaces ethernet <text> vif-s <text> vif-c <text> address <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; description &lt;description&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> description	interfaces ethernet <text> vif-s <text> vif-c <text> description <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options client-id	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options client-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options default-route-distance	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options host-name	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options mtu	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options mtu
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options no-default-route</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options no-default-route	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options no-default-route
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options reject	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options reject <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options vendor-class-id	interfaces ethernet <text> vif-s <text> vif-c <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options duid	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options duid <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options no-release</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options no-release	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options no-release
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options parameters-only	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options parameters-only
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> address	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> sla-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> length	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options rapid-commit	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options rapid-commit
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options temporary</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options temporary	interfaces ethernet <text> vif-s <text> vif-c <text> dhcpv6-options temporary
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; disable</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> disable	interfaces ethernet <text> vif-s <text> vif-c <text> disable
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; disable-link-detect</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> disable-link-detect	interfaces ethernet <text> vif-s <text> vif-c <text> disable-link-detect
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip adjust-mss	interfaces ethernet <text> vif-s <text> vif-c <text> ip adjust-mss <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip arp-cache-timeout</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip arp-cache-timeout	interfaces ethernet <text> vif-s <text> vif-c <text> ip arp-cache-timeout <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip disable-arp-filter</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip disable-arp-filter	interfaces ethernet <text> vif-s <text> vif-c <text> ip disable-arp-filter

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip disable-forwarding</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip disable-forwarding	interfaces ethernet <text> vif-s <text> vif-c <text> ip disable-forwarding
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-accept</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-accept	interfaces ethernet <text> vif-s <text> vif-c <text> ip enable-arp-accept
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-announce</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-announce	interfaces ethernet <text> vif-s <text> vif-c <text> ip enable-arp-announce
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-ignore</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-ignore	interfaces ethernet <text> vif-s <text> vif-c <text> ip enable-arp-ignore
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-directed-broad</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-directed-broadcast	interfaces ethernet <text> vif-s <text> vif-c <text> ip enable-directed-broadcast
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-proxy-arp</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-proxy-arp	interfaces ethernet <text> vif-s <text> vif-c <text> ip enable-proxy-arp
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip proxy-arp-pvlan	interfaces ethernet <text> vif-s <text> vif-c <text> ip proxy-arp-pvlan
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ip source-validation	interfaces ethernet <text> vif-s <text> vif-c <text> ip source-validation <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 accept-dad	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 accept-dad <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address autoconf</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address autoconf	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 address autoconf
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address eui64	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 address eui64 <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address no-default-link-local	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 address no-default-link-local
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 adjust-mss	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 adjust-mss <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 disable-forwarding</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 disable-forwarding	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 disable-forwarding
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 dup-addr-detect-transmits	interfaces ethernet <text> vif-s <text> vif-c <text> ipv6 dup-addr-detect-transmits <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif- c <vif-c> ipv6 source- validation	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> mac	interfaces ethernet <text> vif-s <text> vif-c <text> mac <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> mirror egress	interfaces ethernet <text> vif-s <text> vif-c <text> mirror egress <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> mirror ingress	interfaces ethernet <text> vif-s <text> vif-c <text> mirror ingress <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> mtu	interfaces ethernet <text> vif-s <text> vif-c <text> mtu <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> redirect	interfaces ethernet <text> vif-s <text> vif-c <text> redirect <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <eth- ernet> vif-s <vif-s> vif-c <vif-c> vrf	interfaces ethernet <text> vif-s <text> vif-c <text> vrf <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif-s <vif-s> vrf	interfaces ethernet <text> vif-s <text> vrf <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vif <vif> address	interfaces ethernet <text> vif <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; description &lt;description&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> description	interfaces ethernet <text> vif <text> description <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options client-id	interfaces ethernet <text> vif <text> dhcp-options client-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options default-route-distance	interfaces ethernet <text> vif <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options host-name	interfaces ethernet <text> vif <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options mtu	interfaces ethernet <text> vif <text> dhcp-options mtu
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options no-default-route</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options no-default-route	interfaces ethernet <text> vif <text> dhcp-options no-default-route
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options reject	interfaces ethernet <text> vif <text> dhcp-options reject <value>
×	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcp-options vendor-class-id	interfaces ethernet <text> vif <text> dhcp-options vendor-class-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options duid	interfaces ethernet <text> vif <text> dhcpv6-options duid <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options no-release</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options no-release	interfaces ethernet <text> vif <text> dhcpv6-options no-release
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options parameters-only	interfaces ethernet <text> vif <text> dhcpv6-options parameters-only
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options pd <pd> interface <interface> address	interfaces ethernet <text> vif <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces ethernet <text> vif <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options pd <pd> length	interfaces ethernet <text> vif <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options rapid-commit	interfaces ethernet <text> vif <text> dhcpv6-options rapid-commit
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options temporary</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> dhcpv6-options temporary	interfaces ethernet <text> vif <text> dhcpv6-options temporary
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; disable</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> disable	interfaces ethernet <text> vif <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; disable-link-detect</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> disable-link-detect	interfaces ethernet <text> vif <text> disable-link-detect
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> egress-qos	interfaces ethernet <text> vif <text> egress-qos <value>
×	not yet documented	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ingress-qos	interfaces ethernet <text> vif <text> ingress-qos <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip adjust-mss	interfaces ethernet <text> vif <text> ip adjust-mss <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip arp-cache-timeout</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip arp-cache-timeout	interfaces ethernet <text> vif <text> ip arp-cache-timeout <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-arp-filter</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip disable-arp-filter	interfaces ethernet <text> vif <text> ip disable-arp-filter
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-forwarding</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip disable-forwarding	interfaces ethernet <text> vif <text> ip disable-forwarding
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-accept</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip enable-arp-accept	interfaces ethernet <text> vif <text> ip enable-arp-accept
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-announce</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip enable-arp-announce	interfaces ethernet <text> vif <text> ip enable-arp-announce
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-ignore</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip enable-arp-ignore	interfaces ethernet <text> vif <text> ip enable-arp-ignore

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-directed-broad</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip enable-directed-broadcast	interfaces ethernet <text> vif <text> ip enable-directed-broadcast
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-proxy-arp</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip enable-proxy-arp	interfaces ethernet <text> vif <text> ip enable-proxy-arp
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip proxy-arp-pvlan	interfaces ethernet <text> vif <text> ip proxy-arp-pvlan
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ip source-validation	interfaces ethernet <text> vif <text> ip source-validation <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 accept-dad	interfaces ethernet <text> vif <text> ipv6 accept-dad <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address autoconf</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 address autoconf	interfaces ethernet <text> vif <text> ipv6 address autoconf
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 address eui64	interfaces ethernet <text> vif <text> ipv6 address eui64 <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 address no-default-link-local	interfaces ethernet <text> vif <text> ipv6 address no-default-link-local
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 adjust-mss	interfaces ethernet <text> vif <text> ipv6 adjust-mss <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 disable-forwarding</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 disable-forwarding	interfaces ethernet <text> vif <text> ipv6 disable-forwarding
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 dup-addr-detect-transmits	interfaces ethernet <text> vif <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> mac	interfaces ethernet <text> vif <text> mac <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> mirror egress	interfaces ethernet <text> vif <text> mirror egress <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> mirror ingress	interfaces ethernet <text> vif <text> mirror ingress <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> mtu	interfaces ethernet <text> vif <text> mtu <value>
×	not yet documented	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> redirect	interfaces ethernet <text> vif <text> redirect <value>
✓	<i>set interfaces ethernet &lt;interface&gt; vif &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ethernet> vif <vif> vrf	interfaces ethernet <text> vif <text> vrf <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces ethernet &lt;interface&gt; vrf &lt;vrf&gt;</i>	inter- faces_ethernet.xml.in: interfaces ethernet <ether- net> vrf	interfaces ethernet <text> vrf <value>
✓	<i>set interfaces geneve &lt;interface&gt; address &lt;address&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> address	interfaces geneve <text> address <value>
✓	<i>set interfaces geneve &lt;interface&gt; description &lt;description&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> description	interfaces geneve <text> description <value>
✓	<i>set interfaces geneve &lt;interface&gt; disable</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> disable	interfaces geneve <text> disable
×	<i>set interfaces geneve &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces geneve &lt;interface&gt; disable-link-detect</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces geneve gnv0 remote &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces geneve gnv0 vni &lt;vni&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces geneve &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> ip adjust-mss	interfaces geneve <text> ip adjust-mss <value>
✓	<i>set interfaces geneve &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> ip arp-cache-timeout	interfaces geneve <text> ip arp-cache-timeout <value>
✓	<i>set interfaces geneve &lt;interface&gt; ip disable-arp-filter</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> ip disable-arp-filter	interfaces geneve <text> ip disable-arp-filter
✓	<i>set interfaces geneve &lt;interface&gt; ip disable-forwarding</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip disable- forwarding	interfaces geneve <text> ip disable-forwarding
✓	<i>set interfaces geneve &lt;interface&gt; ip enable-arp-accept</i>	interfaces_geneve.xml.in: interfaces geneve <gen- eve> ip enable-arp-accept	interfaces geneve <text> ip enable-arp-accept

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces geneve &lt;interface&gt; ip enable-arp-announce</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip enable-arp-announce	interfaces geneve <text> ip enable-arp-announce
✓	<i>set interfaces geneve &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip enable-arp-ignore	interfaces geneve <text> ip enable-arp-ignore
✓	<i>set interfaces geneve &lt;interface&gt; ip enable-directed-broadcast</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip enable-directed-broadcast	interfaces geneve <text> ip enable-directed-broadcast
✓	<i>set interfaces geneve &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip enable-proxy-arp	interfaces geneve <text> ip enable-proxy-arp
✓	<i>set interfaces geneve &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip proxy-arp-pvlan	interfaces geneve <text> ip proxy-arp-pvlan
✓	<i>set interfaces geneve &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ip source-validation	interfaces geneve <text> ip source-validation <value>
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 accept-dad	interfaces geneve <text> ipv6 accept-dad <value>
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 address autoconf</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 address autoconf	interfaces geneve <text> ipv6 address autoconf
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 address eui64	interfaces geneve <text> ipv6 address eui64 <value>
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 address no-default-link-local	interfaces geneve <text> ipv6 address no-default-link-local
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 adjust-mss	interfaces geneve <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 base-reachable-time	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 disable-forwarding	interfaces geneve <text> ipv6 disable-forwarding
✓	<i>set interfaces geneve &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 dup-addr-detect-transmits	interfaces geneve <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces geneve &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> mac	interfaces geneve <text> mac <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> mirror egress	interfaces geneve <text> mirror egress <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> mirror ingress	interfaces geneve <text> mirror ingress <value>
✓	<i>set interfaces geneve &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_geneve.xml.in: interfaces geneve <geneve> mtu	interfaces geneve <text> mtu <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> parameters ip df	interfaces geneve <text> parameters ip df <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> parameters ip innerproto	interfaces geneve <text> parameters ip innerproto
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> parameters ip tos	interfaces geneve <text> parameters ip tos <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> parameters ip ttl	interfaces geneve <text> parameters ip ttl <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> parameters ipv6 flowlabel	interfaces geneve <text> parameters ipv6 flowlabel <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> redirect	interfaces geneve <text> redirect <value>
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> remote	interfaces geneve <text> remote <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_geneve.xml.in: interfaces geneve <geneve> vni	interfaces geneve <text> vni <value>
×	<i>set interfaces geneve &lt;interface&gt; vrf &lt;vrf&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	interfaces_input.xml.in: interfaces input <input> description	interfaces input <text> de- scription <value>
×	not yet documented	interfaces_input.xml.in: interfaces input <input> disable	interfaces input <text> dis- able
×	not yet documented	interfaces_input.xml.in: interfaces input <input> redirect	interfaces input <text> redirect <value>
×	<i>set interfaces &lt;inttype&gt; &lt;intname&gt; ip rip authentication md5 &lt;id&gt; password &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces &lt;inttype&gt; &lt;intname&gt; ip rip authentication plaintext-password &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces &lt;inttype&gt; &lt;intname&gt; ip rip split-horizon disable</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces &lt;inttype&gt; &lt;intname&gt; ip rip split-horizon poison-reverse</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces l2tpv3 &lt;interface&gt; address &lt;address&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> address	interfaces l2tpv3 <text> address <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; description &lt;description&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> description	interfaces l2tpv3 <text> description <value>
×	not yet documented	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> destination-port	interfaces l2tpv3 <text> destination-port <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; disable</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> disable	interfaces l2tpv3 <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces l2tpv3 &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces l2tpv3 &lt;interface&gt; disable-link-detect</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces l2tpv3 &lt;interface&gt; encapsulation &lt;udp / ip&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> encapsulation	interfaces l2tpv3 <text> encapsulation <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip adjust-mss	interfaces l2tpv3 <text> ip adjust-mss <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip arp-cache-timeout	interfaces l2tpv3 <text> ip arp-cache-timeout <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip disable-arp-filter</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip disable-arp-filter	interfaces l2tpv3 <text> ip disable-arp-filter
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip disable-forwarding</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip disable-forwarding	interfaces l2tpv3 <text> ip disable-forwarding
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip enable-arp-accept</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip enable-arp-accept	interfaces l2tpv3 <text> ip enable-arp-accept
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip enable-arp-announce</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip enable-arp-announce	interfaces l2tpv3 <text> ip enable-arp-announce
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip enable-arp-ignore	interfaces l2tpv3 <text> ip enable-arp-ignore
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip enable-directed-broad</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip enable-directed-broadcast	interfaces l2tpv3 <text> ip enable-directed-broadcast
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip enable-proxy-arp	interfaces l2tpv3 <text> ip enable-proxy-arp
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip proxy-arp-pvlan	interfaces l2tpv3 <text> ip proxy-arp-pvlan

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ip source-validation	interfaces l2tpv3 <text> ip source-validation <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 accept-dad	interfaces l2tpv3 <text> ipv6 accept-dad <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 address autoconf</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 address autoconf	interfaces l2tpv3 <text> ipv6 address autoconf
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 address eui64	interfaces l2tpv3 <text> ipv6 address eui64 <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 address no-default-link-local	interfaces l2tpv3 <text> ipv6 address no-default-link-local
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 adjust-mss	interfaces l2tpv3 <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 disable-forwarding	interfaces l2tpv3 <text> ipv6 disable-forwarding
✓	<i>set interfaces l2tpv3 &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 dup-addr-detect-transmits	interfaces l2tpv3 <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> ipv6 source-validation	Nothing found in VyOS
×	<i>set interfaces l2tpv3 &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> mirror egress	interfaces l2tpv3 <text> mirror egress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> mirror ingress	interfaces l2tpv3 <text> mirror ingress <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> mtu	interfaces l2tpv3 <text> mtu <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; peer-session-id &lt;id&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> peer-session-id	interfaces l2tpv3 <text> peer-session-id <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; peer-tunnel-id &lt;id&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> peer-tunnel-id	interfaces l2tpv3 <text> peer-tunnel-id <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; remote &lt;address&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> remote	interfaces l2tpv3 <text> remote <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; session-id &lt;id&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> session-id	interfaces l2tpv3 <text> session-id <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; source-address &lt;address&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> source-address	interfaces l2tpv3 <text> source-address <value>
×	not yet documented	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> source-port	interfaces l2tpv3 <text> source-port <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; tunnel-id &lt;id&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> tunnel-id	interfaces l2tpv3 <text> tunnel-id <value>
✓	<i>set interfaces l2tpv3 &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_l2tpv3.xml.in: interfaces l2tpv3 <l2tpv3> vrf	interfaces l2tpv3 <text> vrf <value>
✓	<i>set interfaces loopback &lt;interface&gt; address &lt;address&gt;</i>	inter- faces_loopback.xml.in: interfaces loopback <loop- back> address	interfaces loopback <text> address <value>
✓	<i>set interfaces loopback &lt;interface&gt; description &lt;description&gt;</i>	inter- faces_loopback.xml.in: interfaces loopback <loop- back> description	interfaces loopback <text> description <value>
×	not yet documented	inter- faces_loopback.xml.in: interfaces loopback <loop- back> ip source-validation	interfaces loopback <text> ip source-validation <value>
×	not yet documented	inter- faces_loopback.xml.in: interfaces loopback <loop- back> mirror egress	interfaces loopback <text> mirror egress <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_loopback.xml.in: interfaces loopback <loop- back> mirror ingress	interfaces loopback <text> mirror ingress <value>
×	not yet documented	inter- faces_loopback.xml.in: interfaces loopback <loop- back> redirect	interfaces loopback <text> redirect <value>
✓	<i>set interfaces macsec &lt;interface&gt; address &lt;address / dhcp / dhcpv6&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> address	interfaces macsec <text> address <value>
✓	<i>set interfaces macsec &lt;interface&gt; description &lt;description&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> description	interfaces macsec <text> description <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options client- id	interfaces macsec <text> dhcp-options client-id <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcp-options default-route-distanc &lt;distance&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options default- route-distance	interfaces macsec <text> dhcp-options default- route-distance <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options host- name	interfaces macsec <text> dhcp-options host-name <value>
×	not yet documented	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options mtu	interfaces macsec <text> dhcp-options mtu
✓	<i>set interfaces macsec &lt;interface&gt; dhcp-options no-default-route</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options no- default-route	interfaces macsec <text> dhcp-options no-default- route
✓	<i>set interfaces macsec &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options reject	interfaces macsec <text> dhcp-options reject <value>
×	<i>set interfaces macsec &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <mac- sec> dhcp-options user- class	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces macsec &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcp-options vendor-class-id	interfaces macsec <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options duid	interfaces macsec <text> dhcpv6-options duid <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options no-release</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options no-release	interfaces macsec <text> dhcpv6-options no-release
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options parameters-only</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options parameters-only	interfaces macsec <text> dhcpv6-options parameters-only
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options pd <pd> interface <interface> address	interfaces macsec <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces macsec <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options pd <pd> length	interfaces macsec <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options rapid-commit</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options rapid-commit	interfaces macsec <text> dhcpv6-options rapid-commit
✓	<i>set interfaces macsec &lt;interface&gt; dhcpv6-options temporary</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> dhcpv6-options temporary	interfaces macsec <text> dhcpv6-options temporary
✓	<i>set interfaces macsec &lt;interface&gt; disable</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> disable	interfaces macsec <text> disable
×	<i>set interfaces macsec &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces macsec &lt;interface&gt; disable-link-detect</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces macsec &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip adjust-mss	interfaces macsec <text> ip adjust-mss <value>
✓	<i>set interfaces macsec &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip arp-cache-timeout	interfaces macsec <text> ip arp-cache-timeout <value>
✓	<i>set interfaces macsec &lt;interface&gt; ip disable-arp-filter</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip disable-arp-filter	interfaces macsec <text> ip disable-arp-filter
✓	<i>set interfaces macsec &lt;interface&gt; ip disable-forwarding</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip disable-forwarding	interfaces macsec <text> ip disable-forwarding
✓	<i>set interfaces macsec &lt;interface&gt; ip enable-arp-accept</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip enable-arp-accept	interfaces macsec <text> ip enable-arp-accept
✓	<i>set interfaces macsec &lt;interface&gt; ip enable-arp-announce</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip enable-arp-announce	interfaces macsec <text> ip enable-arp-announce
✓	<i>set interfaces macsec &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip enable-arp-ignore	interfaces macsec <text> ip enable-arp-ignore
✓	<i>set interfaces macsec &lt;interface&gt; ip enable-directed-broadcast</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip enable-directed-broadcast	interfaces macsec <text> ip enable-directed-broadcast
✓	<i>set interfaces macsec &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip enable-proxy-arp	interfaces macsec <text> ip enable-proxy-arp
✓	<i>set interfaces macsec &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip proxy-arp-pvlan	interfaces macsec <text> ip proxy-arp-pvlan
✓	<i>set interfaces macsec &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ip source-validation	interfaces macsec <text> ip source-validation <value>
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 accept-dad	interfaces macsec <text> ipv6 accept-dad <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 address autoconf</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 address autoconf	interfaces macsec <text> ipv6 address autoconf
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 address eui64	interfaces macsec <text> ipv6 address eui64 <value>
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 address no-default-link-local	interfaces macsec <text> ipv6 address no-default-link-local
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 adjust-mss	interfaces macsec <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 disable-forwarding	interfaces macsec <text> ipv6 disable-forwarding
✓	<i>set interfaces macsec &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 dup-addr-detect-transmits	interfaces macsec <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_macsec.xml.in: interfaces macsec <macsec> ipv6 source-validation	Nothing found in VyOS
×	<i>set interfaces macsec &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	interfaces_macsec.xml.in: interfaces macsec <macsec> mirror egress	interfaces macsec <text> mirror egress <value>
×	not yet documented	interfaces_macsec.xml.in: interfaces macsec <macsec> mirror ingress	interfaces macsec <text> mirror ingress <value>
✓	<i>set interfaces macsec &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> mtu	interfaces macsec <text> mtu <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_macsec.xml.in: interfaces macsec <macsec> redirect	interfaces macsec <text> redirect <value>
✓	<i>set interfaces macsec &lt;interface&gt; security cipher &lt;gcm-aes-128/gcm-aes-</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security cipher	interfaces macsec <text> security cipher <value>
✓	<i>set interfaces macsec &lt;interface&gt; security encrypt</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security encrypt	interfaces macsec <text> security encrypt
✓	<i>set interfaces macsec &lt;interface&gt; security mka cak &lt;key&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security mka cak	interfaces macsec <text> security mka cak <value>
✓	<i>set interfaces macsec &lt;interface&gt; security mka ckn &lt;key&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security mka ckn	interfaces macsec <text> security mka ckn <value>
✓	<i>set interfaces macsec &lt;interface&gt; security mka priority &lt;priority&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security mka priority	interfaces macsec <text> security mka priority <value>
✓	<i>set interfaces macsec &lt;interface&gt; security replay-window &lt;window&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security replay-window	interfaces macsec <text> security replay-window <value>
✓	<i>set interfaces macsec &lt;interface&gt; security static key &lt;key&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security static key	interfaces macsec <text> security static key <value>
✓	<i>set interfaces macsec &lt;interface&gt; security static peer &lt;peer&gt; disable</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security static peer <peer> disable	interfaces macsec <text> security static peer <text> disable
✓	<i>set interfaces macsec &lt;interface&gt; security static peer &lt;peer&gt; key &lt;key&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security static peer <peer> key	interfaces macsec <text> security static peer <text> key <value>
✓	<i>set interfaces macsec &lt;interface&gt; security static peer &lt;peer&gt; mac &lt;mac address&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> security static peer <peer> mac	interfaces macsec <text> security static peer <text> mac <value>
✓	<i>set interfaces macsec &lt;interface&gt; source-interface &lt;physical-source&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> source-interface	interfaces macsec <text> source-interface <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces macsec &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_macsec.xml.in: interfaces macsec <macsec> vrf	interfaces macsec <text> vrf <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> authentication pass- word	interfaces openvpn <text> authentication password <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> authentication user- name	interfaces openvpn <text> authentication username <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> description	interfaces openvpn <text> description <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> device-type	interfaces openvpn <text> device-type <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> disable	interfaces openvpn <text> disable
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> encryption cipher	interfaces openvpn <text> encryption cipher <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> encryption ncp-ciphers	interfaces openvpn <text> encryption ncp-ciphers <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> hash	interfaces openvpn <text> hash <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip adjust-mss	interfaces openvpn <text> ip adjust-mss <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip arp-cache-timeout	interfaces openvpn <text> ip arp-cache-timeout <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip disable-arp-filter	interfaces openvpn <text> ip disable-arp-filter
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> ip disable- forwarding	interfaces openvpn <text> ip disable-forwarding
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip enable-arp-accept	interfaces openvpn <text> ip enable-arp-accept
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> ip enable-arp- announce	interfaces openvpn <text> ip enable-arp-announce
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip enable-arp-ignore	interfaces openvpn <text> ip enable-arp-ignore
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip enable-directed- broadcast	interfaces openvpn <text> ip enable-directed- broadcast
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip enable-proxy-arp	interfaces openvpn <text> ip enable-proxy-arp
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip proxy-arp-pvlan	interfaces openvpn <text> ip proxy-arp-pvlan
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ip source-validation	interfaces openvpn <text> ip source-validation <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ipv6 accept-dad	interfaces openvpn <text> ipv6 accept-dad <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ipv6 address auto- conf	interfaces openvpn <text> ipv6 address autoconf

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ipv6 address eui64	interfaces openvpn <text> ipv6 address eui64 <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ipv6 address no- default-link-local	interfaces openvpn <text> ipv6 address no-default- link-local
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ipv6 adjust-mss	interfaces openvpn <text> ipv6 adjust-mss <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> ipv6 base-reachable- time	Nothing found in VyOS
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> ipv6 disable- forwarding	interfaces openvpn <text> ipv6 disable-forwarding
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> ipv6 dup- addr-detect-transmits	interfaces openvpn <text> ipv6 dup-addr-detect- transmits <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> ipv6 source- validation	Nothing found in VyOS
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> keep-alive failure- count	interfaces openvpn <text> keep-alive failure-count <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> keep-alive interval	interfaces openvpn <text> keep-alive interval <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> local-address <local- address> subnet-mask	interfaces openvpn <text> local-address <text> subnet-mask <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> local-host	interfaces openvpn <text> local-host <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> local-port	interfaces openvpn <text> local-port <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> mirror egress	interfaces openvpn <text> mirror egress <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> mirror ingress	interfaces openvpn <text> mirror ingress <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> mode	interfaces openvpn <text> mode <value>
✓	<i>set interfaces openvpn &lt;name&gt; offload dco</i>	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> offload dco	interfaces openvpn <text> offload dco
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> openvpn-option	interfaces openvpn <text> openvpn-option <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> persistent-tunnel	interfaces openvpn <text> persistent-tunnel
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> protocol	interfaces openvpn <text> protocol <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> redirect	interfaces openvpn <text> redirect <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> remote-address	interfaces openvpn <text> remote-address <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> remote-host	interfaces openvpn <text> remote-host <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> remote-port	interfaces openvpn <text> remote-port <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> replace- default-route local	interfaces openvpn <text> replace-default-route local <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server client-ip-pool disable	interfaces openvpn <text> server client-ip-pool dis- able
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server client-ip-pool start	interfaces openvpn <text> server client-ip-pool start <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server client-ip-pool stop	interfaces openvpn <text> server client-ip-pool stop <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server client-ip-pool subnet-mask	interfaces openvpn <text> server client-ip-pool subnet-mask <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server client-ipv6- pool base	interfaces openvpn <text> server client-ipv6-pool base <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server client-ipv6- pool disable	interfaces openvpn <text> server client-ipv6-pool disable
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> server client <client> disable	interfaces openvpn <text> server client <text> dis- able
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> server client <client> ip	interfaces openvpn <text> server client <text> ip <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces        openvpn <openvpn> server client <client> push-route	interfaces openvpn <text> server client <text> push- route <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces        openvpn <openvpn> server client <client> subnet	interfaces openvpn <text> server client <text> subnet <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server domain-name	interfaces openvpn <text> server        domain-name <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces        openvpn <openvpn> server max- connections	interfaces openvpn <text> server max-connections <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server mfa totp chal- lenge	interfaces openvpn <text> server mfa totp challenge <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server mfa totp digits	interfaces openvpn <text> server mfa totp digits <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server mfa totp drift	interfaces openvpn <text> server mfa totp drift <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server mfa totp slop	interfaces openvpn <text> server mfa totp slop <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server mfa totp step	interfaces openvpn <text> server mfa totp step <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server name-server	interfaces openvpn <text> server        name-server <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server push-route <push-route> metric	interfaces openvpn <text> server push-route <text> metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <openvpn> server reject- unconfigured-clients	interfaces openvpn <text> server reject- unconfigured-clients
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server subnet	interfaces openvpn <text> server subnet <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> server topology	interfaces openvpn <text> server topology <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> shared-secret-key	interfaces openvpn <text> shared-secret-key <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls auth-key	interfaces openvpn <text> tls auth-key <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls ca-certificate	interfaces openvpn <text> tls ca-certificate <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls certificate	interfaces openvpn <text> tls certificate <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls crypt-key	interfaces openvpn <text> tls crypt-key <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls dh-params	interfaces openvpn <text> tls dh-params <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls peer-fingerprint	interfaces openvpn <text> tls peer-fingerprnt <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls role	interfaces openvpn <text> tls role <value>
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> tls tls-version-min	interfaces openvpn <text> tls tls-version-min <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> use-lzo-compression	interfaces openvpn <text> use-lzo-compression
×	not yet documented	inter- faces_openvpn.xml.in: interfaces openvpn <open- vpn> vrf	interfaces openvpn <text> vrf <value>
×	<i>set interfaces openvpn vtun10 openvpn-option 'persistent-key'</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces openvpn vtun10 openvpn-option 'push &amp;quot;keepalive 1 10&amp;quot;'</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces pppoe &lt;interface&gt; access-concentrator &lt;name&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> access-concentrator	interfaces pppoe <text> access-concentrator <value>
✓	<i>set interfaces pppoe &lt;interface&gt; authentication password &lt;password&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> authentication password	interfaces pppoe <text> authentication password <value>
✓	<i>set interfaces pppoe &lt;interface&gt; authentication username &lt;username&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> authentication username	interfaces pppoe <text> authentication username <value>
✓	<i>set interfaces pppoe &lt;interface&gt; connect-on-demand</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> connect-on-demand	interfaces pppoe <text> connect-on-demand
✓	<i>set interfaces pppoe &lt;interface&gt; default-route-distanc &lt;distance&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> default-route-distance	interfaces pppoe <text> default-route-distance <value>
✓	<i>set interfaces pppoe &lt;interface&gt; description &lt;description&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> description	interfaces pppoe <text> description <value>
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options duid	interfaces pppoe <text> dhcpv6-options duid <value>
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options no-release	interfaces pppoe <text> dhcpv6-options no-release

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options parameters-only	interfaces pppoe <text> dhcpv6-options parameters-only
✓	<i>set interfaces pppoe &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options pd <pd> interface <interface> address	interfaces pppoe <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces pppoe &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces pppoe <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces pppoe &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options pd <pd> length	interfaces pppoe <text> dhcpv6-options pd <text> length <value>
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options rapid-commit	interfaces pppoe <text> dhcpv6-options rapid-commit
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> dhcpv6-options temporary	interfaces pppoe <text> dhcpv6-options temporary
✓	<i>set interfaces pppoe &lt;interface&gt; disable</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> disable	interfaces pppoe <text> disable
✓	<i>set interfaces pppoe &lt;interface&gt; holdoff &lt;time&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> holdoff	interfaces pppoe <text> holdoff <value>
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> host-uniq	interfaces pppoe <text> host-uniq <value>
✓	<i>set interfaces pppoe &lt;interface&gt; idle-timeout &lt;time&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> idle-timeout	interfaces pppoe <text> idle-timeout <value>
✓	<i>set interfaces pppoe &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> ip adjust-mss	interfaces pppoe <text> ip adjust-mss <value>
✓	<i>set interfaces pppoe &lt;interface&gt; ip disable-forwarding</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> ip disable-forwarding	interfaces pppoe <text> ip disable-forwarding

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pppoe &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> ip source-validation	interfaces pppoe <text> ip source-validation <value>
✓	<i>set interfaces pppoe &lt;interface&gt; ipv6 address autoconf</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> ipv6 address autoconf	interfaces pppoe <text> ipv6 address autoconf
✓	<i>set interfaces pppoe &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> ipv6 adjust-mss	interfaces pppoe <text> ipv6 adjust-mss <value>
✓	<i>set interfaces pppoe &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> ipv6 disable-forwarding	interfaces pppoe <text> ipv6 disable-forwarding
✓	<i>set interfaces pppoe &lt;interface&gt; local-address &lt;address&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> local-address	interfaces pppoe <text> local-address <value>
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> mirror egress	interfaces pppoe <text> mirror egress <value>
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> mirror ingress	interfaces pppoe <text> mirror ingress <value>
×	<i>set interfaces pppoe &lt;interface&gt; mru &lt;mru&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> mru	Nothing found in VyOS
✓	<i>set interfaces pppoe &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> mtu	interfaces pppoe <text> mtu <value>
✓	<i>set interfaces pppoe &lt;interface&gt; no-default-route</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> no-default-route	interfaces pppoe <text> no-default-route
✓	<i>set interfaces pppoe &lt;interface&gt; no-peer-dns</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> no-peer-dns	interfaces pppoe <text> no-peer-dns
×	not yet documented	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> redirect	interfaces pppoe <text> redirect <value>
✓	<i>set interfaces pppoe &lt;interface&gt; remote-address &lt;address&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> remote-address	interfaces pppoe <text> remote-address <value>
✓	<i>set interfaces pppoe &lt;interface&gt; service-name &lt;name&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> service-name	interfaces pppoe <text> service-name <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pppoe &lt;interface&gt; source-interface &lt;source-interface&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> source-interface	interfaces pppoe <text> source-interface <value>
✓	<i>set interfaces pppoe &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_pppoe.xml.in: interfaces pppoe <pppoe> vrf	interfaces pppoe <text> vrf <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> address	interfaces pseudo-ethernet <text> address <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; description &lt;description&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> description	interfaces pseudo-ethernet <text> description <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options client-id	interfaces pseudo-ethernet <text> dhcp-options client-id <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options default-route-distance	interfaces pseudo-ethernet <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options host-name	interfaces pseudo-ethernet <text> dhcp-options host-name <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options mtu	interfaces pseudo-ethernet <text> dhcp-options mtu
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options no-default-route</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options no-default-route	interfaces pseudo-ethernet <text> dhcp-options no-default-route

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options reject	interfaces pseudo-ethernet <text> dhcp-options reject <value>
×	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcp-options vendor-class-id	interfaces pseudo-ethernet <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options duid	interfaces pseudo-ethernet <text> dhcpv6-options duid <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options no-release</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options no-release	interfaces pseudo-ethernet <text> dhcpv6-options no-release
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options parameters-only</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options parameters-only	interfaces pseudo-ethernet <text> dhcpv6-options parameters-only
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options pd <pd> interface <interface> address	interfaces pseudo-ethernet <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces pseudo-ethernet <text> dhcpv6-options pd <text> interface <text> sla-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options pd <pd> length	interfaces pseudo-ethernet <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options rapid-commit</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options rapid-commit	interfaces pseudo-ethernet <text> dhcpv6-options rapid-commit
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; dhcpv6-options temporary</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> dhcpv6-options temporary	interfaces pseudo-ethernet <text> dhcpv6-options temporary
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; disable</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> disable	interfaces pseudo-ethernet <text> disable
×	<i>set interfaces pseudo-ethernet &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; disable-link-detect</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> disable-link-detect	interfaces pseudo-ethernet <text> disable-link-detect
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip adjust-mss	interfaces pseudo-ethernet <text> ip adjust-mss <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip arp-cache-timeout	interfaces pseudo-ethernet <text> ip arp-cache-timeout <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip disable-arp-filter</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip disable-arp-filter	interfaces pseudo-ethernet <text> ip disable-arp-filter

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip disable-forwarding</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip disable-forwarding	interfaces pseudo-ethernet <text> ip disable-forwarding
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip enable-arp-accept</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip enable-arp-accept	interfaces pseudo-ethernet <text> ip enable-arp-accept
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip enable-arp-announce</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip enable-arp-announce	interfaces pseudo-ethernet <text> ip enable-arp-announce
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip enable-arp-ignore	interfaces pseudo-ethernet <text> ip enable-arp-ignore
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip enable-directed-broad</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip enable-directed-broadcast	interfaces pseudo-ethernet <text> ip enable-directed-broadcast
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip enable-proxy-arp	interfaces pseudo-ethernet <text> ip enable-proxy-arp
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip proxy-arp-pvlan	interfaces pseudo-ethernet <text> ip proxy-arp-pvlan
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ip source-validation	interfaces pseudo-ethernet <text> ip source-validation <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 accept-dad	interfaces pseudo-ethernet <text> ipv6 accept-dad <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 address autoconf</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 address autoconf	interfaces pseudo-ethernet <text> ipv6 address autoconf
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 address eui64	interfaces pseudo-ethernet <text> ipv6 address eui64 <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 address no-default-link-local	interfaces pseudo-ethernet <text> ipv6 address no-default-link-local
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 adjust-mss	interfaces pseudo-ethernet <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 disable-forwarding	interfaces pseudo-ethernet <text> ipv6 disable-forwarding
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 dup-addr-detect-transmits	interfaces pseudo-ethernet <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> mac	interfaces pseudo-ethernet <text> mac <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> mirror egress	interfaces pseudo-ethernet <text> mirror egress <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> mirror ingress	interfaces pseudo-ethernet <text> mirror ingress <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> mode	interfaces pseudo-ethernet <text> mode <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> mtu	interfaces pseudo-ethernet <text> mtu <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> redirect	interfaces pseudo-ethernet <text> redirect <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; source-interface &lt;ethX&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> source-interface	interfaces pseudo-ethernet <text> source-interface <value>
×	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> address	interfaces pseudo-ethernet <text> vif-s <text> address <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> description	interfaces pseudo-ethernet <text> vif-s <text> description <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options client-id	interfaces pseudo-ethernet <text> vif-s <text> dhcp-options client-id <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options default-route-distance	interfaces pseudo-ethernet <text> vif-s <text> dhcp-options default- route-distance <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options host-name	interfaces pseudo-ethernet <text> vif-s <text> dhcp-options host-name <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options mtu	interfaces pseudo-ethernet <text> vif-s <text> dhcp- options mtu
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options no-default-route	interfaces pseudo-ethernet <text> vif-s <text> dhcp- options no-default-route
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options reject	interfaces pseudo-ethernet <text> vif-s <text> dhcp- options reject <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options user-class	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcp-options vendor-class-id	interfaces pseudo-ethernet <text> vif-s <text> dhcp- options vendor-class-id <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options duid	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options duid <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options no-release	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options no-release
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options parameters-only	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options parameters-only
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options pd <pd> interface <interface> address	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options pd <text> interface <text> address <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options pd <text> interface <text> sla-id <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options pd <pd> length	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options pd <text> length <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options rapid-commit	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options rapid-commit
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> dhcpv6-options temporary	interfaces pseudo-ethernet <text> vif-s <text> dhcpv6-options temporary
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> disable	interfaces pseudo-ethernet <text> vif-s <text> disable

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> disable-link-detect	interfaces pseudo-ethernet <text> vif-s <text> disable-link-detect
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip adjust-mss	interfaces pseudo-ethernet <text> vif-s <text> ip adjust-mss <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip arp-cache-timeout	interfaces pseudo-ethernet <text> vif-s <text> ip arp-cache-timeout <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip disable-arp-filter	interfaces pseudo-ethernet <text> vif-s <text> ip disable-arp-filter
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip disable-forwarding	interfaces pseudo-ethernet <text> vif-s <text> ip disable-forwarding
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip enable-arp-accept	interfaces pseudo-ethernet <text> vif-s <text> ip enable-arp-accept
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip enable-arp-announce	interfaces pseudo-ethernet <text> vif-s <text> ip enable-arp-announce
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip enable-arp-ignore	interfaces pseudo-ethernet <text> vif-s <text> ip enable-arp-ignore

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip enable-directed-broadcast	interfaces pseudo-ethernet <text> vif-s <text> ip enable-directed-broadcast
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip enable-proxy-arp	interfaces pseudo-ethernet <text> vif-s <text> ip enable-proxy-arp
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip proxy-arp-pvlan	interfaces pseudo-ethernet <text> vif-s <text> ip proxy-arp-pvlan
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ip source-validation	interfaces pseudo-ethernet <text> vif-s <text> ip source-validation <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 accept-dad	interfaces pseudo-ethernet <text> vif-s <text> ipv6 accept-dad <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 address autoconf	interfaces pseudo-ethernet <text> vif-s <text> ipv6 address autoconf
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 address eui64	interfaces pseudo-ethernet <text> vif-s <text> ipv6 address eui64 <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 address no-default-link-local	interfaces pseudo-ethernet <text> vif-s <text> ipv6 address no-default-link-local

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 adjust-mss	interfaces pseudo-ethernet <text> vif-s <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 base-reachable-time	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 disable-forwarding	interfaces pseudo-ethernet <text> vif-s <text> ipv6 disable-forwarding
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 dup-addr-detect-transmits	interfaces pseudo-ethernet <text> vif-s <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> mac	interfaces pseudo-ethernet <text> vif-s <text> mac <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> mirror egress	interfaces pseudo-ethernet <text> vif-s <text> mirror egress <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> mirror ingress	interfaces pseudo-ethernet <text> vif-s <text> mirror ingress <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> mtu	interfaces pseudo-ethernet <text> vif-s <text> mtu <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> protocol	interfaces pseudo-ethernet <text> vif-s <text> protocol <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> redirect	interfaces pseudo-ethernet <text> vif-s <text> redirect <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> address	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> address <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> description	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> description <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options client-id	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options client-id <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options default-route-distance	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options default-route-distance <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options host-name	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options host-name <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options mtu	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options mtu

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options no-default-route	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options no-default-route
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options reject	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options reject <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options user-class	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options vendor-class-id	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcp-options vendor-class-id <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options duid	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options duid <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options no-release	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options no-release
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options parameters-only	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options parameters-only

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> address	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> address <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> sla-id <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> length	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> length <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options rapid-commit	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options rapid-commit
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options temporary	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options temporary
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> disable	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> disable
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> disable-link-detect	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> disable-link-detect

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip adjust-mss	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip adjust-mss <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip arp-cache-timeout	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip arp-cache-timeout <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip disable-arp-filter	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip disable-arp-filter
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip disable-forwarding	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip disable-forwarding
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-accept	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip enable-arp-accept
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-announce	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip enable-arp-announce
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-ignore	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip enable-arp-ignore
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-directed-broadcast	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip enable-directed-broadcast

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-proxy-arp	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip enable-proxy-arp
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip proxy-arp-pvlan	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip proxy-arp-pvlan
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ip source-validation	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ip source-validation <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 accept-dad	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 accept-dad <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address autoconf	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 address autoconf
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address eui64	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 address eui64 <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address no-default-link-local	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 address no-default-link-local
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 adjust-mss	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 adjust-mss <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 base-reachable-time	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 disable-forwarding	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 disable-forwarding
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 dup-addr-detect-transmits	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> mac	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> mac <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> mirror egress	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> mirror egress <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> mirror ingress	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> mirror ingress <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> mtu	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> mtu <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> redirect	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> redirect <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vif-c <vif-c> vrf	interfaces pseudo-ethernet <text> vif-s <text> vif-c <text> vrf <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif-s <vif-s> vrf	interfaces pseudo-ethernet <text> vif-s <text> vrf <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> address	interfaces pseudo-ethernet <text> vif <text> address <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; description &lt;description&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> description	interfaces pseudo-ethernet <text> vif <text> description <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options client-id	interfaces pseudo-ethernet <text> vif <text> dhcp-options client-id <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options default-route-distance	interfaces pseudo-ethernet <text> vif <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options host-name	interfaces pseudo-ethernet <text> vif <text> dhcp-options host-name <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options mtu	interfaces pseudo-ethernet <text> vif <text> dhcp-options mtu
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options no-default-route</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options no-default-route	interfaces pseudo-ethernet <text> vif <text> dhcp-options no-default-route
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options reject	interfaces pseudo-ethernet <text> vif <text> dhcp-options reject <value>
×	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcp-options vendor-class-id	interfaces pseudo-ethernet <text> vif <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options duid	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options duid <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options no-release</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options no-release	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options no-release
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options parameters-only	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options parameters-only

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options pd <pd> interface <interface> address	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options pd <pd> length	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options rapid-commit	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options rapid-commit
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options temporary</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> dhcpv6-options temporary	interfaces pseudo-ethernet <text> vif <text> dhcpv6-options temporary
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; disable</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> disable	interfaces pseudo-ethernet <text> vif <text> disable
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; disable-link-detect</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> disable-link-detect	interfaces pseudo-ethernet <text> vif <text> disable-link-detect

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> egress-qos	interfaces pseudo-ethernet <text> vif <text> egress-qos <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ingress-qos	interfaces pseudo-ethernet <text> vif <text> ingress-qos <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip adjust-mss	interfaces pseudo-ethernet <text> vif <text> ip adjust-mss <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip arp-cache-timeout</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip arp-cache-timeout	interfaces pseudo-ethernet <text> vif <text> ip arp-cache-timeout <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-arp-filter</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip disable-arp-filter	interfaces pseudo-ethernet <text> vif <text> ip disable-arp-filter
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-forwarding</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip disable-forwarding	interfaces pseudo-ethernet <text> vif <text> ip disable-forwarding
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-accept</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip enable-arp-accept	interfaces pseudo-ethernet <text> vif <text> ip enable-arp-accept
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-announce</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip enable-arp-announce	interfaces pseudo-ethernet <text> vif <text> ip enable-arp-announce

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-ignore</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip enable-arp-ignore	interfaces pseudo-ethernet <text> vif <text> ip enable-arp-ignore
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-directed-broad</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip enable-directed-broadcast	interfaces pseudo-ethernet <text> vif <text> ip enable-directed-broadcast
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-proxy-arp</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip enable-proxy-arp	interfaces pseudo-ethernet <text> vif <text> ip enable-proxy-arp
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip proxy-arp-pvlan	interfaces pseudo-ethernet <text> vif <text> ip proxy-arp-pvlan
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ip source-validation	interfaces pseudo-ethernet <text> vif <text> ip source-validation <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 accept-dad	interfaces pseudo-ethernet <text> vif <text> ipv6 accept-dad <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address autoconf</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 address autoconf	interfaces pseudo-ethernet <text> vif <text> ipv6 address autoconf
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 address eui64	interfaces pseudo-ethernet <text> vif <text> ipv6 address eui64 <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 address no-default-link-local	interfaces pseudo-ethernet <text> vif <text> ipv6 address no-default-link-local
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 adjust-mss	interfaces pseudo-ethernet <text> vif <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 disable-forwarding</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 disable-forwarding	interfaces pseudo-ethernet <text> vif <text> ipv6 disable-forwarding
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 dup-addr-detect-transmits	interfaces pseudo-ethernet <text> vif <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> mac	interfaces pseudo-ethernet <text> vif <text> mac <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> mirror egress	interfaces pseudo-ethernet <text> vif <text> mirror egress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> mirror ingress	interfaces pseudo-ethernet <text> vif <text> mirror ingress <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> mtu	interfaces pseudo-ethernet <text> vif <text> mtu <value>
×	not yet documented	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> redirect	interfaces pseudo-ethernet <text> vif <text> redirect <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vif <vif> vrf	interfaces pseudo-ethernet <text> vif <text> vrf <value>
✓	<i>set interfaces pseudo-ethernet &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_pseudo-ethernet.xml.in: interfaces pseudo-ethernet <pseudo-ethernet> vrf	interfaces pseudo-ethernet <text> vrf <value>
×	not yet documented	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> authentication password	interfaces sstpc <text> authentication password <value>
×	not yet documented	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> authentication username	interfaces sstpc <text> authentication username <value>
✓	<i>set interfaces sstpc &lt;interface&gt; default-route-distance &lt;distance&gt;</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> default-route-distance	interfaces sstpc <text> default-route-distance <value>
✓	<i>set interfaces sstpc &lt;interface&gt; description &lt;description&gt;</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> description	interfaces sstpc <text> description <value>
✓	<i>set interfaces sstpc &lt;interface&gt; disable</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> disable	interfaces sstpc <text> disable
×	<i>set interfaces sstpc &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces sstpc &lt;interface&gt; ip disable-forwarding</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces sstpc &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces sstpc &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> mtu	interfaces sstpc <text> mtu <value>
✓	<i>set interfaces sstpc &lt;interface&gt; no-default-route</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> no-default-route	interfaces sstpc <text> no-default-route
✓	<i>set interfaces sstpc &lt;interface&gt; no-peer-dns</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> no-peer-dns	interfaces sstpc <text> no-peer-dns
×	not yet documented	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> port	interfaces sstpc <text> port <value>
✓	<i>set interfaces sstpc &lt;interface&gt; server &lt;address&gt;</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> server	interfaces sstpc <text> server <value>
×	not yet documented	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> ssl ca-certificate	interfaces sstpc <text> ssl ca-certificate <value>
✓	<i>set interfaces sstpc &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_sstpc.xml.in: interfaces sstpc <sstpc> vrf	interfaces sstpc <text> vrf <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> 6rd-prefix	interfaces tunnel <text> 6rd-prefix <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> 6rd-relay-prefix	interfaces tunnel <text> 6rd-relay-prefix <value>
✓	<i>set interfaces tunnel &lt;interface&gt; address &lt;address&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> address	interfaces tunnel <text> address <value>
✓	<i>set interfaces tunnel &lt;interface&gt; description &lt;description&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> description	interfaces tunnel <text> description <value>
✓	<i>set interfaces tunnel &lt;interface&gt; disable</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> disable	interfaces tunnel <text> disable
×	<i>set interfaces tunnel &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces tunnel &lt;interface&gt; disable-link-detect</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> disable-link-detect	interfaces tunnel <text> disable-link-detect

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> enable-multicast	interfaces tunnel <text> enable-multicast
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> encapsulation	interfaces tunnel <text> encapsulation <value>
✓	<i>set interfaces tunnel &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip adjust-mss	interfaces tunnel <text> ip adjust-mss <value>
✓	<i>set interfaces tunnel &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip arp-cache-timeout	interfaces tunnel <text> ip arp-cache-timeout <value>
✓	<i>set interfaces tunnel &lt;interface&gt; ip disable-arp-filter</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip disable-arp-filter	interfaces tunnel <text> ip disable-arp-filter
✓	<i>set interfaces tunnel &lt;interface&gt; ip disable-forwarding</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip disable-forwarding	interfaces tunnel <text> ip disable-forwarding
✓	<i>set interfaces tunnel &lt;interface&gt; ip enable-arp-accept</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip enable-arp-accept	interfaces tunnel <text> ip enable-arp-accept
✓	<i>set interfaces tunnel &lt;interface&gt; ip enable-arp-announce</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip enable-arp-announce	interfaces tunnel <text> ip enable-arp-announce
✓	<i>set interfaces tunnel &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip enable-arp-ignore	interfaces tunnel <text> ip enable-arp-ignore
✓	<i>set interfaces tunnel &lt;interface&gt; ip enable-directed-broad</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip enable-directed- broadcast	interfaces tunnel <text> ip enable-directed-broadcast
✓	<i>set interfaces tunnel &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip enable-proxy-arp	interfaces tunnel <text> ip enable-proxy-arp
✓	<i>set interfaces tunnel &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip proxy-arp-pvlan	interfaces tunnel <text> ip proxy-arp-pvlan
✓	<i>set interfaces tunnel &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ip source-validation	interfaces tunnel <text> ip source-validation <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 accept-dad	interfaces tunnel <text> ipv6 accept-dad <value>
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 address autoconf</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 address autoconf	interfaces tunnel <text> ipv6 address autoconf
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 address eui64	interfaces tunnel <text> ipv6 address eui64 <value>
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 address no-default-link-local	interfaces tunnel <text> ipv6 address no-default-link-local
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 adjust-mss	interfaces tunnel <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 disable-forwarding	interfaces tunnel <text> ipv6 disable-forwarding
✓	<i>set interfaces tunnel &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 dup-addr-detect-transmits	interfaces tunnel <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> mirror egress	interfaces tunnel <text> mirror egress <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> mirror ingress	interfaces tunnel <text> mirror ingress <value>
✓	<i>set interfaces tunnel &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> mtu	interfaces tunnel <text> mtu <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters erspan direction	interfaces tunnel <text> parameters erspan direction <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters erspan hw-id	interfaces tunnel <text> parameters erspan hw-id <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters erspan index	interfaces tunnel <text> parameters erspan index <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters erspan version	interfaces tunnel <text> parameters erspan version <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ip ignore-df	interfaces tunnel <text> parameters ip ignore-df
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ip key	interfaces tunnel <text> parameters ip key <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ip no-pmtu-discovery	interfaces tunnel <text> parameters ip no-pmtu- discovery
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ip tos	interfaces tunnel <text> parameters ip tos <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ip ttl	interfaces tunnel <text> parameters ip ttl <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ipv6 encapslimit	interfaces tunnel <text> parameters ipv6 en- capslimit <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ipv6 flowlabel	interfaces tunnel <text> parameters ipv6 flowlabel <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ipv6 hoplimit	interfaces tunnel <text> parameters ipv6 hoplimit <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> parameters ipv6 tclass	interfaces tunnel <text> parameters ipv6 tclass <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> redirect	interfaces tunnel <text> redirect <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> remote	interfaces tunnel <text> remote <value>
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> source-address	interfaces tunnel <text> source-address <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> source-interface	interfaces tunnel <text> source-interface <value>
✓	<i>set interfaces tunnel &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_tunnel.xml.in: interfaces tunnel <tunnel> vrf	interfaces tunnel <text> vrf <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> address	interfaces virtual-ethernet <text> address <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; description &lt;description&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> de- scription	interfaces virtual-ethernet <text> description <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp- options client-id	interfaces virtual-ethernet <text> dhcp-options client-id <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp- options default-route- distance	interfaces virtual-ethernet <text> dhcp-options default-route-distance <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp- options host-name	interfaces virtual-ethernet <text> dhcp-options host- name <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp- options mtu	interfaces virtual-ethernet <text> dhcp-options mtu
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp- options no-default-route	interfaces virtual-ethernet <text> dhcp-options no- default-route
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp- options reject	interfaces virtual-ethernet <text> dhcp-options reject <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp-options user-class	Nothing found in VyOS
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcp-options vendor-class-id	interfaces virtual-ethernet <text> dhcp-options vendor-class-id <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options duid	interfaces virtual-ethernet <text> dhcpv6-options duid <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options no-release	interfaces virtual-ethernet <text> dhcpv6-options no-release
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options parameters-only	interfaces virtual-ethernet <text> dhcpv6-options parameters-only
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options pd <pd> interface <interface> address	interfaces virtual-ethernet <text> dhcpv6-options pd <text> interface <text> address <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces virtual-ethernet <text> dhcpv6-options pd <text> interface <text> sla-id <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options pd <pd> length	interfaces virtual-ethernet <text> dhcpv6-options pd <text> length <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options rapid-commit	interfaces virtual-ethernet <text> dhcpv6-options rapid-commit
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> dhcpv6-options temporary	interfaces virtual-ethernet <text> dhcpv6-options temporary
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; disable</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> disable	interfaces virtual-ethernet <text> disable
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> peer-name	interfaces virtual-ethernet <text> peer-name <value>
×	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> address	interfaces virtual-ethernet <text> vif-s <text> address <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> description	interfaces virtual-ethernet <text> vif-s <text> de- scription <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options client-id	interfaces virtual-ethernet <text> vif-s <text> dhcp- options client-id <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options default-route-distance	interfaces virtual-ethernet <text> vif-s <text> dhcp-options default- route-distance <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options host-name	interfaces virtual-ethernet <text> vif-s <text> dhcp-options host-name <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options mtu	interfaces virtual-ethernet <text> vif-s <text> dhcp- options mtu
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options no-default-route	interfaces virtual-ethernet <text> vif-s <text> dhcp- options no-default-route
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options reject	interfaces virtual-ethernet <text> vif-s <text> dhcp- options reject <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options user-class	Nothing found in VyOS
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcp-options vendor-class-id	interfaces virtual-ethernet <text> vif-s <text> dhcp- options vendor-class-id <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options duid	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options duid <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options no-release	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options no-release

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options parameters-only	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options parameters-only
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options pd <pd> interface <interface> address	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options pd <text> interface <text> address <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options pd <text> interface <text> sla-id <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options pd <pd> length	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options pd <text> length <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options rapid-commit	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options rapid-commit
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> dhcpv6-options temporary	interfaces virtual-ethernet <text> vif-s <text> dhcpv6-options temporary
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> disable	interfaces virtual-ethernet <text> vif-s <text> disable
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> disable-link-detect	interfaces virtual-ethernet <text> vif-s <text> disable-link-detect

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip adjust-mss	interfaces virtual-ethernet <text> vif-s <text> ip adjust-mss <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip arp-cache-timeout	interfaces virtual-ethernet <text> vif-s <text> ip arp- cache-timeout <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip disable-arp-filter	interfaces virtual-ethernet <text> vif-s <text> ip disable-arp-filter
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip disable-forwarding	interfaces virtual-ethernet <text> vif-s <text> ip disable-forwarding
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip enable-arp-accept	interfaces virtual-ethernet <text> vif-s <text> ip enable-arp-accept
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip enable-arp-announce	interfaces virtual-ethernet <text> vif-s <text> ip enable-arp-announce
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip enable-arp-ignore	interfaces virtual-ethernet <text> vif-s <text> ip enable-arp-ignore
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip enable-directed-broadcast	interfaces virtual-ethernet <text> vif-s <text> ip enable-directed-broadcast

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip enable-proxy-arp	interfaces virtual-ethernet <text> vif-s <text> ip enable-proxy-arp
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip proxy-arp-pvlan	interfaces virtual-ethernet <text> vif-s <text> ip proxy-arp-pvlan
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ip source-validation	interfaces virtual-ethernet <text> vif-s <text> ip source-validation <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 accept-dad	interfaces virtual-ethernet <text> vif-s <text> ipv6 accept-dad <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 address autoconf	interfaces virtual-ethernet <text> vif-s <text> ipv6 address autoconf
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 address eui64	interfaces virtual-ethernet <text> vif-s <text> ipv6 address eui64 <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 address no-default-link-local	interfaces virtual-ethernet <text> vif-s <text> ipv6 address no-default-link- local
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 adjust-mss	interfaces virtual-ethernet <text> vif-s <text> ipv6 adjust-mss <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 base-reachable-time	Nothing found in VyOS
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 disable-forwarding	interfaces virtual-ethernet <text> vif-s <text> ipv6 disable-forwarding
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 dup-addr-detect-transmits	interfaces virtual-ethernet <text> vif-s <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> mac	interfaces virtual-ethernet <text> vif-s <text> mac <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> mirror egress	interfaces virtual-ethernet <text> vif-s <text> mirror egress <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> mirror ingress	interfaces virtual-ethernet <text> vif-s <text> mirror ingress <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> mtu	interfaces virtual-ethernet <text> vif-s <text> mtu <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> protocol	interfaces virtual-ethernet <text> vif-s <text> proto- col <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> redirect	interfaces virtual-ethernet <text> vif-s <text> redirect <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> address	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> address <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; description &lt;description&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> description	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> description <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options client-id	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options client-id <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options default-route-distance	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options host-name	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options host-name <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options mtu	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options mtu

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options no-default-route</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options no-default-route	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options no-default-route
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options reject	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options reject <value>
×	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcp-options vendor-class-id	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options duid	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options duid <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options no-release</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options no-release	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options no-release

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options parameters-only	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options parameters-only
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> address	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> length	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options rapid-commit	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options rapid-commit
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options temporary</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> dhcpv6-options temporary	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> dhcpv6-options temporary

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; disable</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> disable	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> disable
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; disable-link-detect</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> disable-link-detect	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> disable-link-detect
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip adjust-mss	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip adjust-mss <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip arp-cache-timeout</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip arp-cache-timeout	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip arp-cache-timeout <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip disable-arp-filter</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip disable-arp-filter	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip disable-arp-filter
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip disable-forwarding</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip disable-forwarding	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip disable-forwarding
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-accept</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-accept	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip enable-arp-accept
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-announce</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-announce	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip enable-arp-announce

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-ignore</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-arp-ignore	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip enable-arp-ignore
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-directed-broad</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-directed-broadcast	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip enable-directed-broadcast
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-proxy-arp</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip enable-proxy-arp	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip enable-proxy-arp
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip proxy-arp-pvlan	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip proxy-arp-pvlan
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ip source-validation	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ip source-validation <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 accept-dad	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 accept-dad <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address autoconf</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address autoconf	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 address autoconf

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address eui64	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 address eui64 <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 address no-default-link-local	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 address no-default-link-local
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 adjust-mss	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 disable-forwarding</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 disable-forwarding	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 disable-forwarding
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 dup-addr-detect-transmits	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> ipv6 source-validation	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> mac	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> mac <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> mirror egress	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> mirror egress <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> mirror ingress	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> mirror ingress <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> mtu	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> mtu <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> redirect	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> redirect <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vif-c <vif-c> vrf	interfaces virtual-ethernet <text> vif-s <text> vif-c <text> vrf <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif-s <vif-s> vrf	interfaces virtual-ethernet <text> vif-s <text> vrf <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> address	interfaces virtual-ethernet <text> vif <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; description &lt;description&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> description	interfaces virtual-ethernet <text> vif <text> description <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options client-id	interfaces virtual-ethernet <text> vif <text> dhcp-options client-id <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options default-route-distance	interfaces virtual-ethernet <text> vif <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options host-name	interfaces virtual-ethernet <text> vif <text> dhcp-options host-name <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options mtu	interfaces virtual-ethernet <text> vif <text> dhcp-options mtu
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options no-default-route</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options no-default-route	interfaces virtual-ethernet <text> vif <text> dhcp-options no-default-route
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options reject	interfaces virtual-ethernet <text> vif <text> dhcp-options reject <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcp-options vendor-class-id	interfaces virtual-ethernet <text> vif <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options duid	interfaces virtual-ethernet <text> vif <text> dhcpv6-options duid <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options no-release</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options no-release	interfaces virtual-ethernet <text> vif <text> dhcpv6-options no-release
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options parameters-only	interfaces virtual-ethernet <text> vif <text> dhcpv6-options parameters-only
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options pd <pd> interface <interface> address	interfaces virtual-ethernet <text> vif <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces virtual-ethernet <text> vif <text> dhcpv6-options pd <text> interface <text> sla-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options pd <pd> length	interfaces virtual-ethernet <text> vif <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options rapid-commit	interfaces virtual-ethernet <text> vif <text> dhcpv6-options rapid-commit
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options temporary</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> dhcpv6-options temporary	interfaces virtual-ethernet <text> vif <text> dhcpv6-options temporary
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; disable</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> disable	interfaces virtual-ethernet <text> vif <text> disable
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; disable-link-detect</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> disable-link-detect	interfaces virtual-ethernet <text> vif <text> disable-link-detect
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> egress-qos	interfaces virtual-ethernet <text> vif <text> egress-qos <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ingress-qos	interfaces virtual-ethernet <text> vif <text> ingress-qos <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip adjust-mss	interfaces virtual-ethernet <text> vif <text> ip adjust-mss <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip arp-cache-timeout</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip arp-cache-timeout	interfaces virtual-ethernet <text> vif <text> ip arp-cache-timeout <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-arp-filter</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip disable-arp-filter	interfaces virtual-ethernet <text> vif <text> ip disable-arp-filter
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-forwarding</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip disable-forwarding	interfaces virtual-ethernet <text> vif <text> ip disable-forwarding
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-accept</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip enable-arp-accept	interfaces virtual-ethernet <text> vif <text> ip enable-arp-accept
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-announce</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip enable-arp-announce	interfaces virtual-ethernet <text> vif <text> ip enable-arp-announce
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-ignore</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip enable-arp-ignore	interfaces virtual-ethernet <text> vif <text> ip enable-arp-ignore
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-directed-broad</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip enable-directed-broadcast	interfaces virtual-ethernet <text> vif <text> ip enable-directed-broadcast
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-proxy-arp</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip enable-proxy-arp	interfaces virtual-ethernet <text> vif <text> ip enable-proxy-arp

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip proxy-arp-pvlan	interfaces virtual-ethernet <text> vif <text> ip proxy-arp-pvlan
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ip source-validation	interfaces virtual-ethernet <text> vif <text> ip source-validation <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 accept-dad	interfaces virtual-ethernet <text> vif <text> ipv6 accept-dad <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address autoconf</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 address autoconf	interfaces virtual-ethernet <text> vif <text> ipv6 address autoconf
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 address eui64	interfaces virtual-ethernet <text> vif <text> ipv6 address eui64 <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 address no-default-link-local	interfaces virtual-ethernet <text> vif <text> ipv6 address no-default-link-local
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 adjust-mss	interfaces virtual-ethernet <text> vif <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 base-reachable-time	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 disable-forwarding</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 disable-forwarding	interfaces virtual-ethernet <text> vif <text> ipv6 disable-forwarding
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 dup-addr-detect-transmits	interfaces virtual-ethernet <text> vif <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> mac	interfaces virtual-ethernet <text> vif <text> mac <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> mirror egress	interfaces virtual-ethernet <text> vif <text> mirror egress <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> mirror ingress	interfaces virtual-ethernet <text> vif <text> mirror ingress <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> mtu	interfaces virtual-ethernet <text> vif <text> mtu <value>
×	not yet documented	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> redirect	interfaces virtual-ethernet <text> vif <text> redirect <value>
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vif &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vif <vif> vrf	interfaces virtual-ethernet <text> vif <text> vrf <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces virtual-ethernet &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_virtual-ethernet.xml.in: interfaces virtual-ethernet <virtual-ethernet> vrf	interfaces virtual-ethernet <text> vrf <value>
×	<i>set interfaces &lt;dummy   ethernet   bonding   bridge   pppoe&gt; &lt;interface&gt; vrf &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> address	interfaces vti <text> address <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> description	interfaces vti <text> description <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> disable	interfaces vti <text> disable
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip adjust-mss	interfaces vti <text> ip adjust-mss <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip arp-cache-timeout	interfaces vti <text> ip arp-cache-timeout <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip disable-arp-filter	interfaces vti <text> ip disable-arp-filter
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip disable-forwarding	interfaces vti <text> ip disable-forwarding
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip enable-arp-accept	interfaces vti <text> ip enable-arp-accept
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip enable-arp-announce	interfaces vti <text> ip enable-arp-announce
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip enable-arp-ignore	interfaces vti <text> ip enable-arp-ignore
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip enable-directed-broadcast	interfaces vti <text> ip enable-directed-broadcast
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip enable-proxy-arp	interfaces vti <text> ip enable-proxy-arp
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip proxy-arp-pvlan	interfaces vti <text> ip proxy-arp-pvlan

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ip source-validation	interfaces vti <text> ip source-validation <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 accept-dad	interfaces vti <text> ipv6 accept-dad <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 address autoconf	interfaces vti <text> ipv6 address autoconf
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 address eui64	interfaces vti <text> ipv6 address eui64 <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 address no-default-link- local	interfaces vti <text> ipv6 address no-default-link- local
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 adjust-mss	interfaces vti <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 base-reachable-time	Nothing found in VyOS
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 disable-forwarding	interfaces vti <text> ipv6 disable-forwarding
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 dup-addr-detect-transmits	interfaces vti <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> mirror egress	interfaces vti <text> mir- ror egress <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> mirror ingress	interfaces vti <text> mir- ror ingress <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> mtu	interfaces vti <text> mtu <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> redi- rect	interfaces vti <text> redi- rect <value>
×	not yet documented	interfaces_vti.xml.in: interfaces vti <vti> vrf	interfaces vti <text> vrf <value>
✓	<b><i>set interfaces vxlan &lt;interface&gt; address &lt;address&gt;</i></b>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> address	interfaces vxlan <text> ad- dress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces vxlan &lt;interface&gt; description &lt;description&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> description	interfaces vxlan <text> de- scription <value>
✓	<i>set interfaces vxlan &lt;interface&gt; disable</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> disable	interfaces vxlan <text> disable
×	<i>set interfaces vxlan &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set interfaces vxlan &lt;interface&gt; disable-link-detect</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	interfaces vxlan <text> ex- ternal
✓	<i>set interfaces vxlan &lt;interface&gt; gpe</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> gpe	interfaces vxlan <text> gpe
✓	<i>set interfaces vxlan &lt;interface&gt; group &lt;address&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> group	interfaces vxlan <text> group <value>
✓	<i>set interfaces vxlan &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip adjust-mss	interfaces vxlan <text> ip adjust-mss <value>
✓	<i>set interfaces vxlan &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip arp-cache-timeout	interfaces vxlan <text> ip arp-cache-timeout <value>
✓	<i>set interfaces vxlan &lt;interface&gt; ip disable-arp-filter</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip disable-arp-filter	interfaces vxlan <text> ip disable-arp-filter
✓	<i>set interfaces vxlan &lt;interface&gt; ip disable-forwarding</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip disable-forwarding	interfaces vxlan <text> ip disable-forwarding
✓	<i>set interfaces vxlan &lt;interface&gt; ip enable-arp-accept</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip enable-arp-accept	interfaces vxlan <text> ip enable-arp-accept
✓	<i>set interfaces vxlan &lt;interface&gt; ip enable-arp-announce</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip enable-arp-announce	interfaces vxlan <text> ip enable-arp-announce
✓	<i>set interfaces vxlan &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip enable-arp-ignore	interfaces vxlan <text> ip enable-arp-ignore
✓	<i>set interfaces vxlan &lt;interface&gt; ip enable-directed-broad</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip enable-directed- broadcast	interfaces vxlan <text> ip enable-directed-broadcast

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces vxlan &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip enable-proxy-arp	interfaces vxlan <text> ip enable-proxy-arp
✓	<i>set interfaces vxlan &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip proxy-arp-pvlan	interfaces vxlan <text> ip proxy-arp-pvlan
✓	<i>set interfaces vxlan &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ip source-validation	interfaces vxlan <text> ip source-validation <value>
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 accept-dad	interfaces vxlan <text> ipv6 accept-dad <value>
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 address autoconf</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 address autoconf	interfaces vxlan <text> ipv6 address autoconf
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 address eui64	interfaces vxlan <text> ipv6 address eui64 <value>
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 address no-default-link-local	interfaces vxlan <text> ipv6 address no-default-link-local
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 adjust-mss	interfaces vxlan <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 disable-forwarding	interfaces vxlan <text> ipv6 disable-forwarding
✓	<i>set interfaces vxlan &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 dup-addr-detect-transmits	interfaces vxlan <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces vxlan &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> mac	interfaces vxlan <text> mac <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> mirror egress	interfaces vxlan <text> mirror egress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> mirror ingress	interfaces vxlan <text> mirror ingress <value>
✓	<i>set interfaces vxlan &lt;interface&gt; mtu &lt;mtu&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> mtu	interfaces vxlan <text> mtu <value>
×	<i>set interfaces vxlan &lt;interface&gt; parameters external</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters external	Nothing found in VyOS
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters ip df	interfaces vxlan <text> pa- rameters ip df <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters ip tos	interfaces vxlan <text> pa- rameters ip tos <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters ip ttl	interfaces vxlan <text> pa- rameters ip ttl <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters ipv6 flowlabel	interfaces vxlan <text> parameters ipv6 flowlabel <value>
×	<i>set interfaces vxlan &lt;interface&gt; parameters neighbor-suppress</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters neighbor- suppress	Nothing found in VyOS
✓	<i>set interfaces vxlan &lt;interface&gt; parameters nolearning</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters nolearning	interfaces vxlan <text> pa- rameters nolearning
×	<i>set interfaces vxlan &lt;interface&gt; parameters vni-filter</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> parameters vni-filter	Nothing found in VyOS
✓	<i>set interfaces vxlan &lt;interface&gt; port &lt;port&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> port	interfaces vxlan <text> port <value>
×	not yet documented	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> redirect	interfaces vxlan <text> redirect <value>
✓	<i>set interfaces vxlan &lt;interface&gt; remote &lt;address&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> remote	interfaces vxlan <text> re- mote <value>
✓	<i>set interfaces vxlan &lt;interface&gt; source-address &lt;interface&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> source-address	interfaces vxlan <text> source-address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces vxlan &lt;interface&gt; source-interface &lt;interface&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> source-interface	interfaces vxlan <text> source-interface <value>
×	<i>set interfaces vxlan &lt;interface&gt; vlan-to-vni &lt;vlan&gt; vni &lt;vni&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> vlan-to-vni <vlan-to-vni> vni	Nothing found in VyOS
✓	<i>set interfaces vxlan &lt;interface&gt; vni &lt;number&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> vni	interfaces vxlan <text> vni <value>
✓	<i>set interfaces vxlan &lt;interface&gt; vrf &lt;vrf&gt;</i>	interfaces_vxlan.xml.in: interfaces vxlan <vxlan> vrf	interfaces vxlan <text> vrf <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> address	interfaces wireguard <text> address <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> description	interfaces wireguard <text> description <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> disable	interfaces wireguard <text> disable
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> fwmark	interfaces wireguard <text> fwmark <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip adjust- mss	interfaces wireguard <text> ip adjust-mss <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip arp- cache-timeout	interfaces wireguard <text> ip arp-cache- timeout <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip disable- arp-filter	interfaces wireguard <text> ip disable-arp-filter

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip disable- forwarding	interfaces wireguard <text> ip disable- forwarding
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip enable- arp-accept	interfaces wireguard <text> ip enable-arp- accept
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip enable- arp-announce	interfaces wireguard <text> ip enable-arp- announce
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip enable- arp-ignore	interfaces wireguard <text> ip enable-arp- ignore
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip enable- directed-broadcast	interfaces wireguard <text> ip enable-directed- broadcast
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip enable- proxy-arp	interfaces wireguard <text> ip enable-proxy- arp
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip proxy- arp-pvlan	interfaces wireguard <text> ip proxy-arp-pvlan
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ip source- validation	interfaces wireguard <text> ip source- validation <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 accept- dad	interfaces wireguard <text> ipv6 accept-dad <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 address autoconf	interfaces wireguard <text> ipv6 address autoconf
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 address eui64	interfaces wireguard <text> ipv6 address eui64 <value>
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 address no-default-link-local	interfaces wireguard <text> ipv6 address no-default-link-local
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 adjust- mss	interfaces wireguard <text> ipv6 adjust-mss <value>
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 base- reachable-time	Nothing found in VyOS
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 disable- forwarding	interfaces wireguard <text> ipv6 disable- forwarding
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 dup- addr-detect-transmits	interfaces wireguard <text> ipv6 dup-addr- detect-transmits <value>
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> ipv6 source- validation	Nothing found in VyOS
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> mirror egress	interfaces wireguard <text> mirror egress <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> mirror ingress	interfaces wireguard <text> mirror ingress <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> mtu	interfaces wireguard <text> mtu <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> address	interfaces wireguard <text> peer <text> address <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> allowed-ips	interfaces wireguard <text> peer <text> allowed-ips <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> description	interfaces wireguard <text> peer <text> de- scription <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> disable	interfaces wireguard <text> peer <text> disable
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> persistent-keepalive	interfaces wireguard <text> peer <text> persistent-keepalive <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> port	interfaces wireguard <text> peer <text> port <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> preshared-key	interfaces wireguard <text> peer <text> preshared-key <value>
×	not yet documented	inter- faces_wireguard.xml.in: interfaces wireguard <wireguard> peer <peer> public-key	interfaces wireguard <text> peer <text> public- key <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireguard &lt;interface&gt; per-client-thread</i>	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> per-client-thread	interfaces wireguard <text> per-client-thread
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> port	interfaces wireguard <text> port <value>
✓	<i>set interfaces wireguard &lt;interface&gt; private-key &lt;private-key&gt;</i>	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> private-key	interfaces wireguard <text> private-key <value>
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> redirect	interfaces wireguard <text> redirect <value>
×	not yet documented	inter-faces_wireguard.xml.in: interfaces wireguard <wireguard> vrf	interfaces wireguard <text> vrf <value>
✓	<i>set interfaces wireless &lt;interface&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> address	interfaces wireless <text> address <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht 40mhz-incapable</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht 40mhz-incapable	interfaces wireless <text> capabilities ht 40mhz-incapable
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht auto-powersave</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht auto-powersave	interfaces wireless <text> capabilities ht auto-powersave
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht channel-set-width &lt;ht20   ht40+   ht40-&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht channel-set-width	interfaces wireless <text> capabilities ht channel-set-width <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht delayed-block-ack</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht delayed-block-ack	interfaces wireless <text> capabilities ht delayed-block-ack

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht dsss-cck-40</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht dsss-cck-40	interfaces wireless <text> capabilities ht dsss-cck-40
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht greenfield</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht greenfield	interfaces wireless <text> capabilities ht greenfield
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht ldpc</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht ldpc	interfaces wireless <text> capabilities ht ldpc
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht lsig-protection</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht lsig-protection	interfaces wireless <text> capabilities ht lsig-protection
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht max-amsdu &lt;3839   7935&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht max-amsdu	interfaces wireless <text> capabilities ht max-amsdu <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht short-gi &lt;20   40&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht short-gi	interfaces wireless <text> capabilities ht short-gi <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht smps &lt;static   dynamic&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht smps	interfaces wireless <text> capabilities ht smps <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht stbc rx &lt;num&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht stbc rx	interfaces wireless <text> capabilities ht stbc rx <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities ht stbc tx</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities ht stbc tx	interfaces wireless <text> capabilities ht stbc tx
✓	<i>set interfaces wireless &lt;interface&gt; capabilities require-ht</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities require-ht	interfaces wireless <text> capabilities require-ht

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set interfaces wireless &lt;interface&gt; capabilities require-hvt</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities require-vht	interfaces wireless <text> capabilities require-vht
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht antenna-count</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht antenna-count	interfaces wireless <text> capabilities vht antenna-count <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht antenna-pattern-fixed</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht antenna-pattern-fixed	interfaces wireless <text> capabilities vht antenna-pattern-fixed
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht beamform &lt;single-user-beamform / single-user-beamforme / multi-user-beamformer / multi-user-beamformee</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht beamform	interfaces wireless <text> capabilities vht beamform <value>
×	<i>set interfaces wireless &lt;interface&gt; capabilities vht center-channel-freq &lt;freq-1   freq-2&gt; &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht center-channel-freq freq-1	interfaces wireless <text> capabilities vht center-channel-freq freq-1 <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht center-channel-freq freq-2	interfaces wireless <text> capabilities vht center-channel-freq freq-2 <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht channel-set-width &lt;0   1   2   3&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht channel-set-width	interfaces wireless <text> capabilities vht channel-set-width <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht ldpc</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht ldpc	interfaces wireless <text> capabilities vht ldpc
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht link-adaptation</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht link-adaptation	interfaces wireless <text> capabilities vht link-adaptation <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht max-mpdu &lt;value&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht max-mpdu	interfaces wireless <text> capabilities vht max-mpdu <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht max-mpdu-exp &lt;value&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht max-mpdu-exp	interfaces wireless <text> capabilities vht max-mpdu-exp <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht short-gi &lt;80   160&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht short-gi	interfaces wireless <text> capabilities vht short-gi <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht stbc rx &lt;num&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht stbc rx	interfaces wireless <text> capabilities vht stbc rx <value>
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht stbc tx</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht stbc tx	interfaces wireless <text> capabilities vht stbc tx
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht tx-powersave</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht tx-powersave	interfaces wireless <text> capabilities vht tx-powersave
✓	<i>set interfaces wireless &lt;interface&gt; capabilities vht vht-cf</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> capabilities vht vht-cf	interfaces wireless <text> capabilities vht vht-cf

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; channel &lt;number&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> channel	interfaces wireless <text> channel <value>
✓	<i>set interfaces wireless &lt;interface&gt; country-code &lt;cc&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> country-code	interfaces wireless <text> country-code <value>
✓	<i>set interfaces wireless &lt;interface&gt; description &lt;description&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> description	interfaces wireless <text> description <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options client- id	interfaces wireless <text> dhcp-options client-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options default-route-distance	interfaces wireless <text> dhcp-options default- route-distance <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options host- name	interfaces wireless <text> dhcp-options host-name <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options mtu	interfaces wireless <text> dhcp-options mtu
✓	<i>set interfaces wireless &lt;interface&gt; dhcp-options no-default-route</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options no-default-route	interfaces wireless <text> dhcp-options no-default- route
✓	<i>set interfaces wireless &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options reject	interfaces wireless <text> dhcp-options reject <value>
×	<i>set interfaces wireless &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> dhcp-options user- class	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcp-options vendor-class-id	interfaces wireless <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options duid	interfaces wireless <text> dhcpv6-options duid <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options no-release</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options no-release	interfaces wireless <text> dhcpv6-options no-release
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options parameters-only</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options parameters-only	interfaces wireless <text> dhcpv6-options parameters-only
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options pd <pd> interface <interface> address	interfaces wireless <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces wireless <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options pd <pd> length	interfaces wireless <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options rapid-commit</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options rapid-commit	interfaces wireless <text> dhcpv6-options rapid-commit
✓	<i>set interfaces wireless &lt;interface&gt; dhcpv6-options temporary</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> dhcpv6-options temporary	interfaces wireless <text> dhcpv6-options temporary

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; disable</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> disable	interfaces wireless <text> disable
✓	<i>set interfaces wireless &lt;interface&gt; disable-broadcast-ssid</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> disable-broadcast-ssid	interfaces wireless <text> disable-broadcast-ssid
×	<i>set interfaces wireless &lt;interface&gt; disable-flow-control</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; disable-link-detect</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> disable-link-detect	interfaces wireless <text> disable-link-detect
✓	<i>set interfaces wireless &lt;interface&gt; expunge-failing-stations</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> expunge-failing-stations	interfaces wireless <text> expunge-failing-stations
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> hw-id	interfaces wireless <text> hw-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; ip adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip adjust-mss	interfaces wireless <text> ip adjust-mss <value>
✓	<i>set interfaces wireless &lt;interface&gt; ip arp-cache-timeout</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip arp-cache-timeout	interfaces wireless <text> ip arp-cache-timeout <value>
✓	<i>set interfaces wireless &lt;interface&gt; ip disable-arp-filter</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip disable-arp-filter	interfaces wireless <text> ip disable-arp-filter
✓	<i>set interfaces wireless &lt;interface&gt; ip disable-forwarding</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip disable-forwarding	interfaces wireless <text> ip disable-forwarding
✓	<i>set interfaces wireless &lt;interface&gt; ip enable-arp-accept</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip enable-arp-accept	interfaces wireless <text> ip enable-arp-accept

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; ip enable-arp-announce</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip enable-arp-announce	interfaces wireless <text> ip enable-arp-announce
✓	<i>set interfaces wireless &lt;interface&gt; ip enable-arp-ignore</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip enable-arp-ignore	interfaces wireless <text> ip enable-arp-ignore
✓	<i>set interfaces wireless &lt;interface&gt; ip enable-directed-broad</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip enable-directed-broadcast	interfaces wireless <text> ip enable-directed-broadcast
✓	<i>set interfaces wireless &lt;interface&gt; ip enable-proxy-arp</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip enable-proxy-arp	interfaces wireless <text> ip enable-proxy-arp
✓	<i>set interfaces wireless &lt;interface&gt; ip proxy-arp-pvlan</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip proxy-arp-pvlan	interfaces wireless <text> ip proxy-arp-pvlan
✓	<i>set interfaces wireless &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ip source-validation	interfaces wireless <text> ip source-validation <value>
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 accept-dad	interfaces wireless <text> ipv6 accept-dad <value>
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 address autoconf</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 address autoconf	interfaces wireless <text> ipv6 address autoconf
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 address eui64	interfaces wireless <text> ipv6 address eui64 <value>
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 address no-default-link-local</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 address no-default-link-local	interfaces wireless <text> ipv6 address no-default-link-local

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 adjust-mss &lt;mss / clamp-mss-to-pmtu&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 adjust-mss	interfaces wireless <text> ipv6 adjust-mss <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 disable-forwarding</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 disable-forwarding	interfaces wireless <text> ipv6 disable-forwarding
✓	<i>set interfaces wireless &lt;interface&gt; ipv6 dup-addr-detect-transmit &lt;n&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 dup-addr-detect-transmits	interfaces wireless <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; isolate-stations</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> isolate-stations	interfaces wireless <text> isolate-stations
✓	<i>set interfaces wireless &lt;interface&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> mac	interfaces wireless <text> mac <value>
✓	<i>set interfaces wireless &lt;interface&gt; max-stations</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> max-stations	interfaces wireless <text> max-stations <value>
✓	<i>set interfaces wireless &lt;interface&gt; mgmt-frame-protection</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> mgmt-frame-protection	interfaces wireless <text> mgmt-frame-protection <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> mirror egress	interfaces wireless <text> mirror egress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> mirror ingress	interfaces wireless <text> mirror ingress <value>
✓	<i>set interfaces wireless &lt;interface&gt; mode &lt;a   b   g   n   ac&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> mode	interfaces wireless <text> mode <value>
×	<i>set interfaces wireless &lt;interface&gt; mtu &lt;mtu&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; per-client-thread</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> per-client-thread	interfaces wireless <text> per-client-thread
✓	<i>set interfaces wireless &lt;interface&gt; physical-device &lt;device&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> physical-device	interfaces wireless <text> physical-device <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> redirect	interfaces wireless <text> redirect <value>
✓	<i>set interfaces wireless &lt;interface&gt; reduce-transmit-power &lt;number&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> reduce-transmit- power	interfaces wireless <text> reduce-transmit-power <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security station- address accept mac	interfaces wireless <text> security station-address accept mac <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security station- address deny mac	interfaces wireless <text> security station-address deny mac <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security station- address mode	interfaces wireless <text> security station-address mode <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wep key	interfaces wireless <text> security wep key <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa cipher	interfaces wireless <text> security wpa cipher <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa group- cipher	interfaces wireless <text> security wpa group-cipher <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa mode	interfaces wireless <text> security wpa mode <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa passphrase	interfaces wireless <text> security wpa passphrase <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa radius server <server> account- ing	interfaces wireless <text> security wpa radius server <text> accounting
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa radius server <server> disable	interfaces wireless <text> security wpa radius server <text> disable
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa radius server <server> key	interfaces wireless <text> security wpa radius server <text> key <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa radius server <server> port	interfaces wireless <text> security wpa radius server <text> port <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> security wpa radius source-address	interfaces wireless <text> security wpa radius source-address <value>
✓	<i>set interfaces wireless &lt;interface&gt; ssid &lt;ssid&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> ssid	interfaces wireless <text> ssid <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; type &lt;access-point / station / monitor&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> type	interfaces wireless <text> type <value>
×	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> address	interfaces wireless <text> vif-s <text> address <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> description	interfaces wireless <text> vif-s <text> description <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> dhcp-options client-id	interfaces wireless <text> vif-s <text> dhcp-options client-id <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> dhcp-options default-route-distance	interfaces wireless <text> vif-s <text> dhcp-options default-route-distance <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> dhcp-options host-name	interfaces wireless <text> vif-s <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> dhcp-options mtu	interfaces wireless <text> vif-s <text> dhcp-options mtu
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> dhcp-options no-default-route	interfaces wireless <text> vif-s <text> dhcp-options no-default-route
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> dhcp-options reject	interfaces wireless <text> vif-s <text> dhcp-options reject <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcp- options user-class	Nothing found in VyOS
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcp- options vendor-class-id	interfaces wireless <text> vif-s <text> dhcp-options vendor-class-id <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options duid	interfaces wireless <text> vif-s <text> dhcpv6- options duid <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options no-release	interfaces wireless <text> vif-s <text> dhcpv6- options no-release
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif- s> dhcpv6-options parameters-only	interfaces wireless <text> vif-s <text> dhcpv6- options parameters-only
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options pd <pd> interface <interface> address	interfaces wireless <text> vif-s <text> dhcpv6- options pd <text> in- terface <text> address <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces wireless <text> vif-s <text> dhcpv6- options pd <text> in- terface <text> sla-id <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options pd <pd> length	interfaces wireless <text> vif-s <text> dhcpv6- options pd <text> length <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options rapid- commit	interfaces wireless <text> vif-s <text> dhcpv6- options rapid-commit
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> dhcpv6-options tempo- rary	interfaces wireless <text> vif-s <text> dhcpv6- options temporary
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> disable	interfaces wireless <text> vif-s <text> disable
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> disable- link-detect	interfaces wireless <text> vif-s <text> disable-link- detect
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip adjust-mss	interfaces wireless <text> vif-s <text> ip adjust-mss <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip arp- cache-timeout	interfaces wireless <text> vif-s <text> ip arp-cache- timeout <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip disable-arp-filter	interfaces wireless <text> vif-s <text> ip disable-arp- filter
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip disable-forwarding	interfaces wireless <text> vif-s <text> ip disable- forwarding
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip enable-arp-accept	interfaces wireless <text> vif-s <text> ip enable-arp- accept

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip enable-arp-announce	interfaces wireless <text> vif-s <text> ip enable-arp- announce
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip enable-arp-ignore	interfaces wireless <text> vif-s <text> ip enable-arp- ignore
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip enable-directed-broadcast	interfaces wireless <text> vif-s <text> ip enable- directed-broadcast
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip enable-proxy-arp	interfaces wireless <text> vif-s <text> ip enable- proxy-arp
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip proxy-arp-pvlan	interfaces wireless <text> vif-s <text> ip proxy-arp- pvlan
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ip source-validation	interfaces wireless <text> vif-s <text> ip source- validation <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 accept-dad	interfaces wireless <text> vif-s <text> ipv6 accept- dad <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 address autoconf	interfaces wireless <text> vif-s <text> ipv6 address autoconf
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 address eui64	interfaces wireless <text> vif-s <text> ipv6 address eui64 <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 address no-default-link- local	interfaces wireless <text> vif-s <text> ipv6 address no-default-link-local
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 adjust-mss	interfaces wireless <text> vif-s <text> ipv6 adjust- mss <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 base-reachable-time	Nothing found in VyOS
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 disable-forwarding	interfaces wireless <text> vif-s <text> ipv6 disable- forwarding
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 dup-addr-detect-transmits	interfaces wireless <text> vif-s <text> ipv6 dup- addr-detect-transmits <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> mac	interfaces wireless <text> vif-s <text> mac <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> mirror egress	interfaces wireless <text> vif-s <text> mirror egress <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> mirror ingress	interfaces wireless <text> vif-s <text> mirror ingress <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> mtu	interfaces wireless <text> vif-s <text> mtu <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> proto- col	interfaces wireless <text> vif-s <text> protocol <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> redirect	interfaces wireless <text> vif-s <text> redirect <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> address	interfaces wireless <text> vif-s <text> vif-c <text> address <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; description &lt;description&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> description	interfaces wireless <text> vif-s <text> vif-c <text> description <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> dhcp-options client-id	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options client-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options default-route-distanc &lt;distance&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> dhcp-options default-route-distance	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options default- route-distance <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> dhcp-options host-name	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options host-name <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> dhcp-options mtu	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options mtu

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options no-default-route</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcp-options no-default-route	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options no-default-route
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcp-options reject	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options reject <value>
×	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcp-options vendor-class-id	interfaces wireless <text> vif-s <text> vif-c <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options duid	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options duid <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options no-release</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options no-release	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options no-release
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options parameters-only	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options parameters-only

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> address	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options pd <pd> length	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options rapid-commit	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options rapid-commit
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; dhcpv6-options temporary</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> dhcpv6-options temporary	interfaces wireless <text> vif-s <text> vif-c <text> dhcpv6-options temporary
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; disable</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> disable	interfaces wireless <text> vif-s <text> vif-c <text> disable
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; disable-link-detect</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> disable-link-detect	interfaces wireless <text> vif-s <text> vif-c <text> disable-link-detect

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip adjust-mss	interfaces wireless <text> vif-s <text> vif-c <text> ip adjust-mss <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip arp-cache-timeout</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip arp-cache-timeout	interfaces wireless <text> vif-s <text> vif-c <text> ip arp-cache-timeout <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip disable-arp-filter</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip disable-arp-filter	interfaces wireless <text> vif-s <text> vif-c <text> ip disable-arp-filter
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip disable-forwarding</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip disable-forwarding	interfaces wireless <text> vif-s <text> vif-c <text> ip disable-forwarding
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-accept</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip enable-arp-accept	interfaces wireless <text> vif-s <text> vif-c <text> ip enable-arp-accept
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-announce</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip enable-arp-announce	interfaces wireless <text> vif-s <text> vif-c <text> ip enable-arp-announce
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-arp-ignore</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip enable-arp-ignore	interfaces wireless <text> vif-s <text> vif-c <text> ip enable-arp-ignore
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-directed-broad</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip enable-directed-broadcast	interfaces wireless <text> vif-s <text> vif-c <text> ip enable-directed-broadcast

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip enable-proxy-arp</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip enable-proxy-arp	interfaces wireless <text> vif-s <text> vif-c <text> ip enable-proxy-arp
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip proxy-arp-pvlan	interfaces wireless <text> vif-s <text> vif-c <text> ip proxy-arp-pvlan
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ip source-validation	interfaces wireless <text> vif-s <text> vif-c <text> ip source-validation <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ipv6 accept-dad	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 accept-dad <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address autoconf</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ipv6 address autoconf	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 address autoconf
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ipv6 address eui64	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 address eui64 <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ipv6 address no-default-link-local	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 address no-default-link-local
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> ipv6 adjust-mss	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 adjust-mss <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> ipv6 base- reachable-time	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 disable-forwarding</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif- c <vif-c> ipv6 disable- forwarding	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 disable-forwarding
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; ipv6 dup-addr-detect-trans &lt;n&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif- c <vif-c> ipv6 dup-addr- detect-transmits	interfaces wireless <text> vif-s <text> vif-c <text> ipv6 dup-addr-detect- transmits <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif- c <vif-c> ipv6 source- validation	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> mac	interfaces wireless <text> vif-s <text> vif-c <text> mac <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> mirror egress	interfaces wireless <text> vif-s <text> vif-c <text> mirror egress <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> mirror ingress	interfaces wireless <text> vif-s <text> vif-c <text> mirror ingress <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> mtu	interfaces wireless <text> vif-s <text> vif-c <text> mtu <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif-s <vif-s> vif-c <vif-c> redirect	interfaces wireless <text> vif-s <text> vif-c <text> redirect <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif-s &lt;vlan-id&gt; vif-c &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vif-c <vif-c> vrf	interfaces wireless <text> vif-s <text> vif-c <text> vrf <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif-s <vif-s> vrf	interfaces wireless <text> vif-s <text> vrf <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; address &lt;address&gt;   dhcp   dhcpv6&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> address	interfaces wireless <text> vif <text> address <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; description &lt;description&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> description	interfaces wireless <text> vif <text> description <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options client-id &lt;description&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options client-id	interfaces wireless <text> vif <text> dhcp-options client-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options default-route-distance	interfaces wireless <text> vif <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options host-name &lt;hostname&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options host-name	interfaces wireless <text> vif <text> dhcp-options host-name <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options mtu	interfaces wireless <text> vif <text> dhcp-options mtu
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options no-default-route</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options no-default-route	interfaces wireless <text> vif <text> dhcp-options no-default-route

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options reject &lt;address&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options reject	interfaces wireless <text> vif <text> dhcp-options reject <value>
×	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options user-class &lt;string&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcp-options vendor-class-id	interfaces wireless <text> vif <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options duid &lt;duid&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options duid	interfaces wireless <text> vif <text> dhcpv6-options duid <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options no-release</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options no-release	interfaces wireless <text> vif <text> dhcpv6-options no-release
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options parameters-only</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options parameters-only	interfaces wireless <text> vif <text> dhcpv6-options parameters-only
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options pd <pd> interface <interface> address	interfaces wireless <text> vif <text> dhcpv6-options pd <text> interface <text> address <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options pd <pd> interface <interface> sla-id	interfaces wireless <text> vif <text> dhcpv6-options pd <text> interface <text> sla-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options pd <pd> length	interfaces wireless <text> vif <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options rapid-commit</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options rapid-commit	interfaces wireless <text> vif <text> dhcpv6-options rapid-commit
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; dhcpv6-options temporary</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> dhcpv6-options temporary	interfaces wireless <text> vif <text> dhcpv6-options temporary
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; disable</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> disable	interfaces wireless <text> vif <text> disable
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; disable-link-detect</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> disable-link-detect	interfaces wireless <text> vif <text> disable-link-detect
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> egress-qos	interfaces wireless <text> vif <text> egress-qos <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ingress-qos	interfaces wireless <text> vif <text> ingress-qos <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip adjust-mss	interfaces wireless <text> vif <text> ip adjust-mss <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip arp-cache-timeout</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip arp-cache-timeout	interfaces wireless <text> vif <text> ip arp-cache-timeout <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-arp-filter</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip disable-arp-filter	interfaces wireless <text> vif <text> ip disable-arp-filter

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip disable-forwarding</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip disable-forwarding	interfaces wireless <text> vif <text> ip disable-forwarding
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-accept</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip enable-arp-accept	interfaces wireless <text> vif <text> ip enable-arp-accept
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-announce</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip enable-arp-announce	interfaces wireless <text> vif <text> ip enable-arp-announce
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-arp-ignore</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip enable-arp-ignore	interfaces wireless <text> vif <text> ip enable-arp-ignore
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-directed-broad</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip enable-directed-broadcast	interfaces wireless <text> vif <text> ip enable-directed-broadcast
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip enable-proxy-arp</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip enable-proxy-arp	interfaces wireless <text> vif <text> ip enable-proxy-arp
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip proxy-arp-pvlan</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip proxy-arp-pvlan	interfaces wireless <text> vif <text> ip proxy-arp-pvlan
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ip source-validation	interfaces wireless <text> vif <text> ip source-validation <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 accept-dad &lt;1-3&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 accept-dad	interfaces wireless <text> vif <text> ipv6 accept-dad <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address autoconf</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 address autoconf	interfaces wireless <text> vif <text> ipv6 address autoconf
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address eui64 &lt;prefix&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 address eui64	interfaces wireless <text> vif <text> ipv6 address eui64 <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 address no-default-link-local</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 address no-default-link-local	interfaces wireless <text> vif <text> ipv6 address no-default-link-local
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 adjust-mss	interfaces wireless <text> vif <text> ipv6 adjust-mss <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 disable-forwarding</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 disable-forwarding	interfaces wireless <text> vif <text> ipv6 disable-forwarding
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 dup-addr-detect-transmits	interfaces wireless <text> vif <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> ipv6 source-validation	Nothing found in VyOS
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; mac &lt;xx:xx:xx:xx:xx:xx&gt;</i>	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> mac	interfaces wireless <text> vif <text> mac <value>
×	not yet documented	inter-faces_wireless.xml.in: interfaces wireless <wireless> vif <vif> mirror egress	interfaces wireless <text> vif <text> mirror egress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif <vif> mirror ingress	interfaces wireless <text> vif <text> mirror ingress <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; mtu &lt;mtu&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif <vif> mtu	interfaces wireless <text> vif <text> mtu <value>
×	not yet documented	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif <vif> redirect	interfaces wireless <text> vif <text> redirect <value>
✓	<i>set interfaces wireless &lt;interface&gt; vif &lt;vlan-id&gt; vrf &lt;vrf&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vif <vif> vrf	interfaces wireless <text> vif <text> vrf <value>
✓	<i>set interfaces wireless &lt;interface&gt; vrf &lt;vrf&gt;</i>	inter- faces_wireless.xml.in: interfaces wireless <wire- less> vrf	interfaces wireless <text> vrf <value>
✓	<i>set interfaces wwan &lt;interface&gt; address &lt;address   dhcp   dhcpv6&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> address	interfaces wwan <text> address <value>
✓	<i>set interfaces wwan &lt;interface&gt; apn &lt;apn&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> apn	interfaces wwan <text> apn <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> authentication password	interfaces wwan <text> authentication password <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> authentication username	interfaces wwan <text> authentication username <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> connect-on-demand	interfaces wwan <text> connect-on-demand
✓	<i>set interfaces wwan &lt;interface&gt; description &lt;description&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> description	interfaces wwan <text> description <value>
✓	<i>set interfaces wwan &lt;interface&gt; dhcp-options client-id &lt;description&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options client-id	interfaces wwan <text> dhcp-options client-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wwan &lt;interface&gt; dhcp-options default-route-distance &lt;distance&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options default-route-distance	interfaces wwan <text> dhcp-options default-route-distance <value>
✓	<i>set interfaces wwan &lt;interface&gt; dhcp-options host-name &lt;hostname&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options host-name	interfaces wwan <text> dhcp-options host-name <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options mtu	interfaces wwan <text> dhcp-options mtu
✓	<i>set interfaces wwan &lt;interface&gt; dhcp-options no-default-route</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options no-default-route	interfaces wwan <text> dhcp-options no-default-route
✓	<i>set interfaces wwan &lt;interface&gt; dhcp-options reject &lt;address&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options reject	interfaces wwan <text> dhcp-options reject <value>
×	<i>set interfaces wwan &lt;interface&gt; dhcp-options user-class &lt;string&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options user-class	Nothing found in VyOS
✓	<i>set interfaces wwan &lt;interface&gt; dhcp-options vendor-class-id &lt;vendor-id&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcp-options vendor-class-id	interfaces wwan <text> dhcp-options vendor-class-id <value>
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options duid &lt;duid&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options duid	interfaces wwan <text> dhcpv6-options duid <value>
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options no-release</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options no-release	interfaces wwan <text> dhcpv6-options no-release
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options parameters-only</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options parameters-only	interfaces wwan <text> dhcpv6-options parameters-only
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; address &lt;address&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options pd <pd> interface <interface> address	interfaces wwan <text> dhcpv6-options pd <text> interface <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options pd &lt;id&gt; interface &lt;delegatee&gt; sla-id &lt;id&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options pd <pd> interface <interface> sla- id	interfaces wwan <text> dhcpv6-options pd <text> interface <text> sla-id <value>
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options pd &lt;id&gt; length &lt;length&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options pd <pd> length	interfaces wwan <text> dhcpv6-options pd <text> length <value>
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options rapid-commit</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options rapid- commit	interfaces wwan <text> dhcpv6-options rapid- commit
✓	<i>set interfaces wwan &lt;interface&gt; dhcpv6-options temporary</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> dhcpv6-options temporary	interfaces wwan <text> dhcpv6-options temporary
✓	<i>set interfaces wwan &lt;interface&gt; disable</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> disable	interfaces wwan <text> disable
✓	<i>set interfaces wwan &lt;interface&gt; disable-link-detect</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> disable-link-detect	interfaces wwan <text> disable-link-detect
✓	<i>set interfaces wwan &lt;interface&gt; ip adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip adjust-mss	interfaces wwan <text> ip adjust-mss <value>
✓	<i>set interfaces wwan &lt;interface&gt; ip arp-cache-timeout</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip arp-cache-timeout	interfaces wwan <text> ip arp-cache-timeout <value>
✓	<i>set interfaces wwan &lt;interface&gt; ip disable-arp-filter</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip disable-arp-filter	interfaces wwan <text> ip disable-arp-filter
✓	<i>set interfaces wwan &lt;interface&gt; ip disable-forwarding</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip disable-forwarding	interfaces wwan <text> ip disable-forwarding
✓	<i>set interfaces wwan &lt;interface&gt; ip enable-arp-accept</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip enable-arp-accept	interfaces wwan <text> ip enable-arp-accept
✓	<i>set interfaces wwan &lt;interface&gt; ip enable-arp-announce</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip enable-arp-announce	interfaces wwan <text> ip enable-arp-announce
✓	<i>set interfaces wwan &lt;interface&gt; ip enable-arp-ignore</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip enable-arp-ignore	interfaces wwan <text> ip enable-arp-ignore

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set interfaces wwan &lt;interface&gt; ip enable-directed-broad</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip enable-directed-broadcast	interfaces wwan <text> ip enable-directed-broadcast
✓	<i>set interfaces wwan &lt;interface&gt; ip enable-proxy-arp</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip enable-proxy-arp	interfaces wwan <text> ip enable-proxy-arp
✓	<i>set interfaces wwan &lt;interface&gt; ip proxy-arp-pvlan</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip proxy-arp-pvlan	interfaces wwan <text> ip proxy-arp-pvlan
✓	<i>set interfaces wwan &lt;interface&gt; ip source-validation &lt;strict   loose   disable&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ip source-validation	interfaces wwan <text> ip source-validation <value> ip source-validation
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 accept-dad &lt;1-3&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 accept-dad	interfaces wwan <text> ipv6 accept-dad <value>
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 address autoconf</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 address autoconf	interfaces wwan <text> ipv6 address autoconf
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 address eui64 &lt;prefix&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 address eui64	interfaces wwan <text> ipv6 address eui64 <value>
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 address no-default-link-local</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 address no-default-link-local	interfaces wwan <text> ipv6 address no-default-link-local
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 adjust-mss &lt;mss   clamp-mss-to-pmtu&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 adjust-mss	interfaces wwan <text> ipv6 adjust-mss <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 base-reachable-time	Nothing found in VyOS
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 disable-forwarding</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 disable-forwarding	interfaces wwan <text> ipv6 disable-forwarding
✓	<i>set interfaces wwan &lt;interface&gt; ipv6 dup-addr-detect-transmits &lt;n&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 dup-addr-detect-transmits	interfaces wwan <text> ipv6 dup-addr-detect-transmits <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> ipv6 source-validation	Nothing found in VyOS
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> mirror egress	interfaces wwan <text> mirror egress <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> mirror ingress	interfaces wwan <text> mirror ingress <value>
✓	<i>set interfaces wwan</i> <i>&lt;interface&gt; mtu</i> <i>&lt;mtu&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> mtu	interfaces wwan <text> mtu <value>
×	not yet documented	interfaces_wwan.xml.in: interfaces wwan <wwan> redirect	interfaces wwan <text> redirect <value>
✓	<i>set interfaces wwan</i> <i>&lt;interface&gt; vrf</i> <i>&lt;vrf&gt;</i>	interfaces_wwan.xml.in: interfaces wwan <wwan> vrf	interfaces wwan <text> vrf <value>
×	<i>load &lt;URI&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set load-balancing</i> <i>reverse-proxy</i> <i>backend &lt;name&gt;</i> <i>balance &lt;balance&gt;</i>	load-balancing_reverse- proxy.xml.in: load-balancing reverse- proxy backend <backend> balance	load-balancing reverse- proxy backend <text> balance <value>
×	not yet documented	load-balancing_reverse- proxy.xml.in: load-balancing reverse- proxy backend <backend> description	load-balancing reverse- proxy backend <text> description <value>
×	<i>set load-balancing</i> <i>reverse-proxy</i> <i>backend &lt;name&gt;</i> <i>http-check</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set load-balancing</i> <i>reverse-proxy</i> <i>backend &lt;name&gt;</i> <i>http-check expect</i> <i>&lt;condition&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	load-balancing_reverse- proxy.xml.in: load-balancing reverse- proxy backend <backend> http-check expect status	Nothing found in VyOS
×	not yet documented	load-balancing_reverse- proxy.xml.in: load-balancing reverse- proxy backend <backend> http-check expect string	Nothing found in VyOS
×	<i>set load-balancing</i> <i>reverse-proxy</i> <i>backend &lt;name&gt;</i> <i>http-check method</i> <i>&lt;method&gt;</i>	load-balancing_reverse- proxy.xml.in: load-balancing reverse- proxy backend <backend> http-check method	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set load-balancing reverse-proxy backend &lt;name&gt; http-check uri &lt;path&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> http-check uri	Nothing found in VyOS
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; mode &lt;mode&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> mode	load-balancing reverse-proxy backend <text> mode <value>
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; parameters http-check</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> parameters http-check	load-balancing reverse-proxy backend <text> parameters http-check
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> domain-name	load-balancing reverse-proxy backend <text> rule <text> domain-name <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> set redirect-location	load-balancing reverse-proxy backend <text> rule <text> set redirect-location <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> set server	load-balancing reverse-proxy backend <text> rule <text> set server <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> ssl	load-balancing reverse-proxy backend <text> rule <text> ssl <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> url-path begin	load-balancing reverse-proxy backend <text> rule <text> url-path begin <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> url-path end	load-balancing reverse-proxy backend <text> rule <text> url-path end <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> rule <rule> url-path exact	load-balancing reverse-proxy backend <text> rule <text> url-path exact <value>
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; server &lt;name&gt; address &lt;x.x.x.x&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> server <server> address	load-balancing reverse-proxy backend <text> server <text> address <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> server <server> backup	Nothing found in VyOS
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; server &lt;name&gt; check</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> server <server> check	load-balancing reverse-proxy backend <text> server <text> check
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; server &lt;name&gt; port &lt;port&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> server <server> port	load-balancing reverse-proxy backend <text> server <text> port <value>
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; server &lt;name&gt; send-proxy</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> server <server> send-proxy	load-balancing reverse-proxy backend <text> server <text> send-proxy
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; server &lt;name&gt; send-proxy-v2</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> server <server> send-proxy-v2	load-balancing reverse-proxy backend <text> server <text> send-proxy-v2
✓	<i>set load-balancing reverse-proxy backend &lt;name&gt; ssl ca-certificate &lt;ca-certificate&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> ssl ca-certificate	load-balancing reverse-proxy backend <text> ssl ca-certificate <value>
×	<i>set load-balancing reverse-proxy backend &lt;name&gt; ssl no-verify</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> ssl no-verify	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> timeout check	load-balancing reverse-proxy backend <text> timeout check <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> timeout connect	load-balancing reverse-proxy backend <text> timeout connect <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy backend <backend> timeout server	load-balancing reverse-proxy backend <text> timeout server <value>
✓	<i>set load-balancing reverse-proxy global-parameters max-connections &lt;num&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy global-parameters max-connections	load-balancing reverse-proxy global-parameters max-connections <value>
✓	<i>set load-balancing reverse-proxy global-parameters ssl-bind-ciphers &lt;ciphers&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy global-parameters ssl-bind-ciphers	load-balancing reverse-proxy global-parameters ssl-bind-ciphers <value>
✓	<i>set load-balancing reverse-proxy global-parameters tls-version-min &lt;version&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy global-parameters tls-version-min	load-balancing reverse-proxy global-parameters tls-version-min <value>
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; backend &lt;name&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> backend	load-balancing reverse-proxy service <text> backend <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> description	load-balancing reverse-proxy service <text> description <value>
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; listen-address &lt;address&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> listen-address	load-balancing reverse-proxy service <text> listen-address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; mode &lt;tcp/http&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> mode	load-balancing reverse-proxy service <text> mode <value>
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; port &lt;port&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> port	load-balancing reverse-proxy service <text> port <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> redirect-http-to-https	load-balancing reverse-proxy service <text> redirect-http-to-https
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; rule &lt;rule&gt; domain-name &lt;name&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> domain-name	load-balancing reverse-proxy service <text> rule <text> domain-name <value>
×	<i>set load-balancing reverse-proxy service &lt;name&gt; rule &lt;rule&gt; redirect-location &lt;url&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; rule &lt;rule&gt; set backend &lt;name&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> set backend	load-balancing reverse-proxy service <text> rule <text> set backend <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> set redirect-location	load-balancing reverse-proxy service <text> rule <text> set redirect-location <value>
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; rule &lt;rule&gt; ssl &lt;sni&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> ssl	load-balancing reverse-proxy service <text> rule <text> ssl <value>
×	<i>set load-balancing reverse-proxy service &lt;name&gt; rule &lt;rule&gt; url-path &lt;match&gt; &lt;url&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> url-path begin	load-balancing reverse-proxy service <text> rule <text> url-path begin <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> url-path end	load-balancing reverse-proxy service <text> rule <text> url-path end <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> rule <rule> url-path exact	load-balancing reverse-proxy service <text> rule <text> url-path exact <value>
✓	<i>set load-balancing reverse-proxy service &lt;name&gt; ssl certificate &lt;name&gt;</i>	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> ssl certificate	load-balancing reverse-proxy service <text> ssl certificate <value>
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy service <service> tcp-request inspect-delay	Nothing found in VyOS
×	not yet documented	load-balancing_reverse-proxy.xml.in: load-balancing reverse-proxy vrf	load-balancing reverse-proxy vrf <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan disable-source-nat	load-balancing wan disable-source-nat
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan enable-local-traffic	load-balancing wan enable-local-traffic
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan flush-connections	load-balancing wan flush-connections
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan hook	load-balancing wan hook <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> failure-count	load-balancing wan interface-health <text> failure-count <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> nexthop	load-balancing wan interface-health <text> nexthop <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> success-count	load-balancing wan interface-health <text> success-count <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> test <text> resp-time	load-balancing wan interface-health <text> test <text> resp-time <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> test <text> target	load-balancing wan interface-health <text> test <text> target <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> test <text> test-script	load-balancing wan interface-health <text> test <text> test-script <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> test <text> ttl-limit	load-balancing wan interface-health <text> test <text> ttl-limit <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan interface-health <interface-health> test <text> type	load-balancing wan interface-health <text> test <text> type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> description	load-balancing wan rule <text> description <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> destination address	load-balancing wan rule <text> destination address <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> destination port	load-balancing wan rule <text> destination port <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> exclude	load-balancing wan rule <text> exclude
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> failover	load-balancing wan rule <text> failover
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> inbound-interface	load-balancing wan rule <text> inbound-interface <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> interface <interface> weight	load-balancing wan rule <text> interface <text> weight <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> limit burst	load-balancing wan rule <text> limit burst <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> limit period	load-balancing wan rule <text> limit period <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> limit rate	load-balancing wan rule <text> limit rate <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> limit threshold	load-balancing wan rule <text> limit threshold <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> per-packet-balancing	load-balancing wan rule <text> per-packet-balancing
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> protocol	load-balancing wan rule <text> protocol <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> source address	load-balancing wan rule <text> source address <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan rule <rule> source port	load-balancing wan rule <text> source port <value>
×	not yet documented	load-balancing_wan.xml.in: load-balancing wan sticky-connections in-bound	load-balancing wan sticky-connections in-bound
×	not yet documented	nat64.xml.in: nat64 source rule <rule> description	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> disable	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> match mark	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> source prefix	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> address	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> description	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> disable	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> port	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> protocol icmp	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> protocol tcp	Nothing found in VyOS
×	not yet documented	nat64.xml.in: nat64 source rule <rule> translation pool <pool> protocol udp	Nothing found in VyOS
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> description	nat66 destination rule <text> description <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> destination address	nat66 destination rule <text> destination address <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> destination port	nat66 destination rule <text> destination port <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> disable	nat66 destination rule <text> disable
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> exclude	nat66 destination rule <text> exclude
×	not yet documented	Nothing found in XML Definitions	nat66 destination rule <text> inbound-interface <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> inbound-interface name	Nothing found in VyOS
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> log	nat66 destination rule <text> log
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> protocol	nat66 destination rule <text> protocol <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> source address	nat66 destination rule <text> source address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> source port	nat66 destination rule <text> source port <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> translation address	nat66 destination rule <text> translation address <value>
×	not yet documented	nat66.xml.in: nat66 destination rule <rule> translation port	nat66 destination rule <text> translation port <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> description	nat66 source rule <text> description <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> destination port	nat66 source rule <text> destination port <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> destination prefix	nat66 source rule <text> destination prefix <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> disable	nat66 source rule <text> disable
×	not yet documented	nat66.xml.in: nat66 source rule <rule> exclude	nat66 source rule <text> exclude
×	not yet documented	nat66.xml.in: nat66 source rule <rule> log	nat66 source rule <text> log
×	not yet documented	Nothing found in XML Definitions	nat66 source rule <text> outbound-interface <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> outbound-interface name	Nothing found in VyOS
×	not yet documented	nat66.xml.in: nat66 source rule <rule> protocol	nat66 source rule <text> protocol <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> source port	nat66 source rule <text> source port <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> source prefix	nat66 source rule <text> source prefix <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> translation address	nat66 source rule <text> translation address <value>
×	not yet documented	nat66.xml.in: nat66 source rule <rule> translation port	nat66 source rule <text> translation port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat.xml.in: nat destination rule <rule> description	nat destination rule <text> description <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination address	nat destination rule <text> destination address <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination group address- group	nat destination rule <text> destination group address- group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination group domain- group	nat destination rule <text> destination group domain- group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination group mac-group	nat destination rule <text> destination group mac-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination group network-group	nat destination rule <text> destination group network-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination group port-group	nat destination rule <text> destination group port-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> destination port	nat destination rule <text> destination port <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> disable	nat destination rule <text> disable
×	not yet documented	nat.xml.in: nat destination rule <rule> exclude	nat destination rule <text> exclude
×	not yet documented	Nothing found in XML Definitions	nat destination rule <text> inbound-interface <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> inbound-interface group	Nothing found in VyOS
×	not yet documented	nat.xml.in: nat destination rule <rule> inbound-interface name	Nothing found in VyOS
×	not yet documented	nat.xml.in: nat destination rule <rule> load-balance backend <backend> weight	nat destination rule <text> load-balance backend <text> weight <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat.xml.in: nat destination rule <rule> load-balance hash	nat destination rule <text> load-balance hash <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> log	nat destination rule <text> log
×	not yet documented	nat.xml.in: nat destination rule <rule> packet-type	nat destination rule <text> packet-type <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> protocol	nat destination rule <text> protocol <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source address	nat destination rule <text> source address <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source group address-group	nat destination rule <text> source group address-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source group domain-group	nat destination rule <text> source group domain-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source group mac-group	nat destination rule <text> source group mac-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source group network-group	nat destination rule <text> source group network-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source group port-group	nat destination rule <text> source group port-group <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> source port	nat destination rule <text> source port <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> translation address	nat destination rule <text> translation address <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> translation options address-mapping	nat destination rule <text> translation options address-mapping <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> translation options port-mapping	nat destination rule <text> translation options port-mapping <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat.xml.in: nat destination rule <rule> translation port	nat destination rule <text> translation port <value>
×	not yet documented	nat.xml.in: nat destination rule <rule> translation redirect port	nat destination rule <text> translation redirect port <value>
×	<i>set nat [source / destination] rule &lt;rule&gt; load-balance backend &lt;x.x.x.x&gt; weight &lt;1-100&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set nat [source / destination] rule &lt;rule&gt; load-balance hash [source-address / destination-address / source-port / destination-port / random]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	nat.xml.in: nat source rule <rule> de- scription	nat source rule <text> de- scription <value>
×	not yet documented	nat.xml.in: nat source rule <rule> des- tination address	nat source rule <text> des- tination address <value>
×	not yet documented	nat.xml.in: nat source rule <rule> destination group address- group	nat source rule <text> destination group address- group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> destination group domain- group	nat source rule <text> destination group domain- group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> des- tination group mac-group	nat source rule <text> des- tination group mac-group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> des- tination group network- group	nat source rule <text> des- tination group network- group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> des- tination group port-group	nat source rule <text> des- tination group port-group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> des- tination port	nat source rule <text> des- tination port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat.xml.in: nat source rule <rule> disable	nat source rule <text> disable
×	not yet documented	nat.xml.in: nat source rule <rule> exclude	nat source rule <text> exclude
×	not yet documented	nat.xml.in: nat source rule <rule> load-balance backend <backend> weight	nat source rule <text> load-balance backend <text> weight <value>
×	not yet documented	nat.xml.in: nat source rule <rule> load-balance hash	nat source rule <text> load-balance hash <value>
×	not yet documented	nat.xml.in: nat source rule <rule> log	nat source rule <text> log
×	not yet documented	Nothing found in XML Definitions	nat source rule <text> outbound-interface <value>
×	not yet documented	nat.xml.in: nat source rule <rule> outbound-interface group	Nothing found in VyOS
×	not yet documented	nat.xml.in: nat source rule <rule> outbound-interface name	Nothing found in VyOS
×	not yet documented	nat.xml.in: nat source rule <rule> packet-type	nat source rule <text> packet-type <value>
×	not yet documented	nat.xml.in: nat source rule <rule> protocol	nat source rule <text> protocol <value>
×	not yet documented	nat.xml.in: nat source rule <rule> source address	nat source rule <text> source address <value>
×	not yet documented	nat.xml.in: nat source rule <rule> source group address-group	nat source rule <text> source group address-group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> source group domain-group	nat source rule <text> source group domain-group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> source group mac-group	nat source rule <text> source group mac-group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> source group network-group	nat source rule <text> source group network-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	nat.xml.in: nat source rule <rule> source group port-group	nat source rule <text> source group port-group <value>
×	not yet documented	nat.xml.in: nat source rule <rule> source port	nat source rule <text> source port <value>
×	not yet documented	nat.xml.in: nat source rule <rule> translation address	nat source rule <text> translation address <value>
×	not yet documented	nat.xml.in: nat source rule <rule> translation options address-mapping	nat source rule <text> translation options address-mapping <value>
×	not yet documented	nat.xml.in: nat source rule <rule> translation options port- mapping	nat source rule <text> translation options port- mapping <value>
×	not yet documented	nat.xml.in: nat source rule <rule> translation port	nat source rule <text> translation port <value>
×	not yet documented	nat.xml.in: nat static rule <rule> de- scription	nat static rule <text> de- scription <value>
×	not yet documented	nat.xml.in: nat static rule <rule> des- tination address	nat static rule <text> desti- nation address <value>
×	not yet documented	nat.xml.in: nat static rule <rule> inbound-interface	nat static rule <text> inbound-interface <value>
×	not yet documented	nat.xml.in: nat static rule <rule> trans- lation address	nat static rule <text> trans- lation address <value>
×	not yet documented	netns.xml.in: netns name <name> de- scription	netns name <text> de- scription <value>
✓	<i>set pki ca &lt;name&gt; certificate</i>	pki.xml.in: pki ca <ca> certificate	pki ca <text> certificate <value>
✓	<i>set pki ca &lt;name&gt; crl</i>	pki.xml.in: pki ca <ca> crl	pki ca <text> crl <value>
✓	<i>set pki ca &lt;name&gt; description</i>	pki.xml.in: pki ca <ca> description	pki ca <text> description <value>
✓	<i>set pki ca &lt;name&gt; private key</i>	pki.xml.in: pki ca <ca> private key	pki ca <text> private key <value>
✓	<i>set pki ca &lt;name&gt; private password-protected</i>	pki.xml.in: pki ca <ca> private password-protected	pki ca <text> private password-protected
×	not yet documented	pki.xml.in: pki ca <ca> revoke	pki ca <text> revoke

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set pki certificate &lt;name&gt; acme domain-name &lt;name&gt;</code>	pki.xml.in: pki certificate <certificate> acme domain-name	Nothing found in VyOS
×	<code>set pki certificate &lt;name&gt; acme email &lt;address&gt;</code>	pki.xml.in: pki certificate <certificate> acme email	Nothing found in VyOS
×	<code>set pki certificate &lt;name&gt; acme listen-address &lt;address&gt;</code>	pki.xml.in: pki certificate <certificate> acme listen-address	Nothing found in VyOS
×	<code>set pki certificate &lt;name&gt; acme rsa-key-size &lt;2048   3072   4096&gt;</code>	pki.xml.in: pki certificate <certificate> acme rsa-key-size	Nothing found in VyOS
×	<code>set pki certificate &lt;name&gt; acme url &lt;url&gt;</code>	pki.xml.in: pki certificate <certificate> acme url	Nothing found in VyOS
✓	<code>set pki certificate &lt;name&gt; certificate</code>	pki.xml.in: pki certificate <certificate> certificate	pki certificate <text> certificate <value>
✓	<code>set pki certificate &lt;name&gt; description</code>	pki.xml.in: pki certificate <certificate> description	pki certificate <text> description <value>
✓	<code>set pki certificate &lt;name&gt; private key</code>	pki.xml.in: pki certificate <certificate> private key	pki certificate <text> private key <value>
✓	<code>set pki certificate &lt;name&gt; private password-protected</code>	pki.xml.in: pki certificate <certificate> private password-protected	pki certificate <text> private password-protected
✓	<code>set pki certificate &lt;name&gt; revoke</code>	pki.xml.in: pki certificate <certificate> revoke	pki certificate <text> revoke
×	not yet documented	pki.xml.in: pki dh <dh> parameters	pki dh <text> parameters <value>
×	not yet documented	pki.xml.in: pki key-pair <key-pair> private key	pki key-pair <text> private key <value>
×	not yet documented	pki.xml.in: pki key-pair <key-pair> private password-protected	pki key-pair <text> private password-protected
×	not yet documented	pki.xml.in: pki key-pair <key-pair> public key	pki key-pair <text> public key <value>
×	not yet documented	pki.xml.in: pki openssh <openssh> private key	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	pki.xml.in: pki openssh <openssh> private password- protected	Nothing found in VyOS
×	not yet documented	pki.xml.in: pki openssh <openssh> public key	Nothing found in VyOS
×	not yet documented	pki.xml.in: pki openssh <openssh> public type	Nothing found in VyOS
×	not yet documented	pki.xml.in: pki openvpn shared-secret <shared-secret> key	pki openvpn shared-secret <text> key <value>
×	not yet documented	pki.xml.in: pki openvpn shared-secret <shared-secret> version	pki openvpn shared-secret <text> version <value>
×	not yet documented	pki.xml.in: pki x509 default country	pki x509 default country <value>
×	not yet documented	pki.xml.in: pki x509 default locality	pki x509 default locality <value>
×	not yet documented	pki.xml.in: pki x509 default organiza- tion	pki x509 default organiza- tion <value>
×	not yet documented	pki.xml.in: pki x509 default state	pki x509 default state <value>
×	<i>set policy access-list &lt;acl_number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set policy access-list6 &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set policy access-list6 &lt;text&gt; description &lt;text&gt;</i>	policy.xml.in: policy access-list6 <access-list6> description	policy access-list6 <text> description <value>
✓	<i>set policy access-list6 &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</i>	policy.xml.in: policy access-list6 <access-list6> rule <rule> action	policy access-list6 <text> rule <text> action <value>
×	not yet documented	policy.xml.in: policy access-list6 <access-list6> rule <rule> description	policy access-list6 <text> rule <text> description <value>
×	<i>set policy access-list6 &lt;text&gt; rule &lt;1-65535&gt; source &lt;any/exact-match/netw</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy.xml.in: policy access-list6 <access-list6> rule <rule> source any	policy access-list6 <text> rule <text> source any
×	not yet documented	policy.xml.in: policy access-list6 <access-list6> rule <rule> source exact-match	policy access-list6 <text> rule <text> source exact- match
×	not yet documented	policy.xml.in: policy access-list6 <access-list6> rule <rule> source network	policy access-list6 <text> rule <text> source network <value>
✓	<i>set policy access-list &lt;acl_number&gt; description &lt;text&gt;</i>	policy.xml.in: policy access-list <access- list> description	policy access-list <text> description <value>
×	<i>set policy access-list &lt;acl_number&gt; rule &lt;1-65535&gt; &lt;destination/source&gt; &lt;any/host/inverse-mas.</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set policy access-list &lt;acl_number&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</i>	policy.xml.in: policy access-list <access- list> rule <rule> action	policy access-list <text> rule <text> action <value>
×	not yet documented	policy.xml.in: policy access-list <access- list> rule <rule> descrip- tion	policy access-list <text> rule <text> description <value>
×	not yet documented	policy.xml.in: policy access-list <access- list> rule <rule> destina- tion any	policy access-list <text> rule <text> destination any
×	not yet documented	policy.xml.in: policy access-list <access- list> rule <rule> destina- tion host	policy access-list <text> rule <text> destination host <value>
×	not yet documented	policy.xml.in: policy access-list <access- list> rule <rule> destina- tion inverse-mask	policy access-list <text> rule <text> destination inverse-mask <value>
×	not yet documented	policy.xml.in: policy access-list <access- list> rule <rule> destina- tion network	policy access-list <text> rule <text> destination network <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy.xml.in: policy access-list <access-list> rule <rule> source any	policy access-list <text> rule <text> source any
×	not yet documented	policy.xml.in: policy access-list <access-list> rule <rule> source host host	policy access-list <text> rule <text> source host <value>
×	not yet documented	policy.xml.in: policy access-list <access-list> rule <rule> source inverse-mask	policy access-list <text> rule <text> source inverse-mask <value>
×	not yet documented	policy.xml.in: policy access-list <access-list> rule <rule> source network network	policy access-list <text> rule <text> source network <value>
×	<i>set policy as-path-list &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set policy as-path-list &lt;text&gt; description &lt;text&gt;</i>	policy.xml.in: policy as-path-list <as-path-list> description	policy as-path-list <text> description <value>
✓	<i>set policy as-path-list &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</i>	policy.xml.in: policy as-path-list <as-path-list> rule <rule> action	policy as-path-list <text> rule <text> action <value>
✓	<i>set policy as-path-list &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</i>	policy.xml.in: policy as-path-list <as-path-list> rule <rule> description	policy as-path-list <text> rule <text> description <value>
✓	<i>set policy as-path-list &lt;text&gt; rule &lt;1-65535&gt; regex &lt;text&gt;</i>	policy.xml.in: policy as-path-list <as-path-list> rule <rule> regex	policy as-path-list <text> rule <text> regex <value>
×	<i>set policy community-list &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set policy community-list &lt;text&gt; description &lt;text&gt;</i>	policy.xml.in: policy community-list <community-list> description	policy community-list <text> description <value>
✓	<i>set policy community-list &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</i>	policy.xml.in: policy community-list <community-list> rule <rule> action	policy community-list <text> rule <text> action <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy community-list &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</code>	policy.xml.in: policy community-list <community-list> rule <rule> description	policy community-list <text> rule <text> de- scription <value>
✓	<code>set policy community-list &lt;text&gt; rule &lt;1-65535&gt; regex &lt;aa:nn/local-AS/no-ad</code>	policy.xml.in: policy community-list <community-list> rule <rule> regex	policy community-list <text> rule <text> regex <value>
×	<code>set policy extcommunity-list &lt;text&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set policy extcommunity-list &lt;text&gt; description &lt;text&gt;</code>	policy.xml.in: policy extcommunity-list <extcommunity-list> description	policy extcommunity- list <text> description <value>
✓	<code>set policy extcommunity-list &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</code>	policy.xml.in: policy extcommunity-list <extcommunity-list> rule <rule> action	policy extcommunity-list <text> rule <text> action <value>
✓	<code>set policy extcommunity-list &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</code>	policy.xml.in: policy extcommunity-list <extcommunity-list> rule <rule> description	policy extcommunity-list <text> rule <text> descrip- tion <value>
✓	<code>set policy extcommunity-list &lt;text&gt; rule &lt;1-65535&gt; regex &lt;text&gt;</code>	policy.xml.in: policy extcommunity-list <extcommunity-list> rule <rule> regex	policy extcommunity-list <text> rule <text> regex <value>
×	<code>set policy large-community-list &lt;text&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set policy large-community-list &lt;text&gt; description &lt;text&gt;</code>	policy.xml.in: policy large-community- list <large-community- list> description	policy large-community- list <text> description <value>
✓	<code>set policy large-community-list &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</code>	policy.xml.in: policy large-community- list <large-community- list> rule <rule> action	policy large-community- list <text> rule <text> action <value>
✓	<code>set policy large-community-list &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</code>	policy.xml.in: policy large-community- list <large-community- list> rule <rule> descrip- tion	policy large-community- list <text> rule <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy large-community-list &lt;text&gt; rule &lt;1-65535&gt; regex &lt;aa:nn:nn&gt;</code>	policy.xml.in: policy large-community-list <large-community-list> rule <rule> regex	policy large-community-list <text> rule <text> regex <value>
×	<code>set policy local-route6 rule &lt;1-32765&gt; destination &lt;h:h:h:h:h:h:h:h   h:h:h:h:h:h:h:h/x&gt;</code>	Nothing found in XML Definitions	policy local-route6 rule <text> destination <value>
×	not yet documented	policy_local-route.xml.in: policy local-route6 rule <rule> destination address	Nothing found in VyOS
×	not yet documented	policy_local-route.xml.in: policy local-route6 rule <rule> destination port	Nothing found in VyOS
×	not yet documented	policy_local-route.xml.in: policy local-route6 rule <rule> fwmark	policy local-route6 rule <text> fwmark <value>
✓	<code>set policy local-route6 rule &lt;1-32765&gt; inbound-interface &lt;interface&gt;</code>	policy_local-route.xml.in: policy local-route6 rule <rule> inbound-interface	policy local-route6 rule <text> inbound-interface <value>
×	not yet documented	policy_local-route.xml.in: policy local-route6 rule <rule> protocol	Nothing found in VyOS
✓	<code>set policy local-route6 rule &lt;1-32765&gt; set table &lt;1-200/main&gt;</code>	policy_local-route.xml.in: policy local-route6 rule <rule> set table	policy local-route6 rule <text> set table <value>
×	<code>set policy local-route6 rule &lt;1-32765&gt; source &lt;h:h:h:h:h:h:h:h   h:h:h:h:h:h:h:h/x&gt;</code>	Nothing found in XML Definitions	policy local-route6 rule <text> source <value>
×	not yet documented	policy_local-route.xml.in: policy local-route6 rule <rule> source address	Nothing found in VyOS
×	not yet documented	policy_local-route.xml.in: policy local-route6 rule <rule> source port	Nothing found in VyOS
×	<code>set policy local-route rule &lt;1-32765&gt; destination &lt;x.x.x.x/x.x.x.x/x&gt;</code>	Nothing found in XML Definitions	policy local-route rule <text> destination <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy_local-route.xml.in: policy local-route rule <rule> destination address	Nothing found in VyOS
×	not yet documented	policy_local-route.xml.in: policy local-route rule <rule> destination port	Nothing found in VyOS
×	not yet documented	policy_local-route.xml.in: policy local-route rule <rule> fwmark	policy local-route rule <text> fwmark <value>
✓	<i>set policy local-route rule &lt;1-32765&gt; inbound-interface &lt;interface&gt;</i>	policy_local-route.xml.in: policy local-route rule <rule> inbound-interface	policy local-route rule <text> inbound-interface <value>
×	not yet documented	policy_local-route.xml.in: policy local-route rule <rule> protocol	Nothing found in VyOS
✓	<i>set policy local-route rule &lt;1-32765&gt; set table &lt;1-200/main&gt;</i>	policy_local-route.xml.in: policy local-route rule <rule> set table	policy local-route rule <text> set table <value>
×	<i>set policy local-route rule &lt;1-32765&gt; source &lt;x.x.x.x/x.x.x.x/x&gt;</i>	Nothing found in XML Definitions	policy local-route rule <text> source <value>
×	not yet documented	policy_local-route.xml.in: policy local-route rule <rule> source address	Nothing found in VyOS
×	not yet documented	policy_local-route.xml.in: policy local-route rule <rule> source port	Nothing found in VyOS
×	<i>set policy prefix-list &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set policy prefix-list6 &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set policy prefix-list6 &lt;text&gt; description &lt;text&gt;</i>	policy.xml.in: policy prefix-list6 <prefix-list6> description	policy prefix-list6 <text> description <value>
✓	<i>set policy prefix-list6 &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</i>	policy.xml.in: policy prefix-list6 <prefix-list6> rule <rule> action	policy prefix-list6 <text> rule <text> action <value>
✓	<i>set policy prefix-list6 &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</i>	policy.xml.in: policy prefix-list6 <prefix-list6> rule <rule> description	policy prefix-list6 <text> rule <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy prefix-list6 &lt;text&gt; rule &lt;1-65535&gt; ge &lt;0-128&gt;</code>	policy.xml.in: policy prefix-list6 <prefix-list6> rule <rule> ge	policy prefix-list6 <text> rule <text> ge <value>
✓	<code>set policy prefix-list6 &lt;text&gt; rule &lt;1-65535&gt; le &lt;0-128&gt;</code>	policy.xml.in: policy prefix-list6 <prefix-list6> rule <rule> le	policy prefix-list6 <text> rule <text> le <value>
✓	<code>set policy prefix-list6 &lt;text&gt; rule &lt;1-65535&gt; prefix &lt;h:h:h:h:h:h:h/x&gt;</code>	policy.xml.in: policy prefix-list6 <prefix-list6> rule <rule> prefix	policy prefix-list6 <text> rule <text> prefix <value>
✓	<code>set policy prefix-list &lt;text&gt; description &lt;text&gt;</code>	policy.xml.in: policy prefix-list <prefix-list> description	policy prefix-list <text> description <value>
✓	<code>set policy prefix-list &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</code>	policy.xml.in: policy prefix-list <prefix-list> rule <rule> action	policy prefix-list <text> rule <text> action <value>
✓	<code>set policy prefix-list &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</code>	policy.xml.in: policy prefix-list <prefix-list> rule <rule> description	policy prefix-list <text> rule <text> description <value>
✓	<code>set policy prefix-list &lt;text&gt; rule &lt;1-65535&gt; ge &lt;0-32&gt;</code>	policy.xml.in: policy prefix-list <prefix-list> rule <rule> ge	policy prefix-list <text> rule <text> ge <value>
✓	<code>set policy prefix-list &lt;text&gt; rule &lt;1-65535&gt; le &lt;0-32&gt;</code>	policy.xml.in: policy prefix-list <prefix-list> rule <rule> le	policy prefix-list <text> rule <text> le <value>
✓	<code>set policy prefix-list &lt;text&gt; rule &lt;1-65535&gt; prefix &lt;x.x.x.x/x&gt;</code>	policy.xml.in: policy prefix-list <prefix-list> rule <rule> prefix	policy prefix-list <text> rule <text> prefix <value>
×	<code>set policy route-map &lt;text&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set policy route-map &lt;text&gt; description &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> description	policy route-map <text> description <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; action &lt;permit/deny&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> action	policy route-map <text> rule <text> action <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; call &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> call	policy route-map <text> rule <text> call <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; continue &lt;1-65535&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> continue	policy route-map <text> rule <text> continue <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; description &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> description	policy route-map <text> rule <text> description <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match as-path &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match as-path	policy route-map <text> rule <text> match as-path <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match community community-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match community community-list	policy route-map <text> rule <text> match community community-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match community exact-match</code>	policy.xml.in: policy route-map <route-map> rule <rule> match community exact-match	policy route-map <text> rule <text> match community exact-match
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match evpn default-route	policy route-map <text> rule <text> match evpn default-route
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match evpn rd	policy route-map <text> rule <text> match evpn rd <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match evpn route-type	policy route-map <text> rule <text> match evpn route-type <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match evpn vni	policy route-map <text> rule <text> match evpn vni <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match extcommunity &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match extcommunity	policy route-map <text> rule <text> match extcommunity <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match interface &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match interface	policy route-map <text> rule <text> match interface <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip address access-list &lt;1-2699&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip address access-list	policy route-map <text> rule <text> match ip address access-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip address prefix-len &lt;0-32&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip address prefix-len	policy route-map <text> rule <text> match ip address prefix-len <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip address prefix-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip address prefix-list	policy route-map <text> rule <text> match ip address prefix-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip nexthop access-list &lt;1-2699&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip nexthop access-list	policy route-map <text> rule <text> match ip nexthop access-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip nexthop address &lt;x.x.x.x&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip nexthop address	policy route-map <text> rule <text> match ip nexthop address <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip nexthop prefix-len &lt;0-32&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip nexthop prefix-len	policy route-map <text> rule <text> match ip nexthop prefix-len <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip nexthop prefix-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip nexthop prefix-list	policy route-map <text> rule <text> match ip nexthop prefix-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip nexthop type &lt;blackhole&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip nexthop type	policy route-map <text> rule <text> match ip nexthop type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip route-source access-list &lt;1-2699&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip route-source access-list	policy route-map <text> rule <text> match ip route-source access-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ip route-source prefix-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ip route-source prefix-list	policy route-map <text> rule <text> match ip route-source prefix-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ipv6 address access-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 address access-list	policy route-map <text> rule <text> match ipv6 address access-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ipv6 address prefix-len &lt;0-128&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 address prefix-len	policy route-map <text> rule <text> match ipv6 address prefix-len <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ipv6 address prefix-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 address prefix-list	policy route-map <text> rule <text> match ipv6 address prefix-list <value>
×	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match ipv6 nexthop &lt;h:h:h:h:h:h:h:h&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 nexthop access-list	policy route-map <text> rule <text> match ipv6 nexthop access-list <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 nexthop address	policy route-map <text> rule <text> match ipv6 nexthop address <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 nexthop prefix-list	policy route-map <text> rule <text> match ipv6 nexthop prefix-list <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> match ipv6 nexthop type	policy route-map <text> rule <text> match ipv6 nexthop type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match large-community large-community-list &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match large-community large-community-list	policy route-map <text> rule <text> match large-community large-community-list <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match local-preference &lt;0-4294967295&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match local-preference	policy route-map <text> rule <text> match local-preference <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match metric &lt;1-65535&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match metric	policy route-map <text> rule <text> match metric <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match origin &lt;egp/igp/incomplete&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match origin	policy route-map <text> rule <text> match origin <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match peer &lt;x.x.x.x&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match peer	policy route-map <text> rule <text> match peer <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match protocol &lt;protocol&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match protocol	policy route-map <text> rule <text> match protocol <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match rpki &lt;invalid/notfound/valid&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match rpki	policy route-map <text> rule <text> match rpki <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; match tag &lt;1-65535&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> match tag	policy route-map <text> rule <text> match tag <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; on-match goto &lt;1-65535&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> on-match goto	policy route-map <text> rule <text> on-match goto <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; on-match next</code>	policy.xml.in: policy route-map <route-map> rule <rule> on-match next	policy route-map <text> rule <text> on-match next

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set policy route-map</code> <code>&lt;text&gt; rule</code> <code>&lt;1-65535&gt; set</code> <code>aggregator &lt;as/ip&gt;</code> <code>&lt;1-4294967295/x.x.x.</code> <code>x&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set aggregator as	policy route-map <text> rule <text> set aggregator as <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set aggregator ip	policy route-map <text> rule <text> set aggregator ip <value>
✓	<code>set policy route-map</code> <code>&lt;text&gt; rule</code> <code>&lt;1-65535&gt; set</code> <code>as-path exclude</code> <code>&lt;1-4294967295  </code> <code>all&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set as-path exclude	policy route-map <text> rule <text> set as-path exclude <value>
✓	<code>set policy route-map</code> <code>&lt;text&gt; rule</code> <code>&lt;1-65535&gt; set</code> <code>as-path prepend</code> <code>&lt;1-4294967295&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set as-path prepend	policy route-map <text> rule <text> set as-path prepend <value>
✓	<code>set policy</code> <code>route-map &lt;text&gt;</code> <code>rule &lt;1-65535&gt;</code> <code>set as-path</code> <code>prepend-last-as</code> <code>&lt;n&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set as-path prepend-last-as	policy route-map <text> rule <text> set as-path prepend-last-as <value>
✓	<code>set policy route-map</code> <code>&lt;text&gt; rule</code> <code>&lt;1-65535&gt; set</code> <code>atomic-aggregate</code>	policy.xml.in: policy route-map <route-map> rule <rule> set atomic-aggregate	policy route-map <text> rule <text> set atomic-aggregate
×	<code>set policy</code> <code>route-map &lt;text&gt;</code> <code>rule &lt;1-65535&gt;</code> <code>set community</code> <code>&lt;add/replace&gt;</code> <code>&lt;community&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set community add	policy route-map <text> rule <text> set community add <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>community delete</i> <text>	policy.xml.in: policy route-map <route- map> rule <rule> set com- munity delete	policy route-map <text> rule <text> set community delete <value>
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>community none</i>	policy.xml.in: policy route-map <route- map> rule <rule> set com- munity none	policy route-map <text> rule <text> set community none
×	not yet documented	policy.xml.in: policy route-map <route- map> rule <rule> set com- munity replace	policy route-map <text> rule <text> set community replace <value>
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>distance &lt;0-255&gt;</i>	policy.xml.in: policy route-map <route- map> rule <rule> set dis- tance	policy route-map <text> rule <text> set distance <value>
×	not yet documented	policy.xml.in: policy route-map <route- map> rule <rule> set evpn gateway ipv4	policy route-map <text> rule <text> set evpn gate- way ipv4 <value>
×	not yet documented	policy.xml.in: policy route-map <route- map> rule <rule> set evpn gateway ipv6	policy route-map <text> rule <text> set evpn gate- way ipv6 <value>
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>extcommunity bandwidth</i> <1-25600 cumulative n	policy.xml.in: policy route-map <route- map> rule <rule> set extcommunity bandwidth	policy route-map <text> rule <text> set extcommu- nity bandwidth <value>
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>extcommunity bandwidth-non-transit</i>	policy.xml.in: policy route-map <route- map> rule <rule> set extcommunity bandwidth- non-transitive	policy route-map <text> rule <text> set extcom- munity bandwidth-non- transitive
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>extcommunity none</i>	policy.xml.in: policy route-map <route- map> rule <rule> set extcommunity none	policy route-map <text> rule <text> set extcommu- nity none
✓	<i>set policy route-map</i> <text> rule <1-65535> set <i>extcommunity rt</i> <text>	policy.xml.in: policy route-map <route- map> rule <rule> set extcommunity rt	policy route-map <text> rule <text> set extcommu- nity rt <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set extcommunity soo &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set extcommunity soo	policy route-map <text> rule <text> set extcommunity soo <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set ip-next-hop &lt;x.x.x.x&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set ip-next-hop	policy route-map <text> rule <text> set ip-next-hop <value>
×	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set ip-next-hop peer-address</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set ip-next-hop unchanged</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set ipv6-next-hop &lt;global/local&gt; &lt;h:h:h:h:h:h:h:h&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set ipv6-next-hop global	policy route-map <text> rule <text> set ipv6-next-hop global <value>
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set ipv6-next-hop local	policy route-map <text> rule <text> set ipv6-next-hop local <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set ipv6-next-hop peer-address</code>	policy.xml.in: policy route-map <route-map> rule <rule> set ipv6-next-hop peer-address	policy route-map <text> rule <text> set ipv6-next-hop peer-address
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set ipv6-next-hop prefer-global</code>	policy.xml.in: policy route-map <route-map> rule <rule> set ipv6-next-hop prefer-global	policy route-map <text> rule <text> set ipv6-next-hop prefer-global
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set l3vpn-next-hop encapsulation gre	policy route-map <text> rule <text> set l3vpn-next-hop encapsulation gre

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set large-community &lt;add/replace&gt; &lt;GA:LDP1:LDP2&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set large-community add	policy route-map <text> rule <text> set large-community add <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set large-community delete &lt;text&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set large-community delete	policy route-map <text> rule <text> set large-community delete <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set large-community none</code>	policy.xml.in: policy route-map <route-map> rule <rule> set large-community none	policy route-map <text> rule <text> set large-community none
×	not yet documented	policy.xml.in: policy route-map <route-map> rule <rule> set large-community replace	policy route-map <text> rule <text> set large-community replace <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set local-preference &lt;0-4294967295&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set local-preference	policy route-map <text> rule <text> set local-preference <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set metric &lt;+/-metric 0-4294967295 </code>	policy.xml.in: policy route-map <route-map> rule <rule> set metric	policy route-map <text> rule <text> set metric <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set metric-type &lt;type-1/type-2&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set metric-type	policy route-map <text> rule <text> set metric-type <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set origin &lt;igp/egp/incomplete&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set origin	policy route-map <text> rule <text> set origin <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set originator-id &lt;x.x.x.x&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set originator-id	policy route-map <text> rule <text> set originator-id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set src &lt;x.x.x.x/h:h:h:h:h:h:h:h&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set src	policy route-map <text> rule <text> set src <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set table &lt;1-200&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set table	policy route-map <text> rule <text> set table <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set tag &lt;1-65535&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set tag	policy route-map <text> rule <text> set tag <value>
✓	<code>set policy route-map &lt;text&gt; rule &lt;1-65535&gt; set weight &lt;0-4294967295&gt;</code>	policy.xml.in: policy route-map <route-map> rule <rule> set weight	policy route-map <text> rule <text> set weight <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> default-log	Nothing found in VyOS
✓	<code>set policy route6 &lt;name&gt; description &lt;text&gt;</code>	policy_route.xml.in: policy route6 <route6> description	policy route6 <text> description <value>
×	<code>set policy route6 &lt;name&gt; enable-default-log</code>	Nothing found in XML Definitions	policy route6 <text> enable-default-log
×	not yet documented	policy_route.xml.in: policy route6 <route6> interface	policy route6 <text> interface <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> action	policy route6 <text> rule <text> action <value>
×	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; action drop</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; connection-mark &lt;1-2147483647&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> connection-mark	policy route6 <text> rule <text> connection-mark <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; description &lt;text&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> description	policy route6 <text> rule <text> description <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; destination address &lt;match_criteria&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> destination address	policy route6 <text> rule <text> destination address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>destination group</i> <i>&lt;address-group/domain</i> <i>&lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> destination group address-group	policy route6 <text> rule <text> destination group address-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> destination group domain-group	policy route6 <text> rule <text> destination group domain-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> destination group mac-group	policy route6 <text> rule <text> destination group mac-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> destination group network-group	policy route6 <text> rule <text> destination group network-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> destination group port-group	policy route6 <text> rule <text> destination group port-group <value>
✓	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>destination port</i> <i>&lt;match_criteria&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> destination port	policy route6 <text> rule <text> destination port <value>
✓	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>disable</i>	policy_route.xml.in: policy route6 <route6> rule <rule> disable	policy route6 <text> rule <text> disable
✓	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt; dscp</i> <i>&lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> dscp	policy route6 <text> rule <text> dscp <value>
✓	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>dscp-exclude &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> dscp-exclude	policy route6 <text> rule <text> dscp-exclude <value>
×	<i>set policy route6</i> <i>&lt;name&gt; rule</i> <i>&lt;n&gt; fragment</i> <i>&lt;match-grag/match-non</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> fragment match-frag	policy route6 <text> rule <text> fragment match- frag

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> fragment match-non-frag	policy route6 <text> rule <text> fragment match- non-frag
×	<i>set policy route6 rule &lt;n&gt; hop-limit &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> hop-limit eq	policy route6 <text> rule <text> hop-limit eq <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> hop-limit gt	policy route6 <text> rule <text> hop-limit gt <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> hop-limit lt	policy route6 <text> rule <text> hop-limit lt <value>
×	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; icmpv6 &lt;code   type&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> icmpv6 type	policy route6 <text> rule <text> icmpv6 type <value>
×	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; icmpv6 type-name &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; ipsec &lt;match-ipsec/match-no.</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> ipsec match- ipsec	policy route6 <text> rule <text> ipsec match-ipsec
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> ipsec match- none	policy route6 <text> rule <text> ipsec match-none
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; limit burst &lt;0-4294967295&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> limit burst	policy route6 <text> rule <text> limit burst <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; limit rate &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> limit rate	policy route6 <text> rule <text> limit rate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; log &lt;enable/disable&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> log	policy route6 <text> rule <text> log <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> mark	Nothing found in VyOS
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; packet-length &lt;text&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> packet-length	policy route6 <text> rule <text> packet-length <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; packet-length-exclude &lt;text&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> packet-length- exclude	policy route6 <text> rule <text> packet-length- exclude <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; packet-type [broadcast   host   multicast   other]</code>	policy_route.xml.in: policy route6 <route6> rule <rule> packet-type	policy route6 <text> rule <text> packet-type <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; protocol &lt;text   0-255   tcp_udp   all &gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> protocol	policy route6 <text> rule <text> protocol <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; recent count &lt;1-255&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> recent count	policy route6 <text> rule <text> recent count <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; recent time &lt;1-4294967295&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> recent time	policy route6 <text> rule <text> recent time <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; set connection-mark &lt;1-2147483647&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> set connection-mark	policy route6 <text> rule <text> set connection- mark <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; set dscp &lt;0-63&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> set dscp	policy route6 <text> rule <text> set dscp <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; set mark &lt;1-2147483647&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> set mark	policy route6 <text> rule <text> set mark <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; set table &lt;main   1-200&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> set table	policy route6 <text> rule <text> set table <value>
✓	<code>set policy route6 &lt;name&gt; rule &lt;n&gt; set tcp-mss &lt;500-1460&gt;</code>	policy_route.xml.in: policy route6 <route6> rule <rule> set tcp-mss	policy route6 <text> rule <text> set tcp-mss <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>source address</i> <i>&lt;match_criteria&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> source address	policy route6 <text> rule <text> source address <value>
×	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>source group</i> <i>&lt;address-group/domain</i> <i>&lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source group address-group	policy route6 <text> rule <text> source group address-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source group domain-group	policy route6 <text> rule <text> source group domain-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source group mac-group	policy route6 <text> rule <text> source group mac- group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source group network-group	policy route6 <text> rule <text> source group network-group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source group port-group	policy route6 <text> rule <text> source group port- group <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source mac- address	policy route6 <text> rule <text> source mac-address <value>
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> source port	policy route6 <text> rule <text> source port <value>
×	<i>set policy route6</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>state &lt;established</i> <i>  invalid   new  </i> <i>related&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	policy route6 <text> rule <text> state established <value>
×	not yet documented	Nothing found in XML Definitions	policy route6 <text> rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	policy route6 <text> rule <text> state new <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	policy route6 <text> rule <text> state related <value>
×	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; tcp flags &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags ack	policy route6 <text> rule <text> tcp flags ack
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags cwr	policy route6 <text> rule <text> tcp flags cwr
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags ecn	policy route6 <text> rule <text> tcp flags ecn
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags fin	policy route6 <text> rule <text> tcp flags fin
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not ack	policy route6 <text> rule <text> tcp flags not ack
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not cwr	policy route6 <text> rule <text> tcp flags not cwr
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not ecn	policy route6 <text> rule <text> tcp flags not ecn
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not fin	policy route6 <text> rule <text> tcp flags not fin
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not psh	policy route6 <text> rule <text> tcp flags not psh
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not rst	policy route6 <text> rule <text> tcp flags not rst
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not syn	policy route6 <text> rule <text> tcp flags not syn

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags not urg	policy route6 <text> rule <text> tcp flags not urg
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags psh	policy route6 <text> rule <text> tcp flags psh
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags rst	policy route6 <text> rule <text> tcp flags rst
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags syn	policy route6 <text> rule <text> tcp flags syn
×	not yet documented	policy_route.xml.in: policy route6 <route6> rule <rule> tcp flags urg	policy route6 <text> rule <text> tcp flags urg
×	not yet documented	Nothing found in XML Definitions	policy route6 <text> rule <text> tcp mss <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time monthdays &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time month- days	policy route6 <text> rule <text> time monthdays <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time startdate &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time startdate	policy route6 <text> rule <text> time startdate <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time starttime &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time starttime	policy route6 <text> rule <text> time starttime <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time stopdate &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time stopdate	policy route6 <text> rule <text> time stopdate <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time stoptime &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time stoptime	policy route6 <text> rule <text> time stoptime <value>
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time utc</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time utc	policy route6 <text> rule <text> time utc
✓	<i>set policy route6 &lt;name&gt; rule &lt;n&gt; time weekdays &lt;text&gt;</i>	policy_route.xml.in: policy route6 <route6> rule <rule> time weekdays	policy route6 <text> rule <text> time weekdays <value>
×	not yet documented	policy_route.xml.in: policy route <route> default-log	Nothing found in VyOS
✓	<i>set policy route &lt;name&gt; description &lt;text&gt;</i>	policy_route.xml.in: policy route <route> de- scription	policy route <text> de- scription <value>
×	<i>set policy route &lt;name&gt; enable-default-log</i>	Nothing found in XML Definitions	policy route <text> enable-default-log

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy_route.xml.in: policy route <route> inter- face	policy route <text> inter- face <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> action	policy route <text> rule <text> action <value>
×	<i>set policy route &lt;name&gt; rule &lt;n&gt; action drop</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; connection-mark &lt;1-2147483647&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> connection-mark	policy route <text> rule <text> connection-mark <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; description &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> description	policy route <text> rule <text> description <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; destination address &lt;match_criteria&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> destination address	policy route <text> rule <text> destination address <value>
×	<i>set policy route &lt;name&gt; rule &lt;n&gt; destination group &lt;address-group/domain &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> destination group address-group	policy route <text> rule <text> destination group address-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> destination group domain-group	policy route <text> rule <text> destination group domain-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> destination group mac-group	policy route <text> rule <text> destination group mac-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> destination group network-group	policy route <text> rule <text> destination group network-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> destination group port-group	policy route <text> rule <text> destination group port-group <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; destination port &lt;match_criteria&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> destination port	policy route <text> rule <text> destination port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>disable</i>	policy_route.xml.in: policy route <route> rule <rule> disable	policy route <text> rule <text> disable
✓	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt; dscp</i> <i>&lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> dscp	policy route <text> rule <text> dscp <value>
✓	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>dscp-exclude &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> dscp-exclude	policy route <text> rule <text> dscp-exclude <value>
×	<i>set policy route</i> <i>&lt;name&gt; rule</i> <i>&lt;n&gt; fragment</i> <i>&lt;match-grag/match-non</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> fragment match- frag	policy route <text> rule <text> fragment match- frag
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> fragment match- non-frag	policy route <text> rule <text> fragment match- non-frag
×	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt; icmp</i> <i>&lt;code   type&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> icmp code	policy route <text> rule <text> icmp code <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> icmp type	policy route <text> rule <text> icmp type <value>
✓	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt; icmp</i> <i>type-name &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> icmp type-name	policy route <text> rule <text> icmp type-name <value>
×	<i>set policy</i> <i>route &lt;name&gt;</i> <i>rule &lt;n&gt; ipsec</i> <i>&lt;match-ipsec/match-no</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> ipsec match-ipsec	policy route <text> rule <text> ipsec match-ipsec
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> ipsec match-none	policy route <text> rule <text> ipsec match-none
✓	<i>set policy route</i> <i>&lt;name&gt; rule</i> <i>&lt;n&gt; limit burst</i> <i>&lt;0-4294967295&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> limit burst	policy route <text> rule <text> limit burst <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; limit rate &lt;text&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> limit rate	policy route <text> rule <text> limit rate <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; log &lt;enable/disable&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> log	policy route <text> rule <text> log <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> mark	Nothing found in VyOS
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; packet-length &lt;text&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> packet-length	policy route <text> rule <text> packet-length <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; packet-length-exclude &lt;text&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> packet-length-exclude	policy route <text> rule <text> packet-length-exclude <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; packet-type [broadcast   host   multicast   other]</code>	policy_route.xml.in: policy route <route> rule <rule> packet-type	policy route <text> rule <text> packet-type <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; protocol &lt;text   0-255   tcp_udp   all &gt;</code>	policy_route.xml.in: policy route <route> rule <rule> protocol	policy route <text> rule <text> protocol <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; recent count &lt;1-255&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> recent count	policy route <text> rule <text> recent count <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; recent time &lt;1-4294967295&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> recent time	policy route <text> rule <text> recent time <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; set connection-mark &lt;1-2147483647&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> set connection-mark	policy route <text> rule <text> set connection-mark <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; set dscp &lt;0-63&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> set dscp	policy route <text> rule <text> set dscp <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; set mark &lt;1-2147483647&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> set mark	policy route <text> rule <text> set mark <value>
✓	<code>set policy route &lt;name&gt; rule &lt;n&gt; set table &lt;main   1-200&gt;</code>	policy_route.xml.in: policy route <route> rule <rule> set table	policy route <text> rule <text> set table <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt; set</i> <i>tcp-mss &lt;500-1460&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> set tcp-mss	policy route <text> rule <text> set tcp-mss <value>
✓	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>source address</i> <i>&lt;match_criteria&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> source address	policy route <text> rule <text> source address <value>
×	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>source group</i> <i>&lt;address-group/domain</i> <i>&lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source group address-group	policy route <text> rule <text> source group address-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source group domain-group	policy route <text> rule <text> source group domain-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source group mac- group	policy route <text> rule <text> source group mac- group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source group network-group	policy route <text> rule <text> source group network-group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source group port- group	policy route <text> rule <text> source group port- group <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source mac- address	policy route <text> rule <text> source mac-address <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> source port	policy route <text> rule <text> source port <value>
×	<i>set policy route</i> <i>&lt;name&gt; rule &lt;n&gt;</i> <i>state &lt;established</i> <i>  invalid   new  </i> <i>related&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> state	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	policy route <text> rule <text> state established <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	policy route <text> rule <text> state invalid <value>
×	not yet documented	Nothing found in XML Definitions	policy route <text> rule <text> state new <value>
×	not yet documented	Nothing found in XML Definitions	policy route <text> rule <text> state related <value>
×	<i>set policy route &lt;name&gt; rule &lt;n&gt; tcp flags &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags ack	policy route <text> rule <text> tcp flags ack
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags cwr	policy route <text> rule <text> tcp flags cwr
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags ecn	policy route <text> rule <text> tcp flags ecn
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags fin	policy route <text> rule <text> tcp flags fin
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not ack	policy route <text> rule <text> tcp flags not ack
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not cwr	policy route <text> rule <text> tcp flags not cwr
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not ecn	policy route <text> rule <text> tcp flags not ecn
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not fin	policy route <text> rule <text> tcp flags not fin
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not psh	policy route <text> rule <text> tcp flags not psh
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not rst	policy route <text> rule <text> tcp flags not rst
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not syn	policy route <text> rule <text> tcp flags not syn
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags not urg	policy route <text> rule <text> tcp flags not urg

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags psh	policy route <text> rule <text> tcp flags psh
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags rst	policy route <text> rule <text> tcp flags rst
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags syn	policy route <text> rule <text> tcp flags syn
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> tcp flags urg	policy route <text> rule <text> tcp flags urg
×	not yet documented	Nothing found in XML Definitions	policy route <text> rule <text> tcp mss <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time monthdays &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> time monthdays	policy route <text> rule <text> time monthdays <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time startdate &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> time startdate	policy route <text> rule <text> time startdate <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time starttime &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> time starttime	policy route <text> rule <text> time starttime <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time stopdate &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> time stopdate	policy route <text> rule <text> time stopdate <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time stoptime &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> time stoptime	policy route <text> rule <text> time stoptime <value>
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time utc</i>	policy_route.xml.in: policy route <route> rule <rule> time utc	policy route <text> rule <text> time utc
✓	<i>set policy route &lt;name&gt; rule &lt;n&gt; time weekdays &lt;text&gt;</i>	policy_route.xml.in: policy route <route> rule <rule> time weekdays	policy route <text> rule <text> time weekdays <value>
×	<i>set policy route rule &lt;n&gt; ttl &lt;eq   gt   lt&gt; &lt;0-255&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> ttl eq	policy route <text> rule <text> ttl eq <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> ttl gt	policy route <text> rule <text> ttl gt <value>
×	not yet documented	policy_route.xml.in: policy route <route> rule <rule> ttl lt	policy route <text> rule <text> ttl lt <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set protocols babel distribute-list &lt;ipv4/ipv6&gt; access-list &lt;in/out&gt; &lt;number&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set protocols babel distribute-list &lt;ipv4/ipv6&gt; interface &lt;interface&gt; access-list &lt;in/out&gt; &lt;number&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set protocols babel distribute-list &lt;ipv4/ipv6&gt; interface &lt;interface&gt; prefix-list &lt;in/out&gt; &lt;name&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 access-list in	protocols babel distribute-list ipv4 access-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 access-list out	protocols babel distribute-list ipv4 access-list out <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 interface <interface> access-list in	protocols babel distribute-list ipv4 interface <text> access-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 interface <interface> access-list out	protocols babel distribute-list ipv4 interface <text> access-list out <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 interface <interface> prefix-list in	protocols babel distribute-list ipv4 interface <text> prefix-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 interface <interface> prefix-list out	protocols babel distribute-list ipv4 interface <text> prefix-list out <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 prefix-list in	protocols babel distribute-list ipv4 prefix-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute-list ipv4 prefix-list out	protocols babel distribute-list ipv4 prefix-list out <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 access-list in	protocols babel distribute- list ipv6 access-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 access-list out	protocols babel distribute- list ipv6 access-list out <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 interface <inter- face> access-list in	protocols babel distribute- list ipv6 interface <text> access-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 interface <inter- face> access-list out	protocols babel distribute- list ipv6 interface <text> access-list out <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 interface <inter- face> prefix-list in	protocols babel distribute- list ipv6 interface <text> prefix-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 interface <inter- face> prefix-list out	protocols babel distribute- list ipv6 interface <text> prefix-list out <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 prefix-list in	protocols babel distribute- list ipv6 prefix-list in <value>
×	not yet documented	protocols_babel.xml.in: protocols babel distribute- list ipv6 prefix-list out	protocols babel distribute- list ipv6 prefix-list out <value>
×	<i>set protocols babel distribute-list &lt;ipv4/ipv6&gt; prefix-list &lt;in/out&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols babel interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols babel interface &lt;interface&gt; channel &lt;1-254/interfering/no.</i>	protocols_babel.xml.in: protocols babel interface <interface> channel	protocols babel interface <text> channel <value>
✓	<i>set protocols babel interface &lt;interface&gt; enable-timestamps</i>	protocols_babel.xml.in: protocols babel interface <interface> enable- timestamps	protocols babel interface <text> enable-timestamps
✓	<i>set protocols babel interface &lt;interface&gt; hello-interval &lt;milliseconds&gt;</i>	protocols_babel.xml.in: protocols babel interface <interface> hello-interval	protocols babel interface <text> hello-interval <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set protocols babel interface &lt;interface&gt; max-rtt-penalty &lt;milliseconds&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> max-rtt- penalty	protocols babel interface <text> max-rtt-penalty <value>
✓	<code>set protocols babel interface &lt;interface&gt; rtt-decay &lt;1-256&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> rtt-decay	protocols babel interface <text> rtt-decay <value>
✓	<code>set protocols babel interface &lt;interface&gt; rtt-max &lt;milliseconds&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> rtt-max	protocols babel interface <text> rtt-max <value>
✓	<code>set protocols babel interface &lt;interface&gt; rtt-min &lt;milliseconds&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> rtt-min	protocols babel interface <text> rtt-min <value>
✓	<code>set protocols babel interface &lt;interface&gt; rxcost &lt;1-65534&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> rxcost	protocols babel interface <text> rxcost <value>
✓	<code>set protocols babel interface &lt;interface&gt; split-horizon &lt;default/disable/enab</code>	protocols_babel.xml.in: protocols babel interface <interface> split-horizon	protocols babel inter- face <text> split-horizon <value>
✓	<code>set protocols babel interface &lt;interface&gt; type &lt;auto/wired/wireless&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> type	protocols babel interface <text> type <value>
✓	<code>set protocols babel interface &lt;interface&gt; update-interval &lt;milliseconds&gt;</code>	protocols_babel.xml.in: protocols babel interface <interface> update- interval	protocols babel interface <text> update-interval <value>
✓	<code>set protocols babel parameters diversity</code>	protocols_babel.xml.in: protocols babel paramete- rs diversity	protocols babel paramete- rs diversity
✓	<code>set protocols babel parameters diversity-factor &lt;1-256&gt;</code>	protocols_babel.xml.in: protocols babel paramete- rs diversity-factor	protocols babel param- eters diversity-factor <value>
✓	<code>set protocols babel parameters resend-delay &lt;milliseconds&gt;</code>	protocols_babel.xml.in: protocols babel paramete- rs resend-delay	protocols babel paramete- rs resend-delay <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols babel parameters smoothing-half-life &lt;seconds&gt;</i>	protocols_babel.xml.in: protocols babel parameters smoothing-half-life	protocols babel parameters smoothing-half-life <value>
×	<i>set protocols babel redistribute &lt;ipv4/ipv6&gt; &lt;route source&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 bgp	protocols babel redistribute ipv4 bgp
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 connected	protocols babel redistribute ipv4 connected
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 eigrp	protocols babel redistribute ipv4 eigrp
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 isis	protocols babel redistribute ipv4 isis
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 kernel	protocols babel redistribute ipv4 kernel
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 nhrp	protocols babel redistribute ipv4 nhrp
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 ospf	protocols babel redistribute ipv4 ospf
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 rip	protocols babel redistribute ipv4 rip
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv4 static	protocols babel redistribute ipv4 static
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv6 bgp	protocols babel redistribute ipv6 bgp
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv6 connected	protocols babel redistribute ipv6 connected
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv6 isis	protocols babel redistribute ipv6 isis
×	not yet documented	protocols_babel.xml.in: protocols babel redistribute ipv6 kernel	protocols babel redistribute ipv6 kernel

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_babel.xml.in: protocols babel redis- tribute ipv6 nhrp	protocols babel redis- tribute ipv6 nhrp
×	not yet documented	protocols_babel.xml.in: protocols babel redis- tribute ipv6 ospfv3	protocols babel redis- tribute ipv6 ospfv3
×	not yet documented	protocols_babel.xml.in: protocols babel redis- tribute ipv6 ripng	protocols babel redis- tribute ipv6 ripng
×	not yet documented	protocols_babel.xml.in: protocols babel redis- tribute ipv6 static	protocols babel redis- tribute ipv6 static
×	<i>set protocols bfd peer &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols bfd peer &lt;address&gt; echo-mode</i>	protocols_bfd.xml.in: protocols bfd peer <peer> echo-mode	protocols bfd peer <text> echo-mode
×	<i>set protocols bfd peer &lt;address&gt; interval [receive / transmit] &lt;10-60000&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols bfd peer &lt;address&gt; interval echo-interval &lt;10-60000&gt;</i>	protocols_bfd.xml.in: protocols bfd peer <peer> interval echo-interval	protocols bfd peer <text> interval echo-interval <value>
✓	<i>set protocols bfd peer &lt;address&gt; interval multiplier &lt;2-255&gt;</i>	protocols_bfd.xml.in: protocols bfd peer <peer> interval multiplier	protocols bfd peer <text> interval multi- plier <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> interval receive	protocols bfd peer <text> interval receive <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> interval transmit	protocols bfd peer <text> interval transmit <value>
×	<i>set protocols bfd peer &lt;address&gt; minimum-ttl &lt;1-254&gt;</i>	protocols_bfd.xml.in: protocols bfd peer <peer> minimum-ttl	Nothing found in VyOS
✓	<i>set protocols bfd peer &lt;address&gt; multihop</i>	protocols_bfd.xml.in: protocols bfd peer <peer> multihop	protocols bfd peer <text> multihop
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> passive	protocols bfd peer <text> passive
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> profile	protocols bfd peer <text> profile <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols bfd peer &lt;address&gt; shutdown</i>	protocols_bfd.xml.in: protocols bfd peer <peer> shutdown	protocols bfd peer <text> shutdown
×	<i>set protocols bfd peer &lt;address&gt; source [address &lt;address&gt;   interface &lt;interface&gt;]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> source address	protocols bfd peer <text> source address <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> source interface	protocols bfd peer <text> source interface <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd peer <peer> vrf	protocols bfd peer <text> vrf <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> echo-mode	protocols bfd profile <text> echo-mode
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> interval echo-interval	protocols bfd profile <text> interval echo-interval <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> interval multiplier	protocols bfd profile <text> interval multiplier <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> interval receive	protocols bfd profile <text> interval receive <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> interval transmit	protocols bfd profile <text> interval transmit <value>
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> minimum-ttl	Nothing found in VyOS
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> passive	protocols bfd profile <text> passive
×	not yet documented	protocols_bfd.xml.in: protocols bfd profile <profile> shutdown	protocols bfd profile <text> shutdown
×	<i>set protocols bgp address-family &lt;ipv4-unicast / ipv6-unaggregate-address &lt;prefix&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-un aggregate-address &lt;prefix&gt; as-set</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-un aggregate-address &lt;prefix&gt; summary-only</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-flowspec local-install interface	protocols bgp address-family ipv4-flowspec local-install interface <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast aggregate-address <aggregate-address> as-set	protocols bgp address-family ipv4-labeled-unicast aggregate-address <text> as-set
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast aggregate-address <aggregate-address> route-map	protocols bgp address-family ipv4-labeled-unicast aggregate-address <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast aggregate-address <aggregate-address> summary-only	protocols bgp address-family ipv4-labeled-unicast aggregate-address <text> summary-only
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast maximum-paths ebgp	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast maximum-paths ibgp	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast network <network> backdoor	protocols bgp address-family ipv4-labeled-unicast network <text> backdoor

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-labeled-unicast network <network> route-map	protocols bgp address-family ipv4-labeled-unicast network <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast aggregate-address <aggregate-address> as-set	protocols bgp address-family ipv4-multicast aggregate-address <text> as-set
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast aggregate-address <aggregate-address> route-map	protocols bgp address-family ipv4-multicast aggregate-address <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast aggregate-address <aggregate-address> summary-only	protocols bgp address-family ipv4-multicast aggregate-address <text> summary-only
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast distance external	protocols bgp address-family ipv4-multicast distance external <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast distance internal	protocols bgp address-family ipv4-multicast distance internal <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast distance local	protocols bgp address-family ipv4-multicast distance local <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast distance prefix <prefix> distance	protocols bgp address-family ipv4-multicast distance prefix <text> distance <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast network <network> backdoor	protocols bgp address-family ipv4-multicast network <text> backdoor

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-multicast network <network> route-map	protocols bgp address-family ipv4-multicast network <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast aggregate-address <aggregate-address> as-set	protocols bgp address-family ipv4-unicast aggregate-address <text> as-set
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast aggregate-address <aggregate-address> route-map	protocols bgp address-family ipv4-unicast aggregate-address <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast aggregate-address <aggregate-address> summary-only	protocols bgp address-family ipv4-unicast aggregate-address <text> summary-only
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast distance external	protocols bgp address-family ipv4-unicast distance external <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast distance internal	protocols bgp address-family ipv4-unicast distance internal <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast distance local	protocols bgp address-family ipv4-unicast distance local <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast distance prefix <prefix> distance	protocols bgp address-family ipv4-unicast distance prefix <text> distance <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast export vpn	protocols bgp address-family ipv4-unicast export vpn
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast import vpn	protocols bgp address-family ipv4-unicast import vpn

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast import vrf	protocols bgp address-family ipv4-unicast import vrf <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast label vpn allocation-mode per-nexthop	protocols bgp address-family ipv4-unicast label vpn allocation-mode per-nexthop
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast label vpn export	protocols bgp address-family ipv4-unicast label vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast maximum-paths ebgp	protocols bgp address-family ipv4-unicast maximum-paths ebgp <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast maximum-paths ibgp	protocols bgp address-family ipv4-unicast maximum-paths ibgp <value>
✓	<i>set protocols bgp address-family ipv4-unicast network &lt;prefix&gt; backdoor</i>	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast network <network> backdoor	protocols bgp address-family ipv4-unicast network <text> backdoor
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast network <network> route-map	protocols bgp address-family ipv4-unicast network <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast nexthop vpn export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast rd vpn export	protocols bgp address-family ipv4-unicast rd vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast redistribute babel metric	protocols bgp address-family ipv4-unicast redistribute babel metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast redistribute babel route-map	protocols bgp address-family ipv4-unicast redistribute babel route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute connected metric	protocols bgp address- family ipv4-unicast redistribute connected metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute connected route-map	protocols bgp address- family ipv4-unicast redistribute connected route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute isis metric	protocols bgp address- family ipv4-unicast redistribute isis metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute isis route-map	protocols bgp address- family ipv4-unicast redistribute isis route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute kernel metric	protocols bgp address- family ipv4-unicast redistribute kernel metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute kernel route- map	protocols bgp address- family ipv4-unicast redis- tribute kernel route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute ospf metric	protocols bgp address- family ipv4-unicast redistribute ospf metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute ospf route- map	protocols bgp address- family ipv4-unicast re- distribute ospf route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute rip metric	protocols bgp address- family ipv4-unicast redistribute rip metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute rip route-map	protocols bgp address- family ipv4-unicast redistribute rip route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address- family ipv4-unicast redistribute static metric	protocols bgp address- family ipv4-unicast redistribute static metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast redistribute static route-map	protocols bgp address-family ipv4-unicast redistribute static route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast redistribute table	protocols bgp address-family ipv4-unicast redistribute table <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast route-map vpn export	protocols bgp address-family ipv4-unicast route-map vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast route-map vpn import	protocols bgp address-family ipv4-unicast route-map vpn import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast route-target vpn both	protocols bgp address-family ipv4-unicast route-target vpn both <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast route-target vpn export	protocols bgp address-family ipv4-unicast route-target vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast route-target vpn import	protocols bgp address-family ipv4-unicast route-target vpn import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-unicast sid vpn export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-vpn network <network> label	protocols bgp address-family ipv4-vpn network <text> label <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv4-vpn network <network> rd	protocols bgp address-family ipv4-vpn network <text> rd <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-flowspec local-install interface	protocols bgp address-family ipv6-flowspec local-install interface <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-labeled-unicast aggregate-address <aggregate-address> as-set	protocols bgp address-family ipv6-labeled-unicast aggregate-address <text> as-set
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-labeled-unicast aggregate-address <aggregate-address> route-map	protocols bgp address-family ipv6-labeled-unicast aggregate-address <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-labeled-unicast aggregate-address <aggregate-address> summary-only	protocols bgp address-family ipv6-labeled-unicast aggregate-address <text> summary-only
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-labeled-unicast network <network> backdoor	protocols bgp address-family ipv6-labeled-unicast network <text> backdoor
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-labeled-unicast network <network> route-map	protocols bgp address-family ipv6-labeled-unicast network <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast aggregate-address <aggregate-address> as-set	protocols bgp address-family ipv6-multicast aggregate-address <text> as-set
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast aggregate-address <aggregate-address> route-map	protocols bgp address-family ipv6-multicast aggregate-address <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast aggregate-address <aggregate-address> summary-only	protocols bgp address-family ipv6-multicast aggregate-address <text> summary-only

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast distance external	protocols bgp address-family ipv6-multicast distance external <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast distance internal	protocols bgp address-family ipv6-multicast distance internal <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast distance local	protocols bgp address-family ipv6-multicast distance local <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast distance prefix <prefix> distance	protocols bgp address-family ipv6-multicast distance prefix <text> distance <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast network <network> path-limit	protocols bgp address-family ipv6-multicast network <text> path-limit <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-multicast network <network> route-map	protocols bgp address-family ipv6-multicast network <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast aggregate-address <aggregate-address> as-set	protocols bgp address-family ipv6-unicast aggregate-address <text> as-set
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast aggregate-address <aggregate-address> route-map	protocols bgp address-family ipv6-unicast aggregate-address <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast aggregate-address <aggregate-address> summary-only	protocols bgp address-family ipv6-unicast aggregate-address <text> summary-only
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast distance external	protocols bgp address-family ipv6-unicast distance external <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast distance internal	protocols bgp address-family ipv6-unicast distance internal <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast distance local	protocols bgp address-family ipv6-unicast distance local <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast distance prefix <prefix> distance	protocols bgp address-family ipv6-unicast distance prefix <text> distance <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast export vpn	protocols bgp address-family ipv6-unicast export vpn
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast import vpn	protocols bgp address-family ipv6-unicast import vpn
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast import vrf	protocols bgp address-family ipv6-unicast import vrf <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast label vpn allocation-mode per-nexthop	protocols bgp address-family ipv6-unicast label vpn allocation-mode per-nexthop
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast label vpn export	protocols bgp address-family ipv6-unicast label vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast maximum-paths ebgp	protocols bgp address-family ipv6-unicast maximum-paths ebgp <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast maximum-paths ibgp	protocols bgp address-family ipv6-unicast maximum-paths ibgp <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast network <network> path-limit	protocols bgp address-family ipv6-unicast network <text> path-limit <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast network <network> route-map	protocols bgp address-family ipv6-unicast network <text> route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast nexthop vpn export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast rd vpn export	protocols bgp address-family ipv6-unicast rd vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute babel metric	protocols bgp address-family ipv6-unicast redistribute babel metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute babel route-map	protocols bgp address-family ipv6-unicast redistribute babel route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute connected metric	protocols bgp address-family ipv6-unicast redistribute connected metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute connected route-map	protocols bgp address-family ipv6-unicast redistribute connected route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute kernel metric	protocols bgp address-family ipv6-unicast redistribute kernel metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute kernel route-map	protocols bgp address-family ipv6-unicast redistribute kernel route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute ospfv3 metric	protocols bgp address-family ipv6-unicast redistribute ospfv3 metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute ospfv3 route-map	protocols bgp address-family ipv6-unicast redistribute ospfv3 route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute ripng metric	protocols bgp address-family ipv6-unicast redistribute ripng metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute ripng route-map	protocols bgp address-family ipv6-unicast redistribute ripng route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute static metric	protocols bgp address-family ipv6-unicast redistribute static metric <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute static route-map	protocols bgp address-family ipv6-unicast redistribute static route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast redistribute table	protocols bgp address-family ipv6-unicast redistribute table <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast route-map vpn export	protocols bgp address-family ipv6-unicast route-map vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast route-map vpn import	protocols bgp address-family ipv6-unicast route-map vpn import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast route-target vpn both	protocols bgp address-family ipv6-unicast route-target vpn both <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast route-target vpn export	protocols bgp address-family ipv6-unicast route-target vpn export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast route-target vpn import	protocols bgp address-family ipv6-unicast route-target vpn import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-unicast sid vpn export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-vpn network <network> label	protocols bgp address-family ipv6-vpn network <text> label <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family ipv6-vpn network <network> rd	protocols bgp address-family ipv6-vpn network <text> rd <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn advertise-all-vni	protocols bgp address-family l2vpn-evpn advertise-all-vni
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn advertise-default-gw	protocols bgp address-family l2vpn-evpn advertise-default-gw
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn advertise-pip	protocols bgp address-family l2vpn-evpn advertise-pip <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn advertise-svi-ip	protocols bgp address-family l2vpn-evpn advertise-svi-ip
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn advertise ipv4 unicast route-map	protocols bgp address-family l2vpn-evpn advertise ipv4 unicast route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn advertise ipv6 unicast route-map	protocols bgp address-family l2vpn-evpn advertise ipv6 unicast route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn default-originate ipv4	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn default-originate ipv6	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn disable-ead-evi-rx	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn disable-ead-evi-tx	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn ead-es-frag evi-limit	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn ead-es-route-target export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn flooding disable	protocols bgp address-family l2vpn-evpn flooding disable
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn flooding head-end-replication	protocols bgp address-family l2vpn-evpn flooding head-end-replication
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn mac-vrf soo	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn rd <value>	protocols bgp address-family l2vpn-evpn rd <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn route-target both	protocols bgp address-family l2vpn-evpn route-target both <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn route-target export	protocols bgp address-family l2vpn-evpn route-target export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn route-target import	protocols bgp address-family l2vpn-evpn route-target import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn rt-auto-derive	protocols bgp address-family l2vpn-evpn rt-auto-derive

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn vni <vni> advertise-default-gw	protocols bgp address-family l2vpn-evpn vni <text> advertise-default-gw
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn vni <vni> advertise-svi-ip	protocols bgp address-family l2vpn-evpn vni <text> advertise-svi-ip
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn vni <vni> rd	protocols bgp address-family l2vpn-evpn vni <text> rd <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn vni <vni> route-target both	protocols bgp address-family l2vpn-evpn vni <text> route-target both <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn vni <vni> route-target export	protocols bgp address-family l2vpn-evpn vni <text> route-target export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp address-family l2vpn-evpn vni <vni> route-target import	protocols bgp address-family l2vpn-evpn vni <text> route-target import <value>
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-un maximum-paths &lt;ebgp/ibgp&gt; &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-un network &lt;prefix&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-un redistribute &lt;route source&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-un redistribute &lt;route source&gt; metric &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols bgp address-family &lt;ipv4-unicast/ipv6-unicast&gt; redistribute &lt;route source&gt; route-map &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp mirror-buffer-limit	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> address	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> max-retry	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> min-retry	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> mirror	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> monitor ipv4-unicast post-policy	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> monitor ipv4-unicast pre-policy	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> monitor ipv6-unicast post-policy	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> monitor ipv6-unicast pre-policy	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp bmp target <target> port	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp interface <interface> mpls forwarding	protocols bgp interface <text> mpls forwarding
✓	<i>set protocols bgp listen limit &lt;number&gt;</i>	protocols_bgp.xml.in: protocols bgp listen limit	protocols bgp listen limit <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols bgp listen range &lt;prefix&gt; peer-group &lt;name&gt;</i>	protocols_bgp.xml.in: protocols bgp listen range <range> peer-group	protocols bgp listen range <text> peer-group <value>
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un allowas-in number &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un as-override</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un attribute-unchanged &lt;as-path med next-hop</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un capability orf &lt;receive send&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un default-originate [route-map &lt;name&gt;]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un distribute-list &lt;export import&gt; &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols bgp neighbor &lt;address/interface&gt; address-family &lt;ipv4-unicast/ipv6-un filter-list &lt;export/import&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec filter-list export	protocols bgp neighbor <text> address-family ipv4-flowspec filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec filter-list import	protocols bgp neighbor <text> address-family ipv4-flowspec filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec prefix-list export	protocols bgp neighbor <text> address-family ipv4-flowspec prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec prefix-list import	protocols bgp neighbor <text> address-family ipv4-flowspec prefix-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec route-map export	protocols bgp neighbor <text> address-family ipv4-flowspec route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec route-map import	protocols bgp neighbor <text> address-family ipv4-flowspec route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec route-reflector-client	protocols bgp neighbor <text> address-family ipv4-flowspec route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec route-server-client	protocols bgp neighbor <text> address-family ipv4-flowspec route- server-client

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-flowspec soft-reconfiguration inbound	protocols bgp neighbor <text> address-family ipv4-flowspec soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast addpath-tx-all	protocols bgp neighbor <text> address-family ipv4-labeled-unicast addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast addpath-tx-per-as	protocols bgp neighbor <text> address-family ipv4-labeled-unicast addpath-tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast allowas-in number	protocols bgp neighbor <text> address-family ipv4-labeled-unicast allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast as-override	protocols bgp neighbor <text> address-family ipv4-labeled-unicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast attribute- unchanged as-path	protocols bgp neighbor <text> address-family ipv4-labeled-unicast attribute-unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast attribute- unchanged med	protocols bgp neighbor <text> address-family ipv4-labeled-unicast attribute-unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast attribute- unchanged next-hop	protocols bgp neighbor <text> address-family ipv4-labeled-unicast attribute-unchanged next-hop

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast capability orf prefix-list receive	protocols bgp neighbor <text> address-family ipv4-labeled-unicast ca- pability orf prefix-list receive
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast capability orf prefix-list send	protocols bgp neighbor <text> address-family ipv4-labeled-unicast ca- pability orf prefix-list send
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast conditionally- advertise advertise-map	protocols bgp neighbor <text> address-family ipv4-labeled-unicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast conditionally- advertise exist-map	protocols bgp neighbor <text> address-family ipv4-labeled-unicast conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast conditionally- advertise non-exist-map	protocols bgp neighbor <text> address-family ipv4-labeled-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast default-originate route-map	protocols bgp neighbor <text> address-family ipv4-labeled-unicast default-originate route- map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast disable-send- community extended	protocols bgp neighbor <text> address-family ipv4-labeled-unicast disable-send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast disable-send- community standard	protocols bgp neighbor <text> address-family ipv4-labeled-unicast disable-send-community standard

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast distribute-list export	protocols bgp neighbor <text> address-family ipv4-labeled-unicast distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast distribute-list import	protocols bgp neighbor <text> address-family ipv4-labeled-unicast distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast filter-list export	protocols bgp neighbor <text> address-family ipv4-labeled-unicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast filter-list import	protocols bgp neighbor <text> address-family ipv4-labeled-unicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast maximum-prefix	protocols bgp neighbor <text> address-family ipv4-labeled-unicast maximum-prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast maximum-prefix- out	protocols bgp neighbor <text> address-family ipv4-labeled-unicast maximum-prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast nexthop-self force	protocols bgp neighbor <text> address-family ipv4-labeled-unicast nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast prefix-list export	protocols bgp neighbor <text> address-family ipv4-labeled-unicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-labeled- unicast prefix-list import	protocols bgp neighbor <text> address-family ipv4-labeled-unicast prefix-list import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv4-labeled-unicast remove-private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-map export	protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-map import	protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-reflector-client	protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-server-client	protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast soft-reconfiguration inbound	protocols bgp neighbor <text> address-family ipv4-labeled-unicast soft-reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast unsuppress-map	protocols bgp neighbor <text> address-family ipv4-labeled-unicast unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast weight	protocols bgp neighbor <text> address-family ipv4-labeled-unicast weight <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast addpath-tx-all	protocols bgp neighbor <text> address-family ipv4-multicast addpath- tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast addpath-tx-per-as	protocols bgp neighbor <text> address-family ipv4-multicast addpath- tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast allowas-in number	protocols bgp neighbor <text> address-family ipv4-multicast allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast as-override	protocols bgp neighbor <text> address-family ipv4-multicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast attribute-unchanged as-path	protocols bgp neighbor <text> address-family ipv4-multicast attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast attribute-unchanged med	protocols bgp neighbor <text> address-family ipv4-multicast attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast attribute-unchanged next-hop	protocols bgp neighbor <text> address-family ipv4-multicast attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast capability orf prefix-list receive	protocols bgp neighbor <text> address-family ipv4-multicast capability orf prefix-list receive
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast capability orf prefix-list send	protocols bgp neighbor <text> address-family ipv4-multicast capability orf prefix-list send

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast conditionally-advertise advertise-map	protocols bgp neigh- bor <text> address- family ipv4-multicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast conditionally-advertise exist-map	protocols bgp neigh- bor <text> address- family ipv4-multicast conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast conditionally-advertise non-exist-map	protocols bgp neigh- bor <text> address- family ipv4-multicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast default-originate route- map	protocols bgp neighbor <text> address-family ipv4-multicast default- originate route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast disable-send-community extended	protocols bgp neighbor <text> address-family ipv4-multicast disable- send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast disable-send-community standard	protocols bgp neighbor <text> address-family ipv4-multicast disable- send-community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast distribute-list export	protocols bgp neighbor <text> address-family ipv4-multicast distribute- list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast distribute-list import	protocols bgp neighbor <text> address-family ipv4-multicast distribute- list import <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast filter-list export	protocols bgp neighbor <text> address-family ipv4-multicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast filter-list import	protocols bgp neighbor <text> address-family ipv4-multicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast maximum-prefix	protocols bgp neighbor <text> address-family ipv4-multicast maximum- prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast maximum-prefix-out	protocols bgp neighbor <text> address-family ipv4-multicast maximum- prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast nexthop-self force	protocols bgp neighbor <text> address-family ipv4-multicast nexthop- self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast prefix-list export	protocols bgp neighbor <text> address-family ipv4-multicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast prefix-list import	protocols bgp neighbor <text> address-family ipv4-multicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv4-multicast remove- private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast route-map export	protocols bgp neighbor <text> address-family ipv4-multicast route-map export <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast route-map import	protocols bgp neighbor <text> address-family ipv4-multicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast route-reflector-client	protocols bgp neighbor <text> address-family ipv4-multicast route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast route-server-client	protocols bgp neighbor <text> address-family ipv4-multicast route- server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast soft-reconfiguration inbound	protocols bgp neighbor <text> address-family ipv4-multicast soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast unsuppress-map	protocols bgp neigh- bor <text> address- family ipv4-multicast unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-multicast weight	protocols bgp neighbor <text> address-family ipv4-multicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast addpath-tx-all	protocols bgp neighbor <text> address-family ipv4-unicast addpath-tx- all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast addpath-tx-per-as	protocols bgp neighbor <text> address-family ipv4-unicast addpath-tx- per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast allowas-in number	protocols bgp neighbor <text> address-family ipv4-unicast allowas-in number <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast as-override	protocols bgp neighbor <text> address-family ipv4-unicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast attribute-unchanged as-path	protocols bgp neighbor <text> address-family ipv4-unicast attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast attribute-unchanged med	protocols bgp neighbor <text> address-family ipv4-unicast attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast attribute-unchanged next-hop	protocols bgp neighbor <text> address-family ipv4-unicast attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast capability orf prefix-list receive	protocols bgp neighbor <text> address-family ipv4-unicast capability orf prefix-list receive
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast capability orf prefix-list send	protocols bgp neighbor <text> address-family ipv4-unicast capability orf prefix-list send
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast conditionally-advertise advertise-map	protocols bgp neigh- bor <text> address- family ipv4-unicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast conditionally-advertise exist-map	protocols bgp neigh- bor <text> address- family ipv4-unicast conditionally-advertise exist-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast conditionally-advertise non-exist-map	protocols bgp neigh- bor <text> address- family ipv4-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast default-originate route- map	protocols bgp neighbor <text> address-family ipv4-unicast default- originate route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast disable-send-community extended	protocols bgp neighbor <text> address-family ipv4-unicast disable-send- community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast disable-send-community standard	protocols bgp neighbor <text> address-family ipv4-unicast disable-send- community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast distribute-list export	protocols bgp neighbor <text> address-family ipv4-unicast distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast distribute-list import	protocols bgp neighbor <text> address-family ipv4-unicast distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast filter-list export	protocols bgp neighbor <text> address-family ipv4-unicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast filter-list import	protocols bgp neighbor <text> address-family ipv4-unicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast maximum-prefix	protocols bgp neighbor <text> address-family ipv4-unicast maximum- prefix <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast maximum-prefix-out	protocols bgp neighbor <text> address-family ipv4-unicast maximum- prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast nexthop-self force	protocols bgp neighbor <text> address-family ipv4-unicast nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast prefix-list export	protocols bgp neighbor <text> address-family ipv4-unicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast prefix-list import	protocols bgp neighbor <text> address-family ipv4-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv4-unicast remove- private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast route-map export	protocols bgp neighbor <text> address-family ipv4-unicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast route-map import	protocols bgp neighbor <text> address-family ipv4-unicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast route-reflector-client	protocols bgp neighbor <text> address-family ipv4-unicast route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast route-server-client	protocols bgp neighbor <text> address-family ipv4-unicast route-server- client

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast soft-reconfiguration inbound	protocols bgp neigh- bor <text> address- family ipv4-unicast soft-reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast unsuppress-map	protocols bgp neighbor <text> address-family ipv4-unicast unsuppress- map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-unicast weight	protocols bgp neighbor <text> address-family ipv4-unicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn addpath- tx-all	protocols bgp neighbor <text> address-family ipv4-vpn addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn addpath- tx-per-as	protocols bgp neighbor <text> address-family ipv4-vpn addpath-tx-per- as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn allowas- in number	protocols bgp neighbor <text> address-family ipv4-vpn allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn as- override	protocols bgp neighbor <text> address-family ipv4-vpn as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn attribute- unchanged as-path	protocols bgp neighbor <text> address-family ipv4-vpn attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn attribute- unchanged med	protocols bgp neighbor <text> address-family ipv4-vpn attribute- unchanged med

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn attribute- unchanged next-hop	protocols bgp neighbor <text> address-family ipv4-vpn attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn conditionally-advertise advertise-map	protocols bgp neighbor <text> address-family ipv4-vpn conditionally- advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn conditionally-advertise exist-map	protocols bgp neighbor <text> address-family ipv4-vpn conditionally- advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn conditionally-advertise non-exist-map	protocols bgp neighbor <text> address-family ipv4-vpn conditionally- advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn disable- send-community extended	protocols bgp neighbor <text> address-family ipv4-vpn disable-send- community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn disable- send-community standard	protocols bgp neighbor <text> address-family ipv4-vpn disable-send- community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn distribute-list export	protocols bgp neighbor <text> address-family ipv4-vpn distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn distribute-list import	protocols bgp neighbor <text> address-family ipv4-vpn distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn filter-list export	protocols bgp neighbor <text> address-family ipv4-vpn filter-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn filter-list import	protocols bgp neighbor <text> address-family ipv4-vpn filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn maximum-prefix	protocols bgp neighbor <text> address-family ipv4-vpn maximum-prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn maximum-prefix-out	protocols bgp neighbor <text> address-family ipv4-vpn maximum- prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn nexthop- self force	protocols bgp neighbor <text> address-family ipv4-vpn nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn prefix-list export	protocols bgp neighbor <text> address-family ipv4-vpn prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn prefix-list import	protocols bgp neighbor <text> address-family ipv4-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv4-vpn remove-private- as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn remove- private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn route- map export	protocols bgp neighbor <text> address-family ipv4-vpn route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn route- map import	protocols bgp neighbor <text> address-family ipv4-vpn route-map import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn route- reflector-client	protocols bgp neighbor <text> address-family ipv4-vpn route-reflector- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn route- server-client	protocols bgp neighbor <text> address-family ipv4-vpn route-server- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn soft- reconfiguration inbound	protocols bgp neigh- bor <text> address- family ipv4-vpn soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn unsuppress-map	protocols bgp neighbor <text> address-family ipv4-vpn unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv4-vpn weight	protocols bgp neighbor <text> address-family ipv4-vpn weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec filter-list export	protocols bgp neighbor <text> address-family ipv6-flowspec filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec filter-list import	protocols bgp neighbor <text> address-family ipv6-flowspec filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec prefix-list export	protocols bgp neighbor <text> address-family ipv6-flowspec prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec prefix-list import	protocols bgp neighbor <text> address-family ipv6-flowspec prefix-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec route-map export	protocols bgp neighbor <text> address-family ipv6-flowspec route-map export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec route-map import	protocols bgp neighbor <text> address-family ipv6-flowspec route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec route-reflector-client	protocols bgp neighbor <text> address-family ipv6-flowspec route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec route-server-client	protocols bgp neighbor <text> address-family ipv6-flowspec route- server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-flowspec soft-reconfiguration inbound	protocols bgp neighbor <text> address-family ipv6-flowspec soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast addpath-tx-all	protocols bgp neighbor <text> address-family ipv6-labeled-unicast addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast addpath-tx-per-as	protocols bgp neighbor <text> address-family ipv6-labeled-unicast addpath-tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast allowas-in number	protocols bgp neighbor <text> address-family ipv6-labeled-unicast allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast as-override	protocols bgp neighbor <text> address-family ipv6-labeled-unicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast attribute- unchanged as-path	protocols bgp neighbor <text> address-family ipv6-labeled-unicast attribute-unchanged as-path

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast attribute- unchanged med	protocols bgp neighbor <text> address-family ipv6-labeled-unicast attribute-unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast attribute- unchanged next-hop	protocols bgp neighbor <text> address-family ipv6-labeled-unicast attribute-unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast capability orf prefix-list receive	protocols bgp neighbor <text> address-family ipv6-labeled-unicast ca- pability orf prefix-list receive
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast capability orf prefix-list send	protocols bgp neighbor <text> address-family ipv6-labeled-unicast ca- pability orf prefix-list send
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast conditionally- advertise advertise-map	protocols bgp neighbor <text> address-family ipv6-labeled-unicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast conditionally- advertise exist-map	protocols bgp neighbor <text> address-family ipv6-labeled-unicast conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast conditionally- advertise non-exist-map	protocols bgp neighbor <text> address-family ipv6-labeled-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast default-originate route-map	protocols bgp neighbor <text> address-family ipv6-labeled-unicast default-originate route- map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast disable-send- community extended	protocols bgp neighbor <text> address-family ipv6-labeled-unicast disable-send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast disable-send- community standard	protocols bgp neighbor <text> address-family ipv6-labeled-unicast disable-send-community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast distribute-list export	protocols bgp neighbor <text> address-family ipv6-labeled-unicast distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast distribute-list import	protocols bgp neighbor <text> address-family ipv6-labeled-unicast distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast filter-list export	protocols bgp neighbor <text> address-family ipv6-labeled-unicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast filter-list import	protocols bgp neighbor <text> address-family ipv6-labeled-unicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast maximum-prefix	protocols bgp neighbor <text> address-family ipv6-labeled-unicast maximum-prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast maximum-prefix- out	protocols bgp neighbor <text> address-family ipv6-labeled-unicast maximum-prefix-out <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast nexthop-local unchanged	protocols bgp neighbor <text> address-family ipv6-labeled-unicast nexthop-local unchanged
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast nexthop-self force	protocols bgp neighbor <text> address-family ipv6-labeled-unicast nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast prefix-list export	protocols bgp neighbor <text> address-family ipv6-labeled-unicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast prefix-list import	protocols bgp neighbor <text> address-family ipv6-labeled-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv6-labeled-unicast remove-private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast route-map export	protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast route-map import	protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast route-reflector- client	protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-reflector-client

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast route-server-client	protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neigh- bor <neighbor> address-family ipv6- labeled-unicast soft- reconfiguration inbound	protocols bgp neighbor <text> address-family ipv6-labeled-unicast soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast unsuppress-map	protocols bgp neighbor <text> address-family ipv6-labeled-unicast unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-labeled- unicast weight	protocols bgp neighbor <text> address-family ipv6-labeled-unicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast addpath-tx-all	protocols bgp neighbor <text> address-family ipv6-multicast addpath- tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast addpath-tx-per-as	protocols bgp neighbor <text> address-family ipv6-multicast addpath- tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast allowas-in number	protocols bgp neighbor <text> address-family ipv6-multicast allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast as-override	protocols bgp neighbor <text> address-family ipv6-multicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast attribute-unchanged as-path	protocols bgp neighbor <text> address-family ipv6-multicast attribute- unchanged as-path

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast attribute-unchanged med	protocols bgp neighbor <text> address-family ipv6-multicast attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast attribute-unchanged next-hop	protocols bgp neighbor <text> address-family ipv6-multicast attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast conditionally-advertise advertise-map	protocols bgp neigh- bor <text> address- family ipv6-multicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast conditionally-advertise exist-map	protocols bgp neigh- bor <text> address- family ipv6-multicast conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast conditionally-advertise non-exist-map	protocols bgp neigh- bor <text> address- family ipv6-multicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast default-originate route- map	protocols bgp neighbor <text> address-family ipv6-multicast default- originate route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast disable-send-community extended	protocols bgp neighbor <text> address-family ipv6-multicast disable- send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast disable-send-community standard	protocols bgp neighbor <text> address-family ipv6-multicast disable- send-community standard

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast distribute-list export	protocols bgp neighbor <text> address-family ipv6-multicast distribute- list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast distribute-list import	protocols bgp neighbor <text> address-family ipv6-multicast distribute- list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast filter-list export	protocols bgp neighbor <text> address-family ipv6-multicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast filter-list import	protocols bgp neighbor <text> address-family ipv6-multicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast maximum-prefix	protocols bgp neighbor <text> address-family ipv6-multicast maximum- prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast maximum-prefix-out	protocols bgp neighbor <text> address-family ipv6-multicast maximum- prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast nexthop-local unchanged	protocols bgp neighbor <text> address-family ipv6-multicast nexthop- local unchanged
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast nexthop-self force	protocols bgp neighbor <text> address-family ipv6-multicast nexthop- self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast prefix-list export	protocols bgp neighbor <text> address-family ipv6-multicast prefix-list export <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast prefix-list import	protocols bgp neighbor <text> address-family ipv6-multicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv6-multicast remove- private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast route-map export	protocols bgp neighbor <text> address-family ipv6-multicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast route-map import	protocols bgp neighbor <text> address-family ipv6-multicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast route-reflector-client	protocols bgp neighbor <text> address-family ipv6-multicast route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast route-server-client	protocols bgp neighbor <text> address-family ipv6-multicast route- server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast soft-reconfiguration inbound	protocols bgp neighbor <text> address-family ipv6-multicast soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast unsuppress-map	protocols bgp neigh- bor <text> address- family ipv6-multicast unsuppress-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-multicast weight	protocols bgp neighbor <text> address-family ipv6-multicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast addpath-tx-all	protocols bgp neighbor <text> address-family ipv6-unicast addpath-tx- all
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast addpath-tx-per-as	protocols bgp neighbor <text> address-family ipv6-unicast addpath-tx- per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast allowas-in number	protocols bgp neighbor <text> address-family ipv6-unicast allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast as-override	protocols bgp neighbor <text> address-family ipv6-unicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast attribute-unchanged as-path	protocols bgp neighbor <text> address-family ipv6-unicast attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast attribute-unchanged med	protocols bgp neighbor <text> address-family ipv6-unicast attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast attribute-unchanged next-hop	protocols bgp neighbor <text> address-family ipv6-unicast attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast capability orf prefix-list receive	protocols bgp neighbor <text> address-family ipv6-unicast capability orf prefix-list receive

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast capability orf prefix-list send	protocols bgp neighbor <text> address-family ipv6-unicast capability orf prefix-list send
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast conditionally-advertise advertise-map	protocols bgp neigh- bor <text> address- family ipv6-unicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast conditionally-advertise exist-map	protocols bgp neigh- bor <text> address- family ipv6-unicast conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast conditionally-advertise non-exist-map	protocols bgp neigh- bor <text> address- family ipv6-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast default-originate route- map	protocols bgp neighbor <text> address-family ipv6-unicast default- originate route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast disable-send-community extended	protocols bgp neighbor <text> address-family ipv6-unicast disable-send- community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast disable-send-community standard	protocols bgp neighbor <text> address-family ipv6-unicast disable-send- community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast distribute-list export	protocols bgp neighbor <text> address-family ipv6-unicast distribute-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast distribute-list import	protocols bgp neighbor <text> address-family ipv6-unicast distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast filter-list export	protocols bgp neighbor <text> address-family ipv6-unicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast filter-list import	protocols bgp neighbor <text> address-family ipv6-unicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast maximum-prefix	protocols bgp neighbor <text> address-family ipv6-unicast maximum- prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast maximum-prefix-out	protocols bgp neighbor <text> address-family ipv6-unicast maximum- prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast nexthop-local unchanged	protocols bgp neighbor <text> address-family ipv6-unicast nexthop- local unchanged
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast nexthop-self force	protocols bgp neighbor <text> address-family ipv6-unicast nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast prefix-list export	protocols bgp neighbor <text> address-family ipv6-unicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast prefix-list import	protocols bgp neighbor <text> address-family ipv6-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv6-unicast remove- private-as

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast route-map export	protocols bgp neighbor <text> address-family ipv6-unicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast route-map import	protocols bgp neighbor <text> address-family ipv6-unicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast route-reflector-client	protocols bgp neighbor <text> address-family ipv6-unicast route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast route-server-client	protocols bgp neighbor <text> address-family ipv6-unicast route-server- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast soft-reconfiguration inbound	protocols bgp neigh- bor <text> address- family ipv6-unicast soft-reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast unsuppress-map	protocols bgp neighbor <text> address-family ipv6-unicast unsuppress- map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-unicast weight	protocols bgp neighbor <text> address-family ipv6-unicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn addpath- tx-all	protocols bgp neighbor <text> address-family ipv6-vpn addpath-tx-all

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn addpath- tx-per-as	protocols bgp neighbor <text> address-family ipv6-vpn addpath-tx-per- as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn allowas- in number	protocols bgp neighbor <text> address-family ipv6-vpn allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn as- override	protocols bgp neighbor <text> address-family ipv6-vpn as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn attribute- unchanged as-path	protocols bgp neighbor <text> address-family ipv6-vpn attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn attribute- unchanged med	protocols bgp neighbor <text> address-family ipv6-vpn attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn attribute- unchanged next-hop	protocols bgp neighbor <text> address-family ipv6-vpn attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn conditionally-advertise advertise-map	protocols bgp neighbor <text> address-family ipv6-vpn conditionally- advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn conditionally-advertise exist-map	protocols bgp neighbor <text> address-family ipv6-vpn conditionally- advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn conditionally-advertise non-exist-map	protocols bgp neighbor <text> address-family ipv6-vpn conditionally- advertise non-exist-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn disable- send-community extended	protocols bgp neighbor <text> address-family ipv6-vpn disable-send- community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn disable- send-community standard	protocols bgp neighbor <text> address-family ipv6-vpn disable-send- community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn distribute-list export	protocols bgp neighbor <text> address-family ipv6-vpn distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn distribute-list import	protocols bgp neighbor <text> address-family ipv6-vpn distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn filter-list export	protocols bgp neighbor <text> address-family ipv6-vpn filter-list <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn filter-list import	protocols bgp neighbor <text> address-family ipv6-vpn filter-list <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn maximum-prefix	protocols bgp neighbor <text> address-family ipv6-vpn maximum-prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn maximum-prefix-out	protocols bgp neighbor <text> address-family ipv6-vpn maximum- prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn nexthop- local unchanged	protocols bgp neighbor <text> address-family ipv6-vpn nexthop-local unchanged

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn nexthop- self force	protocols bgp neighbor <text> address-family ipv6-vpn nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn prefix-list export	protocols bgp neighbor <text> address-family ipv6-vpn prefix-list <value> export
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn prefix-list import	protocols bgp neighbor <text> address-family ipv6-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp neighbor <text> address-family ipv6-vpn remove-private- as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn remove- private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn route- map export	protocols bgp neighbor <text> address-family ipv6-vpn route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn route- map import	protocols bgp neighbor <text> address-family ipv6-vpn route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn route- reflector-client	protocols bgp neighbor <text> address-family ipv6-vpn route-reflector- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn route- server-client	protocols bgp neighbor <text> address-family ipv6-vpn route-server- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn soft- reconfiguration inbound	protocols bgp neigh- bor <text> address- family ipv6-vpn soft- reconfiguration inbound

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn unsuppress-map	protocols bgp neighbor <text> address-family ipv6-vpn unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family ipv6-vpn weight	protocols bgp neighbor <text> address-family ipv6-vpn weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn allowas-in number	protocols bgp neighbor <text> address-family l2vpn-evpn allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn attribute-unchanged as-path	protocols bgp neighbor <text> address-family l2vpn-evpn attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn attribute-unchanged med	protocols bgp neighbor <text> address-family l2vpn-evpn attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn attribute-unchanged next-hop	protocols bgp neighbor <text> address-family l2vpn-evpn attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn nexthop-self force	protocols bgp neighbor <text> address-family l2vpn-evpn nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn route- map export	protocols bgp neighbor <text> address-family l2vpn-evpn route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn route- map import	protocols bgp neighbor <text> address-family l2vpn-evpn route-map import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn route- reflector-client	protocols bgp neighbor <text> address-family l2vpn-evpn route- reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn route- server-client	protocols bgp neighbor <text> address-family l2vpn-evpn route-server- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> address- family l2vpn-evpn soft- reconfiguration inbound	protocols bgp neigh- bor <text> address- family l2vpn-evpn soft- reconfiguration inbound
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un maximum-prefix &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un nexthop-self</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un prefix-list &lt;export import&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un remove-private-as</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un route-map &lt;export import&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address&gt; address-family &lt;ipv4-unicast ipv6-un route-reflector-clien</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un soft-reconfiguration inbound</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un unsuppress-map &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; address-family &lt;ipv4-unicast ipv6-un weight &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols bgp neighbor &lt;address interface&gt; advertisement-interva &lt;seconds&gt;</i>	protocols_bgp.xml.in: protocols bgp neigh- bor <neighbor> advertisement-interval	protocols bgp neighbor <text> advertisement- interval <value>
×	<i>set protocols bgp neighbor &lt;neighbor&gt; bfd</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> bfd check- control-plane-failure	protocols bgp neighbor <text> bfd check-control- plane-failure
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> bfd profile	protocols bgp neighbor <text> bfd profile <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols bgp neighbor &lt;address interface&gt; capability dynamic</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> capability dynamic	protocols bgp neighbor <text> capability dynamic
✓	<i>set protocols bgp neighbor &lt;address interface&gt; capability extended-nexthop</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> capability extended-nexthop	protocols bgp neigh- bor <text> capability extended-nexthop
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> capability software-version	Nothing found in VyOS
✓	<i>set protocols bgp neighbor &lt;address interface&gt; description &lt;text&gt;</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> description	protocols bgp neigh- bor <text> description <value>
✓	<i>set protocols bgp neighbor &lt;address interface&gt; disable-capability-ne</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> disable- capability-negotiation	protocols bgp neighbor <text> disable-capability- negotiation
✓	<i>set protocols bgp neighbor &lt;address interface&gt; disable-connected-che</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> disable- connected-check	protocols bgp neighbor <text> disable-connected- check
×	<i>set protocols bgp neighbor &lt;address interface&gt; disable-send-communit &lt;extended standard&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols bgp neighbor &lt;address interface&gt; ebgp-multihop &lt;number&gt;</i>	protocols_bgp.xml.in: protocols bgp neigh- bor <neighbor> ebgp- multihop	protocols bgp neighbor <text> ebgp-multihop <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> enforce-first- as	protocols bgp neighbor <text> enforce-first-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> graceful- restart	protocols bgp neighbor <text> graceful-restart <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> interface peer-group	protocols bgp neigh- bor <text> interface peer-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> interface remote-as	protocols bgp neighbor <text> interface remote-as <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> interface source-interface	protocols bgp neighbor <text> interface source- interface <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> interface v6only peer-group	protocols bgp neighbor <text> interface v6only peer-group <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> interface v6only remote-as	protocols bgp neighbor <text> interface v6only remote-as <value>
×	<i>set protocols bgp neighbor &lt;address interface&gt; local-as &lt;asn&gt; [no-prepend] [replace-as]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> local-as <local-as> no-prepend replace-as	protocols bgp neighbor <text> local-as <text> no-prepend replace-as
×	<i>set protocols bgp neighbor &lt;address interface&gt; local-role &lt;role&gt; [strict]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> local-role <local-role> strict	protocols bgp neighbor <text> local-role <text> strict
✓	<i>set protocols bgp neighbor &lt;address interface&gt; override-capability</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> override- capability	protocols bgp neighbor <text> override-capability
✓	<i>set protocols bgp neighbor &lt;address interface&gt; passive</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> passive	protocols bgp neighbor <text> passive
✓	<i>set protocols bgp neighbor &lt;address interface&gt; password &lt;text&gt;</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> password	protocols bgp neighbor <text> password <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> path-attribute discard	protocols bgp neighbor <text> path-attribute discard <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> path-attribute treat-as-withdraw	Nothing found in VyOS
✓	<i>set protocols bgp neighbor &lt;address interface&gt; peer-group &lt;name&gt;</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> peer-group	protocols bgp neigh- bor <text> peer-group <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> port	protocols bgp neighbor <text> port <value>
✓	<i>set protocols bgp neighbor &lt;address interface&gt; remote-as &lt;asn&gt;</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> remote-as	protocols bgp neighbor <text> remote-as <value>
×	<i>set protocols bgp neighbor &lt;address interface&gt; remote-as external</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp neighbor &lt;address interface&gt; remote-as internal</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols bgp neighbor &lt;address interface&gt; shutdown</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> shutdown	protocols bgp neighbor <text> shutdown
✓	<i>set protocols bgp neighbor &lt;address interface&gt; solo</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> solo	protocols bgp neighbor <text> solo
✓	<i>set protocols bgp neighbor &lt;address interface&gt; strict-capability-mat</i>	protocols_bgp.xml.in: protocols bgp neigh- bor <neighbor> strict- capability-match	protocols bgp neighbor <text> strict-capability- match
×	not yet documented	protocols_bgp.xml.in: protocols bgp neigh- bor <neighbor> timers connect	protocols bgp neighbor <text> timers connect <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp neigh- bor <neighbor> timers holdtime	protocols bgp neighbor <text> timers holdtime <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> timers keepalive	protocols bgp neighbor <text> timers keepalive <value>
✓	<i>set protocols bgp neighbor &lt;address interface&gt; ttl-security hops &lt;number&gt;</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> ttl-security hops	protocols bgp neighbor <text> ttl-security hops <value>
✓	<i>set protocols bgp neighbor &lt;address interface&gt; update-source &lt;address interface&gt;</i>	protocols_bgp.xml.in: protocols bgp neighbor <neighbor> update-source	protocols bgp neighbor <text> update-source <value>
×	<i>set protocols bgp parameters allow-martian-nexthop</i>	protocols_bgp.xml.in: protocols bgp parameters allow-martian-nexthop	Nothing found in VyOS
✓	<i>set protocols bgp parameters always-compare-med</i>	protocols_bgp.xml.in: protocols bgp parameters always-compare-med	protocols bgp parameters always-compare-med
✓	<i>set protocols bgp parameters bestpath as-path confed</i>	protocols_bgp.xml.in: protocols bgp parameters bestpath as-path confed	protocols bgp parameters bestpath as-path confed
✓	<i>set protocols bgp parameters bestpath as-path ignore</i>	protocols_bgp.xml.in: protocols bgp parameters bestpath as-path ignore	protocols bgp parameters bestpath as-path ignore
✓	<i>set protocols bgp parameters bestpath as-path multipath-relax</i>	protocols_bgp.xml.in: protocols bgp param- eters bestpath as-path multipath-relax	protocols bgp param- eters bestpath as-path multipath-relax
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters bestpath bandwidth	protocols bgp param- eters bestpath bandwidth <value>
✓	<i>set protocols bgp parameters bestpath compare-routerid</i>	protocols_bgp.xml.in: protocols bgp parameters bestpath compare-routerid	protocols bgp parameters bestpath compare-routerid
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters bestpath med	protocols bgp parameters bestpath med <value>
×	<i>set protocols bgp parameters bestpath med confed</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols bgp parameters bestpath med missing-as-worst</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters distance global external	protocols bgp parameters distance global external <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters distance global internal	protocols bgp parameters distance global internal <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters distance global local	protocols bgp parameters distance global local <value>
✓	<i>set protocols bgp parameters distance prefix &lt;subnet&gt; distance &lt;distance&gt;</i>	protocols_bgp.xml.in: protocols bgp parameters distance prefix <prefix> distance	protocols bgp parameters distance prefix <text> distance <value>
✓	<i>set protocols bgp parameters ebgp-requires-policy</i>	protocols_bgp.xml.in: protocols bgp parameters ebgp-requires-policy	protocols bgp parameters ebgp-requires-policy
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters fast-convergence	protocols bgp parameters fast-convergence
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters graceful-restart stalepath-time	protocols bgp parameters graceful-restart stalepath-time <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters graceful-shutdown	protocols bgp parameters graceful-shutdown
×	<i>set protocols bgp parameters labeled-unicast &lt;explicit-null   ipv4-explicit-null   ipv6-explicit-null&gt;</i>	protocols_bgp.xml.in: protocols bgp parameters labeled-unicast	Nothing found in VyOS
✓	<i>set protocols bgp parameters log-neighbor-changes</i>	protocols_bgp.xml.in: protocols bgp parameters log-neighbor-changes	protocols bgp parameters log-neighbor-changes
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters minimum-holdtime	protocols bgp parameters minimum-holdtime <value>
✓	<i>set protocols bgp parameters network-import-check</i>	protocols_bgp.xml.in: protocols bgp parameters network-import-check	protocols bgp parameters network-import-check
✓	<i>set protocols bgp parameters no-client-to-client-r</i>	protocols_bgp.xml.in: protocols bgp parameters no-client-to-client- reflection	protocols bgp parameters no-client-to-client- reflection
✓	<i>set protocols bgp parameters no-fast-external-fail</i>	protocols_bgp.xml.in: protocols bgp parameters no-fast-external-failover	protocols bgp parameters no-fast-external-failover

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols bgp parameters no-hard-administrativ</i>	protocols_bgp.xml.in: protocols bgp parameters no-hard-administrative- reset	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters no-suppress-duplicates	protocols bgp parameters no-suppress-duplicates
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters reject-as-sets	protocols bgp parameters reject-as-sets
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters route-reflector-allow- outbound-policy	protocols bgp parameters route-reflector-allow- outbound-policy
✓	<i>set protocols bgp parameters router-id &lt;id&gt;</i>	protocols_bgp.xml.in: protocols bgp parameters router-id	protocols bgp parameters router-id <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters shutdown	protocols bgp parameters shutdown
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters suppress-fib-pending	protocols bgp parameters suppress-fib-pending
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters tcp-keepalive idle <value>	protocols bgp parameters tcp-keepalive idle <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters tcp-keepalive interval <value>	protocols bgp parameters tcp-keepalive interval <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp parameters tcp-keepalive probes <value>	protocols bgp parameters tcp-keepalive probes <value>
×	<i>set protocols bgp peer-group &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv4-labeled- unicast addpath-tx-all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv4-labeled- unicast addpath-tx-per-as	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast allowas-in number	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast as-override	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast attribute-unchanged as-path	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast attribute-unchanged med	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast attribute-unchanged next-hop	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast capability orf prefix-list receive	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast capability orf prefix-list send	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast conditionally-advertise advertise-map	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast conditionally-advertise exist-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast conditionally-advertise non-exist-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast default-originate route-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast disable-send-community extended	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast disable-send-community standard	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast distribute-list export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast distribute-list import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast filter-list export	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast filter-list import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast maximum-prefix	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast maximum-prefix-out	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast nexthop-self force	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast prefix-list export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast prefix-list import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-map export	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-map import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-reflector-client	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-server-client	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast soft-reconfiguration inbound	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast unsuppress-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast weight	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast addpath-tx-all	protocols bgp peer-group <text> address-family ipv4-unicast addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast addpath-tx-per-as	protocols bgp peer-group <text> address-family ipv4-unicast addpath-tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast allowas-in number	protocols bgp peer-group <text> address-family ipv4-unicast allowas-in number <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast as-override	protocols bgp peer-group <text> address-family ipv4-unicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast attribute-unchanged as-path	protocols bgp peer-group <text> address-family ipv4-unicast attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast attribute-unchanged med	protocols bgp peer-group <text> address-family ipv4-unicast attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast attribute-unchanged next-hop	protocols bgp peer-group <text> address-family ipv4-unicast attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast capability orf prefix-list receive	protocols bgp peer-group <text> address-family ipv4-unicast capability orf prefix-list receive
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast capability orf prefix-list send	protocols bgp peer-group <text> address-family ipv4-unicast capability orf prefix-list send
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast conditionally-advertise advertise-map	protocols bgp peer-group <text> address-family family ipv4-unicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv4-unicast conditionally-advertise exist-map	protocols bgp peer-group <text> address-family family ipv4-unicast conditionally-advertise exist-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast conditionally-advertise non-exist-map <value>	protocols bgp peer-group <text> address-family ipv4-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast default-originate route-map <value>	protocols bgp peer-group <text> address-family ipv4-unicast default-originate route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast disable-send-community extended	protocols bgp peer-group <text> address-family ipv4-unicast disable-send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast disable-send-community standard	protocols bgp peer-group <text> address-family ipv4-unicast disable-send-community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast distribute-list export <value>	protocols bgp peer-group <text> address-family ipv4-unicast distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast distribute-list import <value>	protocols bgp peer-group <text> address-family ipv4-unicast distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast filter-list export <value>	protocols bgp peer-group <text> address-family ipv4-unicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast filter-list import <value>	protocols bgp peer-group <text> address-family ipv4-unicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast maximum-prefix	protocols bgp peer-group <text> address-family ipv4-unicast maximum-prefix <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast maximum-prefix-out	protocols bgp peer-group <text> address-family ipv4-unicast maximum-prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast nexthop-self force	protocols bgp peer-group <text> address-family ipv4-unicast nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast prefix-list export	protocols bgp peer-group <text> address-family ipv4-unicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast prefix-list import	protocols bgp peer-group <text> address-family ipv4-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp peer-group <text> address-family ipv4-unicast remove-private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast route-map export	protocols bgp peer-group <text> address-family ipv4-unicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast route-map import	protocols bgp peer-group <text> address-family ipv4-unicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast route-reflector-client	protocols bgp peer-group <text> address-family ipv4-unicast route-reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-unicast route-server-client	protocols bgp peer-group <text> address-family ipv4-unicast route-server-client

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-unicast soft-reconfiguration inbound	protocols bgp peer-group <text> address-family address-family ipv4-unicast soft-reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-unicast unsuppress-map	protocols bgp peer-group <text> address-family address-family ipv4-unicast unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-unicast weight	protocols bgp peer-group <text> address-family address-family ipv4-unicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-vpn addpath-tx-all	protocols bgp peer-group <text> address-family address-family ipv4-vpn addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-vpn addpath-tx-per-as	protocols bgp peer-group <text> address-family address-family ipv4-vpn addpath-tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-vpn allowas-in number	protocols bgp peer-group <text> address-family address-family ipv4-vpn allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-vpn as-override	protocols bgp peer-group <text> address-family address-family ipv4-vpn as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-vpn attribute-unchanged as-path	protocols bgp peer-group <text> address-family address-family ipv4-vpn attribute-unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family address-family ipv4-vpn attribute-unchanged med	protocols bgp peer-group <text> address-family address-family ipv4-vpn attribute-unchanged med

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn attribute-unchanged next-hop	protocols bgp peer-group <text> address-family ipv4-vpn attribute-unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn conditionally-advertise advertise-map	protocols bgp peer-group <text> address-family ipv4-vpn conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn conditionally-advertise exist-map	protocols bgp peer-group <text> address-family ipv4-vpn conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn conditionally-advertise non-exist-map	protocols bgp peer-group <text> address-family ipv4-vpn conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn disable-send-community extended	protocols bgp peer-group <text> address-family ipv4-vpn disable-send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn disable-send-community standard	protocols bgp peer-group <text> address-family ipv4-vpn disable-send-community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn distribute-list export	protocols bgp peer-group <text> address-family ipv4-vpn distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn distribute-list import	protocols bgp peer-group <text> address-family ipv4-vpn distribute-list import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn filter-list export export	protocols bgp peer-group <text> address-family ipv4-vpn filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn filter-list import import	protocols bgp peer-group <text> address-family ipv4-vpn filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn maximum-prefix maximum-prefix	protocols bgp peer-group <text> address-family ipv4-vpn maximum-prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn maximum-prefix-out maximum-prefix-out	protocols bgp peer-group <text> address-family ipv4-vpn maximum-prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn nexthop-self force nexthop-self force	protocols bgp peer-group <text> address-family ipv4-vpn nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn prefix-list export export	protocols bgp peer-group <text> address-family ipv4-vpn prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn prefix-list import import	protocols bgp peer-group <text> address-family ipv4-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp peer-group <text> address-family ipv4-vpn remove-private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn route-map export route-map export	protocols bgp peer-group <text> address-family ipv4-vpn route-map export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn route-map import	protocols bgp peer-group <text> address-family ipv4-vpn route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn route-reflector-client	protocols bgp peer-group <text> address-family ipv4-vpn route-reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn route-server-client	protocols bgp peer-group <text> address-family ipv4-vpn route-server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn soft-reconfiguration inbound	protocols bgp peer-group <text> address-family ipv4-vpn soft-reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn unsuppress-map	protocols bgp peer-group <text> address-family ipv4-vpn unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv4-vpn weight	protocols bgp peer-group <text> address-family ipv4-vpn weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast addpath-tx-all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast addpath-tx-per-as	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast allowas-in-number	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast as-override	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast attribute-unchanged as-path	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast attribute-unchanged med	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast attribute-unchanged next-hop	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast capability orf prefix-list receive	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast capability orf prefix-list send	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast conditionally-advertise advertise-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast conditionally-advertise exist-map	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast conditionally-advertise non-exist-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast default-originate route-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast disable-send-community extended	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast disable-send-community standard	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast distribute-list export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast distribute-list import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast filter-list export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast filter-list import	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast maximum-prefix	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast maximum-prefix-out	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast nexthop-local unchanged	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast nexthop-self force	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast prefix-list export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast prefix-list import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-map export	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-map import	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-reflector-client	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-server-client	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast soft-reconfiguration inbound	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast unsuppress-map	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast weight	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast addpath-tx-all	protocols bgp peer-group <text> address-family ipv6-unicast addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast addpath-tx-per-as	protocols bgp peer-group <text> address-family ipv6-unicast addpath-tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast allowas-in number	protocols bgp peer-group <text> address-family ipv6-unicast allowas-in number <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast as-override	protocols bgp peer-group <text> address-family ipv6-unicast as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast attribute-unchanged as-path	protocols bgp peer-group <text> address-family ipv6-unicast attribute- unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast attribute-unchanged med	protocols bgp peer-group <text> address-family ipv6-unicast attribute- unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast attribute-unchanged next-hop	protocols bgp peer-group <text> address-family ipv6-unicast attribute- unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast capability orf prefix-list receive	protocols bgp peer-group <text> address-family ipv6-unicast capability orf prefix-list receive
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast capability orf prefix-list send	protocols bgp peer-group <text> address-family ipv6-unicast capability orf prefix-list send
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast conditionally-advertise advertise-map	protocols bgp peer-group <text> address-family family ipv6-unicast conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast conditionally-advertise exist-map	protocols bgp peer-group <text> address-family family ipv6-unicast conditionally-advertise exist-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast conditionally-advertise non-exist-map <value>	protocols bgp peer- group <text> address- family ipv6-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer- group <peer-group> address-family ipv6- unicast default-originate route-map <value>	protocols bgp peer-group <text> address-family ipv6-unicast default- originate route-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast disable-send-community extended	protocols bgp peer-group <text> address-family ipv6-unicast disable-send- community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast disable-send-community standard	protocols bgp peer-group <text> address-family ipv6-unicast disable-send- community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast distribute-list export	protocols bgp peer-group <text> address-family ipv6-unicast distribute-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast distribute-list import	protocols bgp peer-group <text> address-family ipv6-unicast distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast filter-list export	protocols bgp peer-group <text> address-family ipv6-unicast filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast filter-list import	protocols bgp peer-group <text> address-family ipv6-unicast filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-unicast maximum-prefix	protocols bgp peer-group <text> address-family ipv6-unicast maximum- prefix <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast maximum-prefix-out maximum-prefix-out	protocols bgp peer-group <text> address-family ipv6-unicast maximum-prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast nexthop-local nexthop-local unchanged	protocols bgp peer-group <text> address-family ipv6-unicast nexthop-local unchanged
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast nexthop-self nexthop-self force	protocols bgp peer-group <text> address-family ipv6-unicast nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast prefix-list prefix-list export	protocols bgp peer-group <text> address-family ipv6-unicast prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast prefix-list prefix-list import	protocols bgp peer-group <text> address-family ipv6-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp peer-group <text> address-family ipv6-unicast remove-private-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast remove-private-as remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast route-map route-map export	protocols bgp peer-group <text> address-family ipv6-unicast route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast route-map route-map import	protocols bgp peer-group <text> address-family ipv6-unicast route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-unicast route-reflector-client route-reflector-client	protocols bgp peer-group <text> address-family ipv6-unicast route-reflector-client

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast route-server-client	protocols bgp peer-group <text> address-family ipv6-unicast route-server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast soft-reconfiguration inbound	protocols bgp peer-group <text> address-family family ipv6-unicast soft-reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast unsuppress-map	protocols bgp peer-group <text> address-family ipv6-unicast unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-unicast weight	protocols bgp peer-group <text> address-family ipv6-unicast weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-vpn addpath-tx-all	protocols bgp peer-group <text> address-family ipv6-vpn addpath-tx-all
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-vpn addpath-tx-per-as	protocols bgp peer-group <text> address-family ipv6-vpn addpath-tx-per-as
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-vpn allowas-in number	protocols bgp peer-group <text> address-family ipv6-vpn allowas-in number <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-vpn as-override	protocols bgp peer-group <text> address-family ipv6-vpn as-override
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family family ipv6-vpn attribute-unchanged as-path	protocols bgp peer-group <text> address-family ipv6-vpn attribute-unchanged as-path

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn attribute-unchanged med	protocols bgp peer-group <text> address-family ipv6-vpn attribute-unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn attribute-unchanged next-hop	protocols bgp peer-group <text> address-family ipv6-vpn attribute-unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn conditionally-advertise advertise-map	protocols bgp peer-group <text> address-family ipv6-vpn conditionally-advertise advertise-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn conditionally-advertise exist-map	protocols bgp peer-group <text> address-family ipv6-vpn conditionally-advertise exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn conditionally-advertise non-exist-map	protocols bgp peer-group <text> address-family ipv6-vpn conditionally-advertise non-exist-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn disable-send-community extended	protocols bgp peer-group <text> address-family ipv6-vpn disable-send-community extended
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn disable-send-community standard	protocols bgp peer-group <text> address-family ipv6-vpn disable-send-community standard
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn distribute-list export	protocols bgp peer-group <text> address-family ipv6-vpn distribute-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn distribute-list import	protocols bgp peer-group <text> address-family ipv6-vpn distribute-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn filter-list export	protocols bgp peer-group <text> address-family ipv6-vpn filter-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn filter-list import	protocols bgp peer-group <text> address-family ipv6-vpn filter-list import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn maximum-prefix	protocols bgp peer-group <text> address-family ipv6-vpn maximum-prefix <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn maximum-prefix-out	protocols bgp peer-group <text> address-family ipv6-vpn maximum-prefix-out <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn nexthop-local unchanged	protocols bgp peer-group <text> address-family ipv6-vpn nexthop-local unchanged
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn nexthop-self force	protocols bgp peer-group <text> address-family ipv6-vpn nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn prefix-list export	protocols bgp peer-group <text> address-family ipv6-vpn prefix-list export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn prefix-list import	protocols bgp peer-group <text> address-family ipv6-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	protocols bgp peer-group <text> address-family ipv6-vpn remove-private-as

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn remove-private-as all	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn route-map export	protocols bgp peer-group <text> address-family ipv6-vpn route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn route-map import	protocols bgp peer-group <text> address-family ipv6-vpn route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn route-reflector-client	protocols bgp peer-group <text> address-family ipv6-vpn route-reflector- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn route-server-client	protocols bgp peer-group <text> address-family ipv6-vpn route-server- client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6- vpn soft-reconfiguration inbound	protocols bgp peer- group <text> address- family ipv6-vpn soft- reconfiguration inbound
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family ipv6-vpn unsuppress-map	protocols bgp peer-group <text> address-family ipv6-vpn unsuppress-map <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address- family ipv6-vpn weight	protocols bgp peer-group <text> address-family ipv6-vpn weight <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn- evpn allowas-in number	protocols bgp peer-group <text> address-family l2vpn-evpn allowas-in number <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn attribute-unchanged as-path	protocols bgp peer-group <text> address-family l2vpn-evpn attribute-unchanged as-path
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn attribute-unchanged med	protocols bgp peer-group <text> address-family l2vpn-evpn attribute-unchanged med
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn attribute-unchanged next-hop	protocols bgp peer-group <text> address-family l2vpn-evpn attribute-unchanged next-hop
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn nexthop-self force	protocols bgp peer-group <text> address-family l2vpn-evpn nexthop-self force
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-map export	protocols bgp peer-group <text> address-family l2vpn-evpn route-map export <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-map import	protocols bgp peer-group <text> address-family l2vpn-evpn route-map import <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-reflector-client	protocols bgp peer-group <text> address-family l2vpn-evpn route-reflector-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-server-client	protocols bgp peer-group <text> address-family l2vpn-evpn route-server-client
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> address-family l2vpn-evpn soft-reconfiguration inbound	protocols bgp peer-group <text> address-family l2vpn-evpn soft-reconfiguration inbound

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols bgp peer-group &lt;neighbor&gt; bfd</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> bfd check-control-plane-failure	protocols bgp peer-group <text> bfd check-control-plane-failure
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> bfd profile	protocols bgp peer-group <text> bfd profile <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> capability dynamic	protocols bgp peer-group <text> capability dynamic
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> capability extended-nexthop	protocols bgp peer-group <text> capability extended-nexthop
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> capability software-version	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> description	protocols bgp peer-group <text> description <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> disable-capability-negotiation	protocols bgp peer-group <text> disable-capability-negotiation
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> disable-connected-check	protocols bgp peer-group <text> disable-connected-check
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> ebgp-multihop	protocols bgp peer-group <text> ebgp-multihop <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> graceful-restart	protocols bgp peer-group <text> graceful-restart <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> local-as <local-as> no-prepend replace-as	protocols bgp peer-group <text> local-as <text> no-prepend replace-as

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> local-role <local-role> strict	protocols bgp peer-group <text> local-role <text> strict
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> override- capability	protocols bgp peer-group <text> override-capability
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> passive	protocols bgp peer-group <text> passive
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> password	protocols bgp peer-group <text> password <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer- group <peer-group> path-attribute discard	protocols bgp peer-group <text> path-attribute dis- card <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer- group <peer-group> path-attribute treat-as- withdraw	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> port	protocols bgp peer-group <text> port <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> remote-as	protocols bgp peer-group <text> remote-as <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> shutdown	protocols bgp peer-group <text> shutdown
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> ttl-security hops	protocols bgp peer-group <text> ttl-security hops <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp peer-group <peer-group> update- source	protocols bgp peer-group <text> update-source <value>
×	not yet documented	protocols_bgp.xml.in: protocols bgp sid vpn per- vrf export	Nothing found in VyOS
×	not yet documented	protocols_bgp.xml.in: protocols bgp srv6 locator	Nothing found in VyOS
✓	<i>set protocols bgp system-as &lt;asn&gt;</i>	protocols_bgp.xml.in: protocols bgp system-as	protocols bgp system-as <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols bgp timers holdtime &lt;seconds&gt;</i>	protocols_bgp.xml.in: protocols bgp timers hold-time	protocols bgp timers hold-time <value>
✓	<i>set protocols bgp timers keepalive &lt;seconds&gt;</i>	protocols_bgp.xml.in: protocols bgp timers keepalive	protocols bgp timers keepalive <value>
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp local-as	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp maximum-paths	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp metric weights	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp network	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp passive-interface	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp redistribute	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp router-id	Nothing found in VyOS
×	not yet documented	protocols_eigrp.xml.in: protocols eigrp variance	Nothing found in VyOS
✓	<i>set protocols failover route &lt;subnet&gt; next-hop &lt;address&gt; check policy &lt;policy&gt;</i>	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> check policy	protocols failover route <text> next-hop <text> check policy <value>
×	not yet documented	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> check port	protocols failover route <text> next-hop <text> check port <value>
✓	<i>set protocols failover route &lt;subnet&gt; next-hop &lt;address&gt; check target &lt;target-address&gt;</i>	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> check target	protocols failover route <text> next-hop <text> check target <value>
✓	<i>set protocols failover route &lt;subnet&gt; next-hop &lt;address&gt; check timeout &lt;timeout&gt;</i>	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> check timeout	protocols failover route <text> next-hop <text> check timeout <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols failover route &lt;subnet&gt; next-hop &lt;address&gt; check type &lt;protocol&gt;</i>	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> check type	protocols failover route <text> next-hop <text> check type <value>
✓	<i>set protocols failover route &lt;subnet&gt; next-hop &lt;address&gt; interface &lt;interface&gt;</i>	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> interface	protocols failover route <text> next-hop <text> interface <value>
✓	<i>set protocols failover route &lt;subnet&gt; next-hop &lt;address&gt; metric &lt;metric&gt;</i>	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> metric	protocols failover route <text> next-hop <text> metric <value>
×	not yet documented	protocols_failover.xml.in: protocols failover route <route> next-hop <next-hop> onlink	Nothing found in VyOS
✓	<i>set protocols igmp-proxy disable</i>	protocols_igmp-proxy.xml.in: protocols igmp-proxy disable	protocols igmp-proxy disable
✓	<i>set protocols igmp-proxy disable-quickleave</i>	protocols_igmp-proxy.xml.in: protocols igmp-proxy disable-quickleave	protocols igmp-proxy disable-quickleave
✓	<i>set protocols igmp-proxy interface &lt;interface&gt; alt-subnet &lt;network&gt;</i>	protocols_igmp-proxy.xml.in: protocols igmp-proxy interface <interface> alt-subnet	protocols igmp-proxy interface <text> alt-subnet <value>
✓	<i>set protocols igmp-proxy interface &lt;interface&gt; role &lt;upstream / downstream&gt;</i>	protocols_igmp-proxy.xml.in: protocols igmp-proxy interface <interface> role	protocols igmp-proxy interface <text> role <value>
×	not yet documented	protocols_igmp-proxy.xml.in: protocols igmp-proxy interface <interface> threshold	protocols igmp-proxy interface <text> threshold <value>
×	not yet documented	protocols_igmp-proxy.xml.in: protocols igmp-proxy interface <interface> whitelist	protocols igmp-proxy interface <text> whitelist <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	protocols igmp interface <text> join <text> source <value>
×	not yet documented	Nothing found in XML Definitions	protocols igmp interface <text> query-interval <value>
×	not yet documented	Nothing found in XML Definitions	protocols igmp interface <text> query-max-response-time <value>
×	not yet documented	Nothing found in XML Definitions	protocols igmp interface <text> version <value>
×	not yet documented	protocols_isis.xml.in: protocols isis advertise-high-metrics	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis advertise-passive-only	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis area-password md5	protocols isis area-password md5 <value>
×	not yet documented	protocols_isis.xml.in: protocols isis area-password plaintext-password	protocols isis area-password plaintext-password <value>
×	not yet documented	protocols_isis.xml.in: protocols isis default-information originate ipv4 level-1 always	protocols isis default-information originate ipv4 level-1 always
×	not yet documented	protocols_isis.xml.in: protocols isis default-information originate ipv4 level-1 metric	protocols isis default-information originate ipv4 level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis default-information originate ipv4 level-1 route-map	protocols isis default-information originate ipv4 level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis default-information originate ipv4 level-2 always	protocols isis default-information originate ipv4 level-2 always
×	not yet documented	protocols_isis.xml.in: protocols isis default-information originate ipv4 level-2 metric	protocols isis default-information originate ipv4 level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis default-information originate ipv4 level-2 route-map	protocols isis default-information originate ipv4 level-2 route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_isis.xml.in: protocols_isis_default-information originate ipv6 level-1 always	protocols_isis_default-information originate ipv6 level-1 always
×	not yet documented	protocols_isis.xml.in: protocols_isis_default-information originate ipv6 level-1 metric	protocols_isis_default-information originate ipv6 level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols_isis_default-information originate ipv6 level-1 route-map	protocols_isis_default-information originate ipv6 level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols_isis_default-information originate ipv6 level-2 always	protocols_isis_default-information originate ipv6 level-2 always
×	not yet documented	protocols_isis.xml.in: protocols_isis_default-information originate ipv6 level-2 metric	protocols_isis_default-information originate ipv6 level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols_isis_default-information originate ipv6 level-2 route-map	protocols_isis_default-information originate ipv6 level-2 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols_isis_domain-password md5	protocols_isis_domain-password md5 <value>
×	not yet documented	protocols_isis.xml.in: protocols_isis_domain-password plaintext-password	protocols_isis_domain-password plaintext-password <value>
✓	<i>set protocols isis dynamic-hostname</i>	protocols_isis.xml.in: protocols_isis_dynamic-hostname	protocols_isis_dynamic-hostname
×	<i>set protocols isis fast-reroute lfa local load-sharing disable &lt;level-1 level-2&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols_isis_fast-reroute lfa local load-sharing disable level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols_isis_fast-reroute lfa local load-sharing disable level-2	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols isis fast-reroute lfa local priority-limit &lt;medium/high/critical.&lt;br&gt;&lt;level-1/level-2&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local priority-limit critical level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local priority-limit critical level-2	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local priority-limit high level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local priority-limit high level-2	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local priority-limit medium level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local priority-limit medium level-2	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local tiebreaker downstream index <index> level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local tiebreaker downstream index <index> level-2	Nothing found in VyOS
×	<i>set protocols isis fast-reroute lfa local tiebreaker &lt;downstream/lowest-ba index &lt;number&gt;&lt;br&gt;&lt;level-1/level-2&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local tiebreaker lowest- backup-metric index <in- dex> level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local tiebreaker lowest- backup-metric index <in- dex> level-2	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local tiebreaker node- protecting index <index> level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa local tiebreaker node- protecting index <index> level-2	Nothing found in VyOS
×	<i>set protocols isis fast-reroute lfa remote prefix-list &lt;name&gt; &lt;level-1 level-2&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa remote prefix-list <prefix-list> level-1	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis fast-reroute lfa remote prefix-list <prefix-list> level-2	Nothing found in VyOS
×	<i>set protocols isis interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols isis &lt;name&gt; interface &lt;interface&gt; bfd</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis interface <interface> bfd profile	protocols isis interface <text> bfd profile <value>
✓	<i>set protocols isis interface &lt;interface&gt; circuit-type &lt;level-1 level-1-2 le</i>	protocols_isis.xml.in: protocols isis interface <interface> circuit-type	protocols isis inter- face <text> circuit-type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set protocols isis interface &lt;interface&gt; hello-interval &lt;seconds&gt;</code>	protocols_isis.xml.in: protocols isis interface <interface> hello-interval	protocols isis interface <text> hello-interval <value>
✓	<code>set protocols isis interface &lt;interface&gt; hello-multiplier &lt;seconds&gt;</code>	protocols_isis.xml.in: protocols isis inter- face <interface> hello- multiplier	protocols isis interface <text> hello-multiplier <value>
✓	<code>set protocols isis interface &lt;interface&gt; hello-padding</code>	protocols_isis.xml.in: protocols isis interface <interface> hello-padding	protocols isis interface <text> hello-padding
✓	<code>set protocols isis interface &lt;interface&gt; ldp-sync disable</code>	protocols_isis.xml.in: protocols isis interface <interface> ldp-sync disable	protocols isis interface <text> ldp-sync disable
✓	<code>set protocols isis interface &lt;interface&gt; ldp-sync holddown &lt;seconds&gt;</code>	protocols_isis.xml.in: protocols isis interface <interface> ldp-sync holddown	protocols isis interface <text> ldp-sync holddown <value>
✓	<code>set protocols isis interface &lt;interface&gt; metric &lt;metric&gt;</code>	protocols_isis.xml.in: protocols isis interface <interface> metric	protocols isis interface <text> metric <value>
✓	<code>set protocols isis interface &lt;interface&gt; network point-to-point</code>	protocols_isis.xml.in: protocols isis interface <interface> network point-to-point	protocols isis interface <text> network point-to- point
✓	<code>set protocols isis interface &lt;interface&gt; no-three-way-handshak</code>	protocols_isis.xml.in: protocols isis interface <interface> no-three-way- handshake	protocols isis interface <text> no-three-way- handshake
✓	<code>set protocols isis interface &lt;interface&gt; passive</code>	protocols_isis.xml.in: protocols isis interface <interface> passive	protocols isis interface <text> passive
×	not yet documented	protocols_isis.xml.in: protocols isis interface <interface> password md5	protocols isis interface <text> password md5 <value>
✓	<code>set protocols isis interface &lt;interface&gt; password plaintext-password &lt;text&gt;</code>	protocols_isis.xml.in: protocols isis interface <interface> password plaintext-password	protocols isis interface <text> password plaintext- password <value>
✓	<code>set protocols isis interface &lt;interface&gt; priority &lt;number&gt;</code>	protocols_isis.xml.in: protocols isis interface <interface> priority	protocols isis interface <text> priority <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols isis interface &lt;interface&gt; psnp-interval &lt;number&gt;</i>	protocols_isis.xml.in: protocols isis interface <interface> psnp-interval	protocols isis interface <text> psnp-interval <value>
×	<i>set protocols isis ldp-sync</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols isis ldp-sync holddown &lt;seconds&gt;</i>	protocols_isis.xml.in: protocols isis ldp-sync holddown	protocols isis ldp-sync holddown <value>
✓	<i>set protocols isis level &lt;level-1 level-1-2 le</i>	protocols_isis.xml.in: protocols isis level	protocols isis level <value>
×	not yet documented	protocols_isis.xml.in: protocols isis log-adjacency-changes	protocols isis log-adjacency-changes
✓	<i>set protocols isis lsp-gen-interval &lt;seconds&gt;</i>	protocols_isis.xml.in: protocols isis lsp-gen-interval	protocols isis lsp-gen-interval <value>
✓	<i>set protocols isis lsp-mtu &lt;size&gt;</i>	protocols_isis.xml.in: protocols isis lsp-mtu	protocols isis lsp-mtu <value>
✓	<i>set protocols isis lsp-refresh-interval &lt;seconds&gt;</i>	protocols_isis.xml.in: protocols isis lsp-refresh-interval	protocols isis lsp-refresh-interval <value>
✓	<i>set protocols isis max-lsp-lifetime &lt;seconds&gt;</i>	protocols_isis.xml.in: protocols isis max-lsp-lifetime	protocols isis max-lsp-lifetime <value>
✓	<i>set protocols isis metric-style &lt;narrow transition/wi</i>	protocols_isis.xml.in: protocols isis metric-style	protocols isis metric-style <value>
×	<i>set protocols isis name default-information originate &lt;ipv4 ipv6&gt; level-1</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols isis name default-information originate &lt;ipv4 ipv6&gt; level-2</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols isis net &lt;network-entity-title</i>	protocols_isis.xml.in: protocols isis net	protocols isis net <value>
✓	<i>set protocols isis purge-originator</i>	protocols_isis.xml.in: protocols isis purge-originator	protocols isis purge-originator
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 babel level-1 metric	protocols isis redistribute ipv4 babel level-1 metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 babel level-1 route- map	protocols isis redistribute ipv4 babel level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 babel level-2 metric	protocols isis redistribute ipv4 babel level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 babel level-2 route- map	protocols isis redistribute ipv4 babel level-2 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 bgp level-1 metric	protocols isis redistribute ipv4 bgp level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 bgp level-1 route- map	protocols isis redistribute ipv4 bgp level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 bgp level-2 metric	protocols isis redistribute ipv4 bgp level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 bgp level-2 route- map	protocols isis redistribute ipv4 bgp level-2 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 connected level-1 metric	protocols isis redistribute ipv4 connected level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 connected level-1 route-map	protocols isis redistribute ipv4 connected level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 connected level-2 metric	protocols isis redistribute ipv4 connected level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 connected level-2 route-map	protocols isis redistribute ipv4 connected level-2 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 kernel level-1 metric	protocols isis redistribute ipv4 kernel level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 kernel level-1 route- map	protocols isis redistribute ipv4 kernel level-1 route- map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 kernel level-2 metric <value>	protocols isis redistribute ipv4 kernel level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 kernel level-2 route- map	protocols isis redistribute ipv4 kernel level-2 route- map <value>
×	<i>set protocols isis redistribute ipv4 &lt;route source&gt; level-1</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols isis redistribute ipv4 &lt;route source&gt; level-2</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols isis redistribute ipv4 &lt;route source&gt; &lt;level-1 level-2&gt; metric &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 ospf level-1 metric <value>	protocols isis redistribute ipv4 ospf level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 ospf level-1 route- map	protocols isis redistribute ipv4 ospf level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 ospf level-2 metric <value>	protocols isis redistribute ipv4 ospf level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 ospf level-2 route- map	protocols isis redistribute ipv4 ospf level-2 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 rip level-1 metric <value>	protocols isis redistribute ipv4 rip level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 rip level-1 route-map <value>	protocols isis redistribute ipv4 rip level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 rip level-2 metric <value>	protocols isis redistribute ipv4 rip level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 rip level-2 route-map <value>	protocols isis redistribute ipv4 rip level-2 route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols isis redistribute ipv4 &lt;route source&gt; &lt;level-1 level-2&gt; route-map &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 static level-1 metric	protocols isis redistribute ipv4 static level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 static level-1 route-map	protocols isis redistribute ipv4 static level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 static level-2 metric	protocols isis redistribute ipv4 static level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv4 static level-2 route-map	protocols isis redistribute ipv4 static level-2 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 babel level-1 metric	protocols isis redistribute ipv6 babel level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 babel level-1 route-map	protocols isis redistribute ipv6 babel level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 babel level-2 metric	protocols isis redistribute ipv6 babel level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 babel level-2 route-map	protocols isis redistribute ipv6 babel level-2 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 bgp level-1 metric	protocols isis redistribute ipv6 bgp level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 bgp level-1 route-map	protocols isis redistribute ipv6 bgp level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 bgp level-2 metric	protocols isis redistribute ipv6 bgp level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 bgp level-2 route-map	protocols isis redistribute ipv6 bgp level-2 route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 connected level-1 metric	protocols isis redistribute ipv6 connected level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 connected level-1 route-map	protocols isis redistribute ipv6 connected level-1 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 connected level-2 metric	protocols isis redistribute ipv6 connected level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 connected level-2 route-map	protocols isis redistribute ipv6 connected level-2 route-map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 kernel level-1 metric	protocols isis redistribute ipv6 kernel level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 kernel level-1 route- map	protocols isis redistribute ipv6 kernel level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 kernel level-2 metric	protocols isis redistribute ipv6 kernel level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 kernel level-2 route- map	protocols isis redistribute ipv6 kernel level-2 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ospf6 level-1 metric	protocols isis redistribute ipv6 ospf6 level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ospf6 level-1 route- map	protocols isis redistribute ipv6 ospf6 level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ospf6 level-2 metric	protocols isis redistribute ipv6 ospf6 level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ospf6 level-2 route- map	protocols isis redistribute ipv6 ospf6 level-2 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ripng level-1 metric	protocols isis redistribute ipv6 ripng level-1 metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ripng level-1 route- map	protocols isis redistribute ipv6 ripng level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ripng level-2 metric	protocols isis redistribute ipv6 ripng level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 ripng level-2 route- map	protocols isis redistribute ipv6 ripng level-2 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 static level-1 metric	protocols isis redistribute ipv6 static level-1 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 static level-1 route- map	protocols isis redistribute ipv6 static level-1 route- map <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 static level-2 metric	protocols isis redistribute ipv6 static level-2 metric <value>
×	not yet documented	protocols_isis.xml.in: protocols isis redistribute ipv6 static level-2 route- map	protocols isis redistribute ipv6 static level-2 route- map <value>
✓	<i>set protocols isis segment-routing global-block high-label-value &lt;label-value&gt;</i>	protocols_isis.xml.in: protocols isis segment- routing global-block high-label-value	protocols isis segment- routing global-block high-label-value <value>
✓	<i>set protocols isis segment-routing global-block low-label-value &lt;label-value&gt;</i>	protocols_isis.xml.in: protocols isis segment- routing global-block low-label-value	protocols isis segment- routing global-block low-label-value <value>
×	<i>set protocols isis segment-routing local-block &lt;low-label-value &lt;label-value&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols isis segment-routing local-block high-label-value &lt;label-value&gt;</i>	protocols_isis.xml.in: protocols isis segment- routing local-block high-label-value	protocols isis segment- routing local-block high-label-value <value>
×	not yet documented	protocols_isis.xml.in: protocols isis segment- routing local-block low-label-value	protocols isis segment- routing local-block low-label-value <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols isis segment-routing maximum-label-depth &lt;1-16&gt;</i>	protocols_isis.xml.in: protocols isis segment-routing maximum-label-depth	protocols isis segment-routing maximum-label-depth <value>
×	not yet documented	protocols_isis.xml.in: protocols isis segment-routing prefix <prefix> absolute explicit-null	protocols isis segment-routing prefix <text> absolute explicit-null
×	not yet documented	protocols_isis.xml.in: protocols isis segment-routing prefix <prefix> absolute no-php-flag	protocols isis segment-routing prefix <text> absolute no-php-flag
×	not yet documented	protocols_isis.xml.in: protocols isis segment-routing prefix <prefix> absolute value	protocols isis segment-routing prefix <text> absolute value <value>
×	<i>set protocols isis segment-routing prefix &lt;address&gt; index &lt;no-php-flag / explicit-null / n-flag-clear&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_isis.xml.in: protocols isis segment-routing prefix <prefix> index explicit-null	protocols isis segment-routing prefix <text> index explicit-null
×	not yet documented	protocols_isis.xml.in: protocols isis segment-routing prefix <prefix> index no-php-flag	protocols isis segment-routing prefix <text> index no-php-flag
✓	<i>set protocols isis segment-routing prefix &lt;address&gt; index value &lt;0-65535&gt;</i>	protocols_isis.xml.in: protocols isis segment-routing prefix <prefix> index value	protocols isis segment-routing prefix <text> index value <value>
✓	<i>set protocols isis set-attached-bit</i>	protocols_isis.xml.in: protocols isis set-attached-bit	protocols isis set-attached-bit
✓	<i>set protocols isis set-overload-bit</i>	protocols_isis.xml.in: protocols isis set-overload-bit	protocols isis set-overload-bit
✓	<i>set protocols isis spf-delay-ietf holddown &lt;milliseconds&gt;</i>	protocols_isis.xml.in: protocols isis spf-delay-ietf holddown	protocols isis spf-delay-ietf holddown <value>
✓	<i>set protocols isis spf-delay-ietf init-delay &lt;milliseconds&gt;</i>	protocols_isis.xml.in: protocols isis spf-delay-ietf init-delay	protocols isis spf-delay-ietf init-delay <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols isis spf-delay-ietf long-delay &lt;milliseconds&gt;</i>	protocols_isis.xml.in: protocols isis spf-delay-ietf long-delay	protocols isis spf-delay-ietf long-delay <value>
✓	<i>set protocols isis spf-delay-ietf short-delay &lt;milliseconds&gt;</i>	protocols_isis.xml.in: protocols isis spf-delay-ietf short-delay	protocols isis spf-delay-ietf short-delay <value>
✓	<i>set protocols isis spf-delay-ietf time-to-learn &lt;milliseconds&gt;</i>	protocols_isis.xml.in: protocols isis spf-delay-ietf time-to-learn	protocols isis spf-delay-ietf time-to-learn <value>
✓	<i>set protocols isis spf-interval &lt;seconds&gt;</i>	protocols_isis.xml.in: protocols isis spf-interval	protocols isis spf-interval <value>
×	not yet documented	protocols_isis.xml.in: protocols isis traffic-engineering address	protocols isis traffic-engineering address <value>
×	not yet documented	protocols_isis.xml.in: protocols isis traffic-engineering enable	protocols isis traffic-engineering enable
✓	<i>set protocols mpls interface &lt;interface&gt;</i>	protocols_mpls.xml.in: protocols mpls interface	protocols mpls interface <value>
✓	<i>set protocols mpls ldp allocation ipv4 access-list &lt;access list number&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp allocation ipv4 access-list	protocols mpls ldp allocation ipv4 access-list <value>
✓	<i>set protocols mpls ldp allocation ipv6 access-list6 &lt;access list number&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp allocation ipv6 access-list6	protocols mpls ldp allocation ipv6 access-list6 <value>
✓	<i>set protocols mpls ldp discovery hello-ipv4-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery hello-ipv4-holdtime	protocols mpls ldp discovery hello-ipv4-holdtime <value>
✓	<i>set protocols mpls ldp discovery hello-ipv4-interval &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery hello-ipv4-interval	protocols mpls ldp discovery hello-ipv4-interval <value>
✓	<i>set protocols mpls ldp discovery hello-ipv6-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery hello-ipv6-holdtime	protocols mpls ldp discovery hello-ipv6-holdtime <value>
✓	<i>set protocols mpls ldp discovery hello-ipv6-interval &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery hello-ipv6-interval	protocols mpls ldp discovery hello-ipv6-interval <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols mpls ldp discovery session-ipv4-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery session-ipv4-holdtime	protocols mpls ldp discovery session-ipv4-holdtime <value>
✓	<i>set protocols mpls ldp discovery session-ipv6-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery session-ipv6-holdtime	protocols mpls ldp discovery session-ipv6-holdtime <value>
✓	<i>set protocols mpls ldp discovery transport-ipv4-address &lt;address&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery transport-ipv4-address	protocols mpls ldp discovery transport-ipv4-address <value>
✓	<i>set protocols mpls ldp discovery transport-ipv6-address &lt;address&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp discovery transport-ipv6-address	protocols mpls ldp discovery transport-ipv6-address <value>
✓	<i>set protocols mpls ldp export ipv4 explicit-null</i>	protocols_mpls.xml.in: protocols mpls ldp export ipv4 explicit-null	protocols mpls ldp export ipv4 explicit-null
✓	<i>set protocols mpls ldp export ipv4 export-filter filter-access-list &lt;access list number&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp export ipv4 export-filter filter-access-list	protocols mpls ldp export ipv4 export-filter filter-access-list <value>
×	not yet documented	protocols_mpls.xml.in: protocols mpls ldp export ipv4 export-filter neighbor-access-list	protocols mpls ldp export ipv4 export-filter neighbor-access-list <value>
✓	<i>set protocols mpls ldp export ipv6 explicit-null</i>	protocols_mpls.xml.in: protocols mpls ldp export ipv6 explicit-null	protocols mpls ldp export ipv6 explicit-null
✓	<i>set protocols mpls ldp export ipv6 export-filter filter-access-list6 &lt;access list number&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp export ipv6 export-filter filter-access-list6	protocols mpls ldp export ipv6 export-filter filter-access-list6 <value>
×	not yet documented	protocols_mpls.xml.in: protocols mpls ldp export ipv6 export-filter neighbor-access-list6	protocols mpls ldp export ipv6 export-filter neighbor-access-list6 <value>
✓	<i>set protocols mpls ldp import ipv4 import-filter filter-access-list &lt;access list number&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp import ipv4 import-filter filter-access-list	protocols mpls ldp import ipv4 import-filter filter-access-list <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_mpls.xml.in: protocols mpls ldp im- port ipv4 import-filter neighbor-access-list	protocols mpls ldp im- port ipv4 import-filter neighbor-access-list <value>
✓	<i>set protocols mpls ldp import ipv6 import-filter filter-access-list6 &lt;access list number&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp im- port ipv6 import-filter filter-access-list6	protocols mpls ldp im- port ipv6 import-filter filter-access-list6 <value>
×	not yet documented	protocols_mpls.xml.in: protocols mpls ldp im- port ipv6 import-filter neighbor-access-list6	protocols mpls ldp im- port ipv6 import-filter neighbor-access-list6 <value>
✓	<i>set protocols mpls ldp interface &lt;interface&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp inter- face	protocols mpls ldp inter- face <value>
✓	<i>set protocols mpls ldp neighbor &lt;address&gt; password &lt;password&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp neigh- bor <neighbor> password	protocols mpls ldp neigh- bor <text> password <value>
✓	<i>set protocols mpls ldp neighbor &lt;address&gt; session-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp neigh- bor <neighbor> session- holdtime	protocols mpls ldp neighbor <text> session- holdtime <value>
✓	<i>set protocols mpls ldp neighbor &lt;address&gt; ttl-security &lt;disable   hop count&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp neighbor <neighbor> ttl-security	protocols mpls ldp neigh- bor <text> ttl-security <value>
✓	<i>set protocols mpls ldp parameters cisco-interop-tlv</i>	protocols_mpls.xml.in: protocols mpls ldp param- eters cisco-interop-tlv	protocols mpls ldp param- eters cisco-interop-tlv
✓	<i>set protocols mpls ldp parameters ordered-control</i>	protocols_mpls.xml.in: protocols mpls ldp param- eters ordered-control	protocols mpls ldp param- eters ordered-control
✓	<i>set protocols mpls ldp parameters transport-prefer-ipv4</i>	protocols_mpls.xml.in: protocols mpls ldp param- eters transport-prefer-ipv4	protocols mpls ldp param- eters transport-prefer-ipv4
✓	<i>set protocols mpls ldp router-id &lt;address&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp router- id	protocols mpls ldp router- id <value>
✓	<i>set protocols mpls ldp targeted-neighbor ipv4 address &lt;address&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv4 address	protocols mpls ldp targeted-neighbor ipv4 address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols mpls ldp targeted-neighbor ipv4 enable</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv4 enable	protocols mpls ldp targeted-neighbor ipv4 enable
✓	<i>set protocols mpls ldp targeted-neighbor ipv4 hello-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv4 hello-holdtime	protocols mpls ldp targeted-neighbor ipv4 hello-holdtime <value>
✓	<i>set protocols mpls ldp targeted-neighbor ipv4 hello-interval &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv4 hello-interval	protocols mpls ldp targeted-neighbor ipv4 hello-interval <value>
✓	<i>set protocols mpls ldp targeted-neighbor ipv6 address &lt;address&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv6 address	protocols mpls ldp targeted-neighbor ipv6 address <value>
✓	<i>set protocols mpls ldp targeted-neighbor ipv6 enable</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv6 enable	protocols mpls ldp targeted-neighbor ipv6 enable
✓	<i>set protocols mpls ldp targeted-neighbor ipv6 hello-holdtime &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv6 hello-holdtime	protocols mpls ldp targeted-neighbor ipv6 hello-holdtime <value>
✓	<i>set protocols mpls ldp targeted-neighbor ipv6 hello-interval &lt;seconds&gt;</i>	protocols_mpls.xml.in: protocols mpls ldp targeted-neighbor ipv6 hello-interval	protocols mpls ldp targeted-neighbor ipv6 hello-interval <value>
×	not yet documented	protocols_mpls.xml.in: protocols mpls parameters maximum-ttl	protocols mpls parameters maximum-ttl <value>
×	not yet documented	protocols_mpls.xml.in: protocols mpls parameters no-propagate-ttl	protocols mpls parameters no-propagate-ttl
✓	<i>set protocols nhrp tunnel &lt;tunnel&gt; cisco-authentication &lt;secret&gt;</i>	protocols_nhrp.xml.in: protocols nhrp tun- nel <tunnel> cisco- authentication	protocols nhrp tun- nel <text> cisco- authentication <value>
✓	<i>set protocols nhrp tunnel &lt;tunnel&gt; dynamic-map &lt;address&gt; nbma-domain-name &lt;fqdn&gt;</i>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> dynamic-map <dynamic-map> nbma- domain-name	protocols nhrp tunnel <text> dynamic-map <text> nbma-domain- name <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; holding-time &lt;timeout&gt;</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> holding-time	protocols nhrp tunnel <text> holding-time <value>
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; map cisco</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> map <map> cisco	protocols nhrp tunnel <text> map <text> cisco
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; map nbma-address &lt;address&gt;</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> map <map> nbma-address	protocols nhrp tunnel <text> map <text> nbma- address <value>
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; map register</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> map <map> register	protocols nhrp tunnel <text> map <text> register
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; multicast &lt;dynamic / nhs&gt;</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> multicast	protocols nhrp tunnel <text> multicast <value>
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; non-caching</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> non-caching	protocols nhrp tunnel <text> non-caching
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; redirect</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> redirect	protocols nhrp tunnel <text> redirect
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; shortcut</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> shortcut	protocols nhrp tunnel <text> shortcut
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; shortcut-destination</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> shortcut- destination	protocols nhrp tun- nel <text> shortcut- destination
×	<code>set protocols nhrp tunnel &lt;tunnel&gt; shortcut-target &lt;address&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set protocols nhrp tunnel &lt;tunnel&gt; shortcut-target &lt;address&gt; holding-time &lt;timeout&gt;</code>	protocols_nhrp.xml.in: protocols nhrp tunnel <tunnel> shortcut-target <shortcut-target> holding- time	protocols nhrp tunnel <text> shortcut-target <text> holding-time <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf access-list <access-list> export	protocols ospf access-list <text> export <value>
✓	<code>set protocols ospf aggregation timer &lt;seconds&gt;</code>	protocols_ospf.xml.in: protocols ospf aggregation timer	protocols ospf aggregation timer <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> area-type normal	protocols ospf area <text> area-type normal
×	<i>set protocols ospf area &lt;number&gt; area-type nssa</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols ospf area &lt;number&gt; area-type nssa default-cost &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf area <area> area-type nssa default-cost	protocols ospf area <text> area-type nssa default-cost <value>
✓	<i>set protocols ospf area &lt;number&gt; area-type nssa no-summary</i>	protocols_ospf.xml.in: protocols ospf area <area> area-type nssa no-summary	protocols ospf area <text> area-type nssa no-summary
✓	<i>set protocols ospf area &lt;number&gt; area-type nssa translate &lt;always/candidate/never&gt;</i>	protocols_ospf.xml.in: protocols ospf area <area> area-type nssa translate	protocols ospf area <text> area-type nssa translate <value>
×	<i>set protocols ospf area &lt;number&gt; area-type stub</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols ospf area &lt;number&gt; area-type stub default-cost &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf area <area> area-type stub default-cost	protocols ospf area <text> area-type stub default-cost <value>
✓	<i>set protocols ospf area &lt;number&gt; area-type stub no-summary</i>	protocols_ospf.xml.in: protocols ospf area <area> area-type stub no-summary	protocols ospf area <text> area-type stub no-summary
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> authentication	protocols ospf area <text> authentication <value>
×	<i>set protocols ospf area &lt;number&gt; authentication md5</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols ospf area &lt;number&gt; authentication plaintext-password</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols ospf area &lt;number&gt; export-list &lt;acl_number&gt;</i>	protocols_ospf.xml.in: protocols ospf area <area> export-list	protocols ospf area <text> export-list <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set protocols ospf area &lt;number&gt; import-list &lt;acl_number&gt;</code>	protocols_ospf.xml.in: protocols ospf area <area> import-list	protocols ospf area <text> import-list <value>
✓	<code>set protocols ospf area &lt;number&gt; network &lt;A.B.C.D/M&gt;</code>	protocols_ospf.xml.in: protocols ospf area <area> network	protocols ospf area <text> network <value>
×	<code>set protocols ospf area &lt;number&gt; range &lt;A.B.C.D/M&gt; [cost &lt;number&gt;]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> range <range> cost	protocols ospf area <text> range <text> cost <value>
✓	<code>set protocols ospf area &lt;number&gt; range &lt;A.B.C.D/M&gt; not-advertise</code>	protocols_ospf.xml.in: protocols ospf area <area> range <range> not-advertise	protocols ospf area <text> range <text> not-advertise
✓	<code>set protocols ospf area &lt;number&gt; range &lt;A.B.C.D/M&gt; substitute &lt;E.F.G.H/M&gt;</code>	protocols_ospf.xml.in: protocols ospf area <area> range <range> substitute	protocols ospf area <text> range <text> substitute <value>
✓	<code>set protocols ospf area &lt;number&gt; shortcut &lt;default disable enab</code>	protocols_ospf.xml.in: protocols ospf area <area> shortcut	protocols ospf area <text> shortcut <value>
×	<code>set protocols ospf area &lt;number&gt; virtual-link &lt;A.B.C.D&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> virtual-link <virtual-link> authentication md5 key-id <key-id> md5-key	protocols ospf area <text> virtual-link <text> authen- tication md5 key-id <text> md5-key <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> virtual-link <virtual-link> authentication plaintext- password	protocols ospf area <text> virtual-link <text> authentication plaintext- password <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> virtual-link <virtual-link> dead-interval	protocols ospf area <text> virtual-link <text> dead- interval <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> virtual-link <virtual-link> hello-interval	protocols ospf area <text> virtual-link <text> hello- interval <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> virtual-link <virtual-link> retransmit-interval	protocols ospf area <text> virtual-link <text> retransmit-interval <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf area <area> virtual-link <virtual-link> transmit-delay	protocols ospf area <text> virtual-link <text> transmit-delay <value>
✓	<i>set protocols ospf auto-cost reference-bandwidth &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf auto-cost reference-bandwidth	protocols ospf auto-cost reference-bandwidth <value>
✓	<i>set protocols ospf capability opaque</i>	protocols_ospf.xml.in: protocols ospf capability opaque	protocols ospf capability opaque
×	<i>set protocols ospf default-information originate [always] [metric &lt;number&gt;] [metric-type &lt;1 2&gt;] [route-map &lt;name&gt;]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf default- information originate always	protocols ospf default- information originate always
×	not yet documented	protocols_ospf.xml.in: protocols ospf default- information originate metric	protocols ospf default- information originate metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf default- information originate metric-type	protocols ospf default- information originate metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf default- information originate route-map	protocols ospf default- information originate route-map <value>
✓	<i>set protocols ospf default-metric &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf default- metric	protocols ospf default- metric <value>
✓	<i>set protocols ospf distance global &lt;distance&gt;</i>	protocols_ospf.xml.in: protocols ospf distance global	protocols ospf distance global <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols ospf distance ospf &lt;external/inter-area/&gt; &lt;distance&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf distance ospf external	protocols ospf distance ospf external <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf distance ospf inter-area	protocols ospf distance ospf inter-area <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf distance ospf intra-area	protocols ospf distance ospf intra-area <value>
×	<i>set protocols ospf graceful-restart [grace-period (1-1800)]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf graceful-restart grace-period	protocols ospf graceful-restart grace-period <value>
×	<i>set protocols ospf graceful-restart helper enable [router-id A.B.C.D]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf graceful-restart helper enable router-id	protocols ospf graceful-restart helper enable router-id <value>
✓	<i>set protocols ospf graceful-restart helper no-strict-lsa-checking</i>	protocols_ospf.xml.in: protocols ospf graceful-restart helper no-strict-lsa-checking	protocols ospf graceful-restart helper no-strict-lsa-checking
✓	<i>set protocols ospf graceful-restart helper planned-only</i>	protocols_ospf.xml.in: protocols ospf graceful-restart helper planned-only	protocols ospf graceful-restart helper planned-only
✓	<i>set protocols ospf graceful-restart helper supported-grace-time</i>	protocols_ospf.xml.in: protocols ospf graceful-restart helper supported-grace-time	protocols ospf graceful-restart helper supported-grace-time <value>
✓	<i>set protocols ospf interface &lt;interface&gt; area &lt;x.x.x.x   x&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> area	protocols ospf interface <text> area <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols ospf interface &lt;interface&gt; authentication md5 key-id &lt;id&gt; md5-key &lt;text&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> authentication md5 key-id <key-id> md5-key	protocols ospf interface <text> authentication md5 key-id <text> md5-key <value>
✓	<i>set protocols ospf interface &lt;interface&gt; authentication plaintext-password &lt;text&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> authentication plaintext-password	protocols ospf interface <text> authentication plaintext-password <value>
✓	<i>set protocols ospf interface &lt;interface&gt; bandwidth &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> bandwidth	protocols ospf interface <text> bandwidth <value>
×	<i>set protocols ospf interface &lt;interface&gt; bfd</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf interface <interface> bfd profile	protocols ospf interface <text> bfd profile <value>
✓	<i>set protocols ospf interface &lt;interface&gt; cost &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> cost	protocols ospf interface <text> cost <value>
✓	<i>set protocols ospf interface &lt;interface&gt; dead-interval &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> dead-interval	protocols ospf interface <text> dead-interval <value>
✓	<i>set protocols ospf interface &lt;interface&gt; hello-interval &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> hello-interval	protocols ospf interface <text> hello-interval <value>
✓	<i>set protocols ospf interface &lt;interface&gt; hello-multiplier &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> hello-multiplier	protocols ospf interface <text> hello-multiplier <value>
✓	<i>set protocols ospf interface &lt;interface&gt; ldp-sync disable</i>	protocols_ospf.xml.in: protocols ospf interface <interface> ldp-sync disable	protocols ospf interface <text> ldp-sync disable
✓	<i>set protocols ospf interface &lt;interface&gt; ldp-sync holddown &lt;seconds&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> ldp-sync holddown	protocols ospf interface <text> ldp-sync holddown <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols ospf interface &lt;interface&gt; mtu-ignore</i>	protocols_ospf.xml.in: protocols ospf interface <interface> mtu-ignore	protocols ospf interface <text> mtu-ignore
✓	<i>set protocols ospf interface &lt;interface&gt; network &lt;type&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> network	protocols ospf interface <text> network <value>
×	<i>set protocols ospf interface &lt;interface&gt; passive [disable]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf inter- face <interface> passive disable	protocols ospf interface <text> passive disable
✓	<i>set protocols ospf interface &lt;interface&gt; priority &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> priority	protocols ospf interface <text> priority <value>
✓	<i>set protocols ospf interface &lt;interface&gt; retransmit-interval &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> retransmit- interval	protocols ospf interface <text> retransmit-interval <value>
✓	<i>set protocols ospf interface &lt;interface&gt; transmit-delay &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf interface <interface> transmit-delay	protocols ospf interface <text> transmit-delay <value>
×	<i>set protocols ospf ldp-sync</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols ospf ldp-sync holddown &lt;seconds&gt;</i>	protocols_ospf.xml.in: protocols ospf ldp-sync holddown	protocols ospf ldp-sync holddown <value>
×	<i>set protocols ospf log-adjacency-changes [detail]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf log- adjacency-changes detail	protocols ospf log- adjacency-changes detail
×	<i>set protocols ospf max-metric router-lsa &lt;administrative/on-sh &lt;seconds&gt;/on-startup &lt;seconds&gt;&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospf.xml.in: protocols ospf max-metric router-lsa administrative	protocols ospf max-metric router-lsa administrative
×	not yet documented	protocols_ospf.xml.in: protocols ospf max-metric router-lsa on-shutdown	protocols ospf max-metric router-lsa on-shutdown <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf max-metric router-lsa on-startup	protocols ospf max-metric router-lsa on-startup <value>
✓	<i>set protocols ospf maximum-paths &lt;1-64&gt;</i>	protocols_ospf.xml.in: protocols ospf maximum-paths	protocols ospf maximum-paths <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf mpls-te enable	protocols ospf mpls-te enable
×	not yet documented	protocols_ospf.xml.in: protocols ospf mpls-te router-address	protocols ospf mpls-te router-address <value>
×	<i>set protocols ospf neighbor &lt;A.B.C.D&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols ospf neighbor &lt;A.B.C.D&gt; poll-interval &lt;seconds&gt;</i>	protocols_ospf.xml.in: protocols ospf neighbor <neighbor> poll-interval	protocols ospf neighbor <text> poll-interval <value>
✓	<i>set protocols ospf neighbor &lt;A.B.C.D&gt; priority &lt;number&gt;</i>	protocols_ospf.xml.in: protocols ospf neighbor <neighbor> priority	protocols ospf neighbor <text> priority <value>
✓	<i>set protocols ospf parameters abr-type &lt;cisco/ibm/shortcut/s&gt;</i>	protocols_ospf.xml.in: protocols ospf parameters abr-type	protocols ospf parameters abr-type <value>
✓	<i>set protocols ospf parameters opaque-lsa</i>	protocols_ospf.xml.in: protocols ospf parameters opaque-lsa	protocols ospf parameters opaque-lsa
✓	<i>set protocols ospf parameters rfc1583-compatibility</i>	protocols_ospf.xml.in: protocols ospf parameters rfc1583-compatibility	protocols ospf parameters rfc1583-compatibility
✓	<i>set protocols ospf parameters router-id &lt;rid&gt;</i>	protocols_ospf.xml.in: protocols ospf parameters router-id	protocols ospf parameters router-id <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf passive-interface	protocols ospf passive-interface <value>
×	<i>set protocols ospf passive-interface default</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols ospf redistribute &lt;route source&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute babel metric	protocols ospf redistribute babel metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute babel metric-type	protocols ospf redistribute babel metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute babel route-map	protocols ospf redistribute babel route-map <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute bgp metric	protocols ospf redistribute bgp metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute bgp metric-type	protocols ospf redistribute bgp metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute bgp route-map	protocols ospf redistribute bgp route-map <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute connected metric	protocols ospf redistribute connected metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute connected metric-type	protocols ospf redistribute connected metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute connected route-map	protocols ospf redistribute connected route-map <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute isis metric	protocols ospf redistribute isis metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute isis metric-type	protocols ospf redistribute isis metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute isis route-map	protocols ospf redistribute isis route-map <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute kernel metric	protocols ospf redistribute kernel metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute kernel metric-type	protocols ospf redi- stribute kernel metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute kernel route-map	protocols ospf redistribute kernel route-map <value>
×	<i>set protocols ospf redistribute &lt;route source&gt; metric &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols ospf redistribute &lt;route source&gt; metric-type &lt;1/2&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute rip metric	protocols ospf redistribute rip metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute rip metric-type	protocols ospf redistribute rip metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute rip route-map	protocols ospf redistribute rip route-map <value>
×	<i>set protocols ospf redistribute &lt;route source&gt; route-map &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute static metric	protocols ospf redistribute static metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute static metric-type	protocols ospf redistribute static metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute static route-map	protocols ospf redistribute static route-map <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute table <table> metric	protocols ospf redistribute table <text> metric <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute table <table> metric-type	protocols ospf redistribute table <text> metric-type <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf redistribute table <table> route-map	protocols ospf redistribute table <text> route-map <value>
✓	<i>set protocols ospf refresh timers &lt;seconds&gt;</i>	protocols_ospf.xml.in: protocols ospf refresh timers	protocols ospf refresh timers <value>
✓	<i>set protocols ospf segment-routing global-block high-label-value &lt;label-value&gt;</i>	protocols_ospf.xml.in: protocols ospf segment-routing global-block high-label-value	protocols ospf segment-routing global-block high-label-value <value>
✓	<i>set protocols ospf segment-routing global-block low-label-value &lt;label-value&gt;</i>	protocols_ospf.xml.in: protocols ospf segment-routing global-block low-label-value	protocols ospf segment-routing global-block low-label-value <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols ospf segment-routing local-block &lt;low-label-value &lt;label-value&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols ospf segment-routing local-block high-label-value &lt;label-value&gt;</i>	protocols_ospf.xml.in: protocols ospf segment-routing local-block high-label-value	protocols ospf segment-routing local-block high-label-value <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf segment-routing local-block low-label-value	protocols ospf segment-routing local-block low-label-value <value>
✓	<i>set protocols ospf segment-routing maximum-label-depth &lt;1-16&gt;</i>	protocols_ospf.xml.in: protocols ospf segment-routing maximum-label-depth	protocols ospf segment-routing maximum-label-depth <value>
×	<i>set protocols ospf segment-routing prefix &lt;address&gt; index &lt;no-php-flag   explicit-null   n-flag-clear&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf segment-routing prefix <prefix> index explicit-null	protocols ospf segment-routing prefix <text> index explicit-null
×	not yet documented	protocols_ospf.xml.in: protocols ospf segment-routing prefix <prefix> index no-php-flag	protocols ospf segment-routing prefix <text> index no-php-flag
✓	<i>set protocols ospf segment-routing prefix &lt;address&gt; index value &lt;0-65535&gt;</i>	protocols_ospf.xml.in: protocols ospf segment-routing prefix <prefix> index value	protocols ospf segment-routing prefix <text> index value <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf summary-address <summary-address> no-advertise	protocols ospf summary-address <text> no-advertise
×	not yet documented	protocols_ospf.xml.in: protocols ospf summary-address <summary-address> tag	protocols ospf summary-address <text> tag <value>
×	<i>set protocols ospf summary-address x.x.x.x/y [tag (1-4294967295)]</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols ospf summary-address x.x.x.x/y no-advertise</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols ospf timers throttle spf &lt;delay/initial-holdtime&gt; &lt;seconds&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospf.xml.in: protocols ospf timers throttle spf delay	protocols ospf timers throttle spf delay <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf timers throttle spf initial-holdtime	protocols ospf timers throttle spf initial-holdtime <value>
×	not yet documented	protocols_ospf.xml.in: protocols ospf timers throttle spf max-holdtime	protocols ospf timers throttle spf max-holdtime <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 area <area> area-type nssa default-information-originate	protocols ospfv3 area <text> area-type nssa default-information-originate
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 area <area> area-type nssa no-summary	protocols ospfv3 area <text> area-type nssa no-summary
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 area <area> area-type stub no-summary	protocols ospfv3 area <text> area-type stub no-summary
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 area <area> export-list	protocols ospfv3 area <text> export-list <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 area <area> import-list	protocols ospfv3 area <text> import-list <value>
×	<i>set protocols ospfv3 area &lt;number&gt; range &lt;prefix&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 area <area> range <range> advertise	protocols ospfv3 area <text> range <text> advertise
✓	<i>set protocols ospfv3 area &lt;number&gt; range &lt;prefix&gt; not-advertise</i>	protocols_ospfv3.xml.in: protocols ospfv3 area <area> range <range> not-advertise	protocols ospfv3 area <text> range <text> not-advertise

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 auto-cost reference-bandwidth	protocols ospfv3 auto- cost reference-bandwidth <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 default- information originate al- ways	protocols ospfv3 default- information originate al- ways
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 default- information originate met- ric	protocols ospfv3 default- information originate met- ric <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 default- information originate metric-type	protocols ospfv3 default- information originate metric-type <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 default- information originate route-map	protocols ospfv3 default- information originate route-map <value>
✓	<i>set protocols ospfv3 distance global &lt;distance&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 distance global	protocols ospfv3 distance global <value>
×	<i>set protocols ospfv3 distance ospfv3 &lt;external inter-area  &lt;distance&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 distance ospfv3 external	protocols ospfv3 distance ospfv3 external <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 distance ospfv3 inter-area	protocols ospfv3 distance ospfv3 inter-area <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 distance ospfv3 intra-area	protocols ospfv3 distance ospfv3 intra-area <value>
×	<i>set protocols ospfv3 graceful-restart [grace-period (1-1800)]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 graceful- restart grace-period	protocols ospfv3 graceful- restart grace-period <value>
×	<i>set protocols ospfv3 graceful-restart helper enable [router-id A.B.C. D]</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 graceful- restart helper enable router-id	protocols ospfv3 graceful- restart helper enable router-id <value>
✓	<i>set protocols ospfv3 graceful-restart helper lsa-check-disable</i>	protocols_ospfv3.xml.in: protocols ospfv3 graceful- restart helper lsa-check- disable	protocols ospfv3 graceful- restart helper lsa-check- disable
✓	<i>set protocols ospfv3 graceful-restart helper planned-only</i>	protocols_ospfv3.xml.in: protocols ospfv3 graceful- restart helper planned- only	protocols ospfv3 graceful- restart helper planned- only
✓	<i>set protocols ospfv3 graceful-restart helper supported-grace-time</i>	protocols_ospfv3.xml.in: protocols ospfv3 graceful- restart helper supported- grace-time	protocols ospfv3 graceful- restart helper supported- grace-time <value>
✓	<i>set protocols ospfv3 interface &lt;interface&gt; area &lt;number&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> area	protocols ospfv3 interface <text> area <value>
×	<i>set protocols ospfv3 interface &lt;interface&gt; bfd</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> bfd profile	protocols ospfv3 interface <text> bfd profile <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> cost	protocols ospfv3 interface <text> cost <value>
✓	<i>set protocols ospfv3 interface &lt;interface&gt; dead-interval &lt;number&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> dead-interval	protocols ospfv3 inter- face <text> dead-interval <value>
✓	<i>set protocols ospfv3 interface &lt;interface&gt; hello-interval &lt;number&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> hello-interval	protocols ospfv3 interface <text> hello-interval <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> ifmtu	protocols ospfv3 interface <text> ifmtu <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> instance-id	protocols ospfv3 inter- face <text> instance-id <value>
×	<i>set protocols ospfv3 interface &lt;interface&gt; ipv6 cost &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols ospfv3 interface &lt;interface&gt; mtu-ignore</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> mtu-ignore	protocols ospfv3 interface <text> mtu-ignore
✓	<i>set protocols ospfv3 interface &lt;interface&gt; network &lt;type&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> network	protocols ospfv3 interface <text> network <value>
✓	<i>set protocols ospfv3 interface &lt;interface&gt; passive</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> passive	protocols ospfv3 interface <text> passive
✓	<i>set protocols ospfv3 interface &lt;interface&gt; priority &lt;number&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> priority	protocols ospfv3 interface <text> priority <value>
✓	<i>set protocols ospfv3 interface &lt;interface&gt; retransmit-interval &lt;number&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> retransmit-interval	protocols ospfv3 interface <text> retransmit-interval <value>
✓	<i>set protocols ospfv3 interface &lt;interface&gt; transmit-delay &lt;number&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 interface <interface> transmit-delay	protocols ospfv3 interface <text> transmit-delay <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 log-adjacency-changes detail	protocols ospfv3 log-adjacency-changes detail
✓	<i>set protocols ospfv3 parameters router-id &lt;rid&gt;</i>	protocols_ospfv3.xml.in: protocols ospfv3 parameters router-id	protocols ospfv3 parameters router-id <value>
×	<i>set protocols ospfv3 redistribute &lt;route source&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redistribute babel metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redistribute babel metric-type	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redistribute babel route-map	protocols ospfv3 redistribute babel route-map <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redistribute bgp metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redistribute bgp metric-type	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute bgp route-map	protocols ospfv3 redis- tribute bgp route-map <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute connected metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 re- distribute connected metric-type	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 re- distribute connected route-map	protocols ospfv3 re- distribute connected route-map <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute isis metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute isis metric-type	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute isis route-map	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute kernel metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute kernel metric-type	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute kernel route-map	protocols ospfv3 redis- tribute kernel route-map <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute ripng metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute ripng metric-type	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute ripng route-map	protocols ospfv3 redis- tribute ripng route-map <value>
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute static metric	Nothing found in VyOS
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute static metric-type	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ospfv3.xml.in: protocols ospfv3 redis- tribute static route-map <value>	protocols ospfv3 redis- tribute static route-map <value>
×	<i>set protocols pim6 interface &lt;interface-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 interface <interface> dr-priority	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 interface <interface> hello	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld disable</i>	protocols_pim6.xml.in: protocols pim6 interface <interface> mld disable	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld interval &lt;seconds&gt;</i>	protocols_pim6.xml.in: protocols pim6 interface <interface> mld interval	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld join &lt;multicast-address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld join &lt;multicast-address&gt; source &lt;source-address&gt;</i>	protocols_pim6.xml.in: protocols pim6 interface <interface> mld join <join> source	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld last-member-query-cou &lt;count&gt;</i>	protocols_pim6.xml.in: protocols pim6 inter- face <interface> mld last-member-query-count	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld last-member-query-int &lt;milliseconds&gt;</i>	protocols_pim6.xml.in: protocols pim6 interface <interface> mld last- member-query-interval	Nothing found in VyOS
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld max-response-time &lt;milliseconds&gt;</i>	protocols_pim6.xml.in: protocols pim6 inter- face <interface> mld max-response-time	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols pim6 interface &lt;interface-name&gt; mld version &lt;version-number&gt;</i>	protocols_pim6.xml.in: protocols pim6 interface <interface> mld version	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 interface <interface> no-bsm	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 interface <interface> no-unicast-bsm	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 interface <interface> passive	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 join-prune-interval	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 keep-alive-timer	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 packets	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 register-suppress-time	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 rp address <address> group	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 rp address <address> prefix-list6	Nothing found in VyOS
×	not yet documented	protocols_pim6.xml.in: protocols pim6 rp keep-alive-timer	Nothing found in VyOS
×	<i>set protocols pim ecmp</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols pim ecmp rebalance</i>	protocols_pim.xml.in: protocols pim ecmp rebalance	Nothing found in VyOS
×	<i>set protocols pim igmp watermark-warning &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim igmp watermark-warning	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; bfd [profile &lt;name&gt;]</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_pim.xml.in: protocols pim interface <interface> bfd profile	Nothing found in VyOS
✓	<i>set protocols pim interface &lt;interface&gt; dr-priority &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim interface <interface> dr-priority	protocols pim interface <text> dr-priority <value>
✓	<i>set protocols pim interface &lt;interface&gt; hello &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim interface <interface> hello	protocols pim interface <text> hello <value>
×	not yet documented	protocols_pim.xml.in: protocols pim interface <interface> igmp disable	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; igmp join &lt;multicast-address&gt; source-address &lt;IP-address&gt;</i>	protocols_pim.xml.in: protocols pim interface <interface> igmp join <join> source-address	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; igmp query-interval &lt;seconds&gt;</i>	protocols_pim.xml.in: protocols pim inter- face <interface> igmp query-interval	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; igmp query-max-response-ti. &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim inter- face <interface> igmp query-max-response-time	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; igmp version &lt;version-number&gt;</i>	protocols_pim.xml.in: protocols pim interface <interface> igmp version	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; no-bsm</i>	protocols_pim.xml.in: protocols pim interface <interface> no-bsm	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; no-unicast-bsm</i>	protocols_pim.xml.in: protocols pim interface <interface> no-unicast- bsm	Nothing found in VyOS
×	<i>set protocols pim interface &lt;interface&gt; passive</i>	protocols_pim.xml.in: protocols pim interface <interface> passive	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols pim interface &lt;interface&gt; source-address &lt;ip-address&gt;</i>	protocols_pim.xml.in: protocols pim interface <interface> source-address	Nothing found in VyOS
×	<i>set protocols pim join-prune-interval &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim join-prune-interval	Nothing found in VyOS
×	<i>set protocols pim keep-alive-timer &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim keep-alive-timer	Nothing found in VyOS
×	<i>set protocols pim no-v6-secondary</i>	protocols_pim.xml.in: protocols pim no-v6-secondary	Nothing found in VyOS
×	<i>set protocols pim packets &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim packets	Nothing found in VyOS
×	<i>set protocols pim register-accept-list &lt;prefix-list&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_pim.xml.in: protocols pim register-accept-list prefix-list	Nothing found in VyOS
×	<i>set protocols pim register-suppress-tim &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim register-suppress-time	Nothing found in VyOS
×	not yet documented	protocols_pim.xml.in: protocols pim rp address <address> group	protocols pim rp address <text> group <value>
×	<i>set protocols pim rp &lt;address&gt; group &lt;group&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols pim rp keep-alive-timer &lt;n&gt;</i>	protocols_pim.xml.in: protocols pim rp keep-alive-timer	protocols pim rp keep-alive-timer <value>
×	<i>set protocols pim spt-switchover infinity-and-beyond [prefix-list &lt;list&gt;]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_pim.xml.in: protocols pim spt-switchover infinity-and-beyond prefix-list	Nothing found in VyOS
×	<i>set protocols pim ssm prefix-list &lt;list&gt;</i>	protocols_pim.xml.in: protocols pim ssm prefix-list	Nothing found in VyOS
✓	<i>set protocols rip default-distance &lt;distance&gt;</i>	protocols_rip.xml.in: protocols rip default-distance	protocols rip default-distance <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set protocols rip default-information originate</i>	protocols_rip.xml.in: protocols_rip_default-information_originate	protocols_rip_default-information_originate
✓	<i>set protocols rip default-metric &lt;metric&gt;</i>	protocols_rip.xml.in: protocols_rip_default-metric	protocols_rip_default-metric <value>
×	<i>set protocols rip distribute-list access-list &lt;in/out&gt; &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_rip.xml.in: protocols_rip_distribute-list_access-list_in	protocols_rip_distribute-list_access-list_in <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_distribute-list_access-list_out	protocols_rip_distribute-list_access-list_out <value>
×	<i>set protocols rip distribute-list interface &lt;interface&gt; access-list &lt;in/out&gt; &lt;number&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_rip.xml.in: protocols_rip_distribute-list_interface_<interface>_access-list_in	protocols_rip_distribute-list_interface_<text>_access-list_in <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_distribute-list_interface_<interface>_access-list_out	protocols_rip_distribute-list_interface_<text>_access-list_out <value>
×	<i>set protocols rip distribute-list interface &lt;interface&gt; prefix-list &lt;in/out&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_rip.xml.in: protocols_rip_distribute-list_interface_<interface>_prefix-list_in	protocols_rip_distribute-list_interface_<text>_prefix-list_in <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_distribute-list_interface_<interface>_prefix-list_out	protocols_rip_distribute-list_interface_<text>_prefix-list_out <value>
×	<i>set protocols rip distribute-list prefix-list &lt;in/out&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_rip.xml.in: protocols rip distribute-list prefix-list in	protocols rip distribute-list prefix-list in <value>
×	not yet documented	protocols_rip.xml.in: protocols rip distribute-list prefix-list out	protocols rip distribute-list prefix-list out <value>
×	<i>set protocols rip interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_rip.xml.in: protocols rip interface <interface> authentication md5 <md5> password	protocols rip interface <text> authentication md5 <text> password <value>
×	not yet documented	protocols_rip.xml.in: protocols rip interface <interface> authentication plaintext-password	protocols rip interface <text> authentication plaintext-password <value>
×	not yet documented	protocols_rip.xml.in: protocols rip interface <in- terface> receive version	protocols rip interface <text> receive version <value>
×	not yet documented	protocols_rip.xml.in: protocols rip interface <in- terface> send version	protocols rip interface <text> send version <value>
×	not yet documented	protocols_rip.xml.in: protocols rip interface <in- terface> split-horizon dis- able	protocols rip interface <text> split-horizon disable
×	not yet documented	protocols_rip.xml.in: protocols rip interface <interface> split-horizon poison-reverse	protocols rip interface <text> split-horizon poison-reverse
✓	<i>set protocols rip neighbor &lt;A.B.C.D&gt;</i>	protocols_rip.xml.in: protocols rip neighbor	protocols rip neighbor <value>
✓	<i>set protocols rip network &lt;A.B.C.D/M&gt;</i>	protocols_rip.xml.in: protocols rip network	protocols rip network <value>
✓	<i>set protocols rip network-distance &lt;A. B.C.D/M&gt; access-list &lt;name&gt;</i>	protocols_rip.xml.in: protocols rip network- distance <network- distance> access-list	protocols rip network- distance <text> access-list <value>
✓	<i>set protocols rip network-distance &lt;A.B.C.D/M&gt; distance &lt;distance&gt;</i>	protocols_rip.xml.in: protocols rip network- distance <network- distance> distance	protocols rip network- distance <text> distance <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng aggregate- address	protocols ripng aggregate- address <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng default- information originate	protocols ripng default- information originate

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ripng.xml.in: protocols_ripng default-metric	protocols_ripng default-metric <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list access-list in	protocols_ripng distribute-list access-list in <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list access-list out	protocols_ripng distribute-list access-list out <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list interface <interface> access-list in	protocols_ripng distribute-list interface <text> access-list in <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list interface <interface> access-list out	protocols_ripng distribute-list interface <text> access-list out <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list interface <interface> prefix-list in	protocols_ripng distribute-list interface <text> prefix-list in <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list interface <interface> prefix-list out	protocols_ripng distribute-list interface <text> prefix-list out <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list prefix-list in	protocols_ripng distribute-list prefix-list in <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng distribute-list prefix-list out	protocols_ripng distribute-list prefix-list out <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng interface <interface> split-horizon disable	protocols_ripng interface <text> split-horizon disable
×	not yet documented	protocols_ripng.xml.in: protocols_ripng interface <interface> split-horizon poison-reverse	protocols_ripng interface <text> split-horizon poison-reverse
×	not yet documented	protocols_ripng.xml.in: protocols_ripng network	protocols_ripng network <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng passive-interface	protocols_ripng passive-interface <value>
×	not yet documented	protocols_ripng.xml.in: protocols_ripng redistribute babel metric	protocols_ripng redistribute babel metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute babel route-map	protocols ripng redistribute babel route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute bgp metric	protocols ripng redistribute bgp metric <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute bgp route-map	protocols ripng redistribute bgp route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute connected metric	protocols ripng redistribute connected metric <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute connected route-map	protocols ripng redistribute connected route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute kernel metric	protocols ripng redistribute kernel metric <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute kernel route-map	protocols ripng redistribute kernel route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute ospfv3 metric	protocols ripng redistribute ospfv3 metric <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute ospfv3 route-map	protocols ripng redistribute ospfv3 route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute static metric	protocols ripng redistribute static metric <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng redistribute static route-map	protocols ripng redistribute static route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng route	protocols ripng route <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng route-map	protocols ripng route-map <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng timers garbage-collection	protocols ripng timers garbage-collection <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng timers timeout	protocols ripng timers timeout <value>
×	not yet documented	protocols_ripng.xml.in: protocols ripng timers update	protocols ripng timers update <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_rip.xml.in: protocols_rip_passive-interface	protocols_rip_passive-interface <value>
×	<i>set protocols rip passive-interface interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols rip passive-interface interface default</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set protocols rip redistribute &lt;route source&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_babel_metric	protocols_rip_redistribute_babel_metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_babel_route-map	protocols_rip_redistribute_babel_route-map <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_bgp_metric	protocols_rip_redistribute_bgp_metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_bgp_route-map	protocols_rip_redistribute_bgp_route-map <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_connected_metric	protocols_rip_redistribute_connected_metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_connected_route-map	protocols_rip_redistribute_connected_route-map <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_isis_metric	protocols_rip_redistribute_isis_metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_isis_route-map	protocols_rip_redistribute_isis_route-map <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_kernel_metric	protocols_rip_redistribute_kernel_metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip_redistribute_kernel_route-map	protocols_rip_redistribute_kernel_route-map <value>
×	<i>set protocols rip redistribute &lt;route source&gt; metric &lt;metric&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_rip.xml.in: protocols_rip redistribute ospf metric	protocols_rip redistribute ospf metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip redistribute ospf route-map	protocols_rip redistribute ospf route-map <value>
×	<i>set protocols rip redistribute &lt;route source&gt; route-map &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	protocols_rip.xml.in: protocols_rip redistribute static metric	protocols_rip redistribute static metric <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip redistribute static route-map	protocols_rip redistribute static route-map <value>
✓	<i>set protocols rip route &lt;A.B.C.D/M&gt;</i>	protocols_rip.xml.in: protocols_rip route	protocols_rip route <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip route-map	protocols_rip route-map <value>
✓	<i>set protocols rip timers garbage-collection &lt;seconds&gt;</i>	protocols_rip.xml.in: protocols_rip timers garbage-collection	protocols_rip timers garbage-collection <value>
✓	<i>set protocols rip timers timeout &lt;seconds&gt;</i>	protocols_rip.xml.in: protocols_rip timers time- out	protocols_rip timers time- out <value>
✓	<i>set protocols rip timers update &lt;seconds&gt;</i>	protocols_rip.xml.in: protocols_rip timers update	protocols_rip timers update <value>
×	not yet documented	protocols_rip.xml.in: protocols_rip version	protocols_rip version <value>
✓	<i>set protocols rpki cache &lt;address&gt; port &lt;port&gt;</i>	protocols_rpki.xml.in: protocols_rpki cache <cache> port	protocols_rpki cache <text> port <value>
✓	<i>set protocols rpki cache &lt;address&gt; preference &lt;preference&gt;</i>	protocols_rpki.xml.in: protocols_rpki cache <cache> preference	protocols_rpki cache <text> preference <value>
×	not yet documented	protocols_rpki.xml.in: protocols_rpki cache <cache> ssh key	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	protocols_rpki cache <text> ssh known-hosts- file <value>
×	<i>set protocols rpki cache &lt;address&gt; ssh private-key-file &lt;filepath&gt;</i>	Nothing found in XML Definitions	protocols_rpki cache <text> ssh private-key-file <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols rpki cache &lt;address&gt; ssh public-key-file &lt;filepath&gt;</i>	Nothing found in XML Definitions	protocols rpki cache <text> ssh public-key-file <value>
✓	<i>set protocols rpki cache &lt;address&gt; ssh username &lt;user&gt;</i>	protocols_rpki.xml.in: protocols rpki cache <cache> ssh username	protocols rpki cache <text> ssh username <value>
×	<i>set protocols rpki expire-interval &lt;600-172800&gt;</i>	protocols_rpki.xml.in: protocols rpki expire-interval	Nothing found in VyOS
✓	<i>set protocols rpki polling-period &lt;1-86400&gt;</i>	protocols_rpki.xml.in: protocols rpki polling-period	protocols rpki polling-period <value>
×	<i>set protocols rpki retry-interval &lt;1-7200&gt;</i>	protocols_rpki.xml.in: protocols rpki retry-interval	Nothing found in VyOS
×	not yet documented	protocols_segment-routing.xml.in: protocols segment-routing interface <interface> srv6 hmac	Nothing found in VyOS
×	not yet documented	protocols_segment-routing.xml.in: protocols segment-routing srv6 locator <locator> behavior-usid	Nothing found in VyOS
×	not yet documented	protocols_segment-routing.xml.in: protocols segment-routing srv6 locator <locator> block-len	Nothing found in VyOS
×	not yet documented	protocols_segment-routing.xml.in: protocols segment-routing srv6 locator <locator> func-bits	Nothing found in VyOS
×	not yet documented	protocols_segment-routing.xml.in: protocols segment-routing srv6 locator <locator> node-len	Nothing found in VyOS
×	not yet documented	protocols_segment-routing.xml.in: protocols segment-routing srv6 locator <locator> prefix	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	proto- cols_static_arp.xml.in: protocols static arp inter- face <interface> address <address> description	protocols static arp inter- face <text> address <text> description <value>
✓	<b>set protocols static arp interface &lt;interface&gt; address &lt;host&gt; mac &lt;mac&gt;</b>	proto- cols_static_arp.xml.in: protocols static arp inter- face <interface> address <address> mac	protocols static arp inter- face <text> address <text> mac <value>
×	not yet documented	proto- cols_static_multicast.xml.in protocols static multicast interface-route <interface- route> next-hop-interface <next-hop-interface> dis- tance	protocols static multicast interface-route <text> next-hop-interface <text> distance <value>
×	not yet documented	proto- cols_static_multicast.xml.in protocols static multicast route <route> next-hop <next-hop> distance	protocols static multicast route <text> next-hop <text> distance <value>
×	not yet documented	protocols_static_neighbor- proxy.xml.in: protocols static neighbor- proxy arp <arp> interface	Nothing found in VyOS
×	not yet documented	protocols_static_neighbor- proxy.xml.in: protocols static neighbor- proxy nd <nd> interface	Nothing found in VyOS
×	not yet documented	protocols_static.xml.in: protocols static route-map	protocols static route-map <value>
×	<b>set protocols static route 0.0.0.0/0 next-hop &lt;address&gt;</b>	Nothing found in XML Definitions	Nothing found in VyOS
×	<b>set protocols static route6 &lt;subnet&gt; blackhole</b>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<b>set protocols static route6 &lt;subnet&gt; blackhole distance &lt;distance&gt;</b>	protocols_static.xml.in: protocols static route6 <route6> blackhole distance	protocols static route6 <text> blackhole distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> blackhole tag	protocols static route6 <text> blackhole tag <value>
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> description	protocols static route6 <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols static route6 &lt;subnet&gt; interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols static route6 &lt;subnet&gt; interface &lt;interface&gt; disable</i>	protocols_static.xml.in: protocols static route6 <route6> interface <interface> disable	protocols static route6 <text> interface <text> disable
✓	<i>set protocols static route6 &lt;subnet&gt; interface &lt;interface&gt; distance &lt;distance&gt;</i>	protocols_static.xml.in: protocols static route6 <route6> interface <interface> distance	protocols static route6 <text> interface <text> distance <value>
×	<i>set protocols static route6 &lt;subnet&gt; interface &lt;interface&gt; segments &lt;segments&gt;</i>	protocols_static.xml.in: protocols static route6 <route6> interface <interface> segments	Nothing found in VyOS
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> interface <interface> vrf	protocols static route6 <text> interface <text> vrf <value>
×	<i>set protocols static route6 &lt;subnet&gt; next-hop &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols static route6 &lt;subnet&gt; next-hop &lt;address&gt; bfd multi-hop source &lt;address&gt; profile &lt;profile&gt;</i>	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> bfd multi-hop source <source> profile	protocols static route6 <text> next-hop <text> bfd multi-hop source <text> profile <value>
✓	<i>set protocols static route6 &lt;subnet&gt; next-hop &lt;address&gt; bfd profile &lt;profile&gt;</i>	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> bfd profile	protocols static route6 <text> next-hop <text> bfd profile <value>
✓	<i>set protocols static route6 &lt;subnet&gt; next-hop &lt;address&gt; disable</i>	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> disable	protocols static route6 <text> next-hop <text> disable
✓	<i>set protocols static route6 &lt;subnet&gt; next-hop &lt;address&gt; distance &lt;distance&gt;</i>	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> distance	protocols static route6 <text> next-hop <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> interface	protocols static route6 <text> next-hop <text> interface <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set protocols static route6 &lt;subnet&gt; next-hop &lt;address&gt; segments &lt;segments&gt;</i>	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> segments	Nothing found in VyOS
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> next-hop <next-hop> vrf	protocols static route6 <text> next-hop <text> vrf <value>
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> reject distance	protocols static route6 <text> reject distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route6 <route6> reject tag	protocols static route6 <text> reject tag <value>
×	<i>set protocols static route &lt;subnet&gt; blackhole</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols static route &lt;subnet&gt; blackhole distance &lt;distance&gt;</i>	protocols_static.xml.in: protocols static route <route> blackhole distance	protocols static route <text> blackhole distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> blackhole tag	protocols static route <text> blackhole tag <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> description	protocols static route <text> description <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> dhcp-interface	protocols static route <text> dhcp-interface <value>
×	<i>set protocols static route &lt;subnet&gt; interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set protocols static route &lt;subnet&gt; interface &lt;interface&gt; disable</i>	protocols_static.xml.in: protocols static route <route> interface <interface> disable	protocols static route <text> interface <text> disable
✓	<i>set protocols static route &lt;subnet&gt; interface &lt;interface&gt; distance &lt;distance&gt;</i>	protocols_static.xml.in: protocols static route <route> interface <interface> distance	protocols static route <text> interface <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> interface <interface> vrf	protocols static route <text> interface <text> vrf <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set protocols static route &lt;subnet&gt; next-hop &lt;address&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set protocols static route &lt;subnet&gt; next-hop &lt;address&gt; bfd multi-hop source &lt;address&gt; profile &lt;profile&gt;</code>	protocols_static.xml.in: protocols static route <route> next-hop <next-hop> bfd multi-hop source <source> profile	protocols static route <text> next-hop <text> bfd multi-hop source <text> profile <value>
✓	<code>set protocols static route &lt;subnet&gt; next-hop &lt;address&gt; bfd profile &lt;profile&gt;</code>	protocols_static.xml.in: protocols static route <route> next-hop <next-hop> bfd profile	protocols static route <text> next-hop <text> bfd profile <value>
✓	<code>set protocols static route &lt;subnet&gt; next-hop &lt;address&gt; disable</code>	protocols_static.xml.in: protocols static route <route> next-hop <next-hop> disable	protocols static route <text> next-hop <text> disable
✓	<code>set protocols static route &lt;subnet&gt; next-hop &lt;address&gt; distance &lt;distance&gt;</code>	protocols_static.xml.in: protocols static route <route> next-hop <next-hop> distance	protocols static route <text> next-hop <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> next-hop <next-hop> interface	protocols static route <text> next-hop <text> interface <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> next-hop <next-hop> vrf	protocols static route <text> next-hop <text> vrf <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> reject distance	protocols static route <text> reject distance <value>
×	not yet documented	protocols_static.xml.in: protocols static route <route> reject tag	protocols static route <text> reject tag <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> description	protocols static table <text> description <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> blackhole distance	protocols static table <text> route6 <text> blackhole distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> blackhole tag	protocols static table <text> route6 <text> blackhole tag <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> description	protocols static table <text> route6 <text> description <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> interface <interface> disable	protocols static table <text> route6 <text> interface <text> disable
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> interface <interface> distance	protocols static table <text> route6 <text> interface <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> interface <interface> segments	Nothing found in VyOS
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> interface <interface> vrf	protocols static table <text> route6 <text> interface <text> vrf <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> bfd multi-hop source <source> profile	protocols static table <text> route6 <text> next-hop <text> bfd multi-hop source <text> profile <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> bfd profile	protocols static table <text> route6 <text> next-hop <text> bfd profile <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> disable	protocols static table <text> route6 <text> next-hop <text> disable
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> distance	protocols static table <text> route6 <text> next-hop <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> interface	protocols static table <text> route6 <text> next-hop <text> interface <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> segments	Nothing found in VyOS
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> next-hop <next-hop> vrf	protocols static table <text> route6 <text> next-hop <text> vrf <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> reject distance	protocols static table <text> route6 <text> reject distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route6 <route6> reject tag	protocols static table <text> route6 <text> reject tag <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> black-hole distance	protocols static table <text> route <text> black-hole distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> black-hole tag	protocols static table <text> route <text> blackhole tag <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> description	protocols static table <text> route <text> description <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> dhcp-interface	protocols static table <text> route <text> dhcp-interface <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> interface <interface> disable	protocols static table <text> route <text> interface <text> disable
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> interface <interface> distance	protocols static table <text> route <text> interface <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> interface <interface> vrf	protocols static table <text> route <text> interface <text> vrf <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> next-hop <next-hop> bfd multi-hop source <source> profile	protocols static table <text> route <text> next-hop <text> bfd multi-hop source <text> profile <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> next-hop <next-hop> bfd profile	protocols static table <text> route <text> next-hop <text> bfd profile <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> next-hop <next-hop> disable	protocols static table <text> route <text> next-hop <text> disable
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> next-hop <next-hop> distance	protocols static table <text> route <text> next-hop <text> distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> next-hop <next-hop> interface	protocols static table <text> route <text> next-hop <text> interface <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> next-hop <next-hop> vrf	protocols static table <text> route <text> next-hop <text> vrf <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> reject distance	protocols static table <text> route <text> reject distance <value>
×	not yet documented	protocols_static.xml.in: protocols static table <table> route <route> reject tag	protocols static table <text> route <text> reject tag <value>
×	not yet documented	qos.xml.in: qos interface <interface> egress	qos interface <text> egress <value>
×	not yet documented	qos.xml.in: qos interface <interface> ingress	qos interface <text> ingress <value>
✓	<i>set qos policy cake</i> <i>&lt;text&gt; bandwidth</i> <i>&lt;value&gt;</i>	qos.xml.in: qos policy cake <cake> bandwidth	qos policy cake <text> bandwidth <value>
✓	<i>set qos policy cake</i> <i>&lt;text&gt; description</i>	qos.xml.in: qos policy cake <cake> description	qos policy cake <text> description <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set qos policy cake &lt;text&gt; flow-isolation blind</code>	qos.xml.in: qos policy cake <cake> flow-isolation blind	qos policy cake <text> flow-isolation blind
✓	<code>set qos policy cake &lt;text&gt; flow-isolation dst-host</code>	qos.xml.in: qos policy cake <cake> flow-isolation dst-host	qos policy cake <text> flow-isolation dst-host
✓	<code>set qos policy cake &lt;text&gt; flow-isolation dual-dst-host</code>	qos.xml.in: qos policy cake <cake> flow-isolation dual-dst- host	qos policy cake <text> flow-isolation dual-dst- host
✓	<code>set qos policy cake &lt;text&gt; flow-isolation dual-src-host</code>	qos.xml.in: qos policy cake <cake> flow-isolation dual-src- host	qos policy cake <text> flow-isolation dual-src- host
✓	<code>set qos policy cake &lt;text&gt; flow-isolation flow</code>	qos.xml.in: qos policy cake <cake> flow-isolation flow	qos policy cake <text> flow-isolation flow
✓	<code>set qos policy cake &lt;text&gt; flow-isolation host</code>	qos.xml.in: qos policy cake <cake> flow-isolation host	qos policy cake <text> flow-isolation host
✓	<code>set qos policy cake &lt;text&gt; flow-isolation nat</code>	qos.xml.in: qos policy cake <cake> flow-isolation nat	qos policy cake <text> flow-isolation nat
✓	<code>set qos policy cake &lt;text&gt; flow-isolation src-host</code>	qos.xml.in: qos policy cake <cake> flow-isolation src-host	qos policy cake <text> flow-isolation src-host
×	<code>set qos policy cake &lt;text&gt; flow-isolation triple-isolate</code>	qos.xml.in: qos policy cake <cake> flow-isolation triple- isolate	Nothing found in VyOS
✓	<code>set qos policy cake &lt;text&gt; rtt</code>	qos.xml.in: qos policy cake <cake> rtt	qos policy cake <text> rtt <value>
×	not yet documented	qos.xml.in: qos policy drop-tail <drop-tail> description	qos policy drop-tail <text> description <value>
✓	<code>set qos policy drop-tail &lt;policy-name&gt; queue-limit &lt;number-of-packets&gt;</code>	qos.xml.in: qos policy drop-tail <drop-tail> queue-limit	qos policy drop-tail <text> queue-limit <value>
×	<code>set qos policy fair-queue &lt;policy-name&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy fair-queue <fair-queue> description	qos policy fair-queue <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set qos policy fair-queue &lt;policy-name&gt; hash-interval &lt;seconds&gt;</code>	qos.xml.in: qos policy fair-queue <fair-queue> hash-interval	qos policy fair-queue <text> hash-interval <value>
✓	<code>set qos policy fair-queue &lt;policy-name&gt; queue-limit &lt;limit&gt;</code>	qos.xml.in: qos policy fair-queue <fair-queue> queue-limit	qos policy fair-queue <text> queue-limit <value>
✓	<code>set qos policy fq-codel &lt;policy name&gt; codel-quantum &lt;bytes&gt;</code>	qos.xml.in: qos policy fq-codel <fq-codel> codel-quantum	qos policy fq-codel <text> codel-quantum <value>
×	not yet documented	qos.xml.in: qos policy fq-codel <fq-codel> description	qos policy fq-codel <text> description <value>
✓	<code>set qos policy fq-codel &lt;policy name&gt; flows &lt;number-of-flows&gt;</code>	qos.xml.in: qos policy fq-codel <fq-codel> flows	qos policy fq-codel <text> flows <value>
✓	<code>set qos policy fq-codel &lt;policy name&gt; interval &lt;milliseconds&gt;</code>	qos.xml.in: qos policy fq-codel <fq-codel> interval	qos policy fq-codel <text> interval <value>
✓	<code>set qos policy fq-codel &lt;policy-name&gt; queue-limit &lt;number-of-packets&gt;</code>	qos.xml.in: qos policy fq-codel <fq-codel> queue-limit	qos policy fq-codel <text> queue-limit <value>
✓	<code>set qos policy fq-codel &lt;policy-name&gt; target &lt;milliseconds&gt;</code>	qos.xml.in: qos policy fq-codel <fq-codel> target	qos policy fq-codel <text> target <value>
✓	<code>set qos policy limiter &lt;policy-name&gt; class &lt;class-ID&gt; bandwidth &lt;rate&gt;</code>	qos.xml.in: qos policy limiter <limiter> class <class> bandwidth	qos policy limiter <text> class <text> bandwidth <value>
✓	<code>set qos policy limiter &lt;policy-name&gt; class &lt;class-ID&gt; burst &lt;burst-size&gt;</code>	qos.xml.in: qos policy limiter <limiter> class <class> burst	qos policy limiter <text> class <text> burst <value>
×	not yet documented	qos.xml.in: qos policy limiter <limiter> class <class> description	qos policy limiter <text> class <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> exceed	qos policy limiter <text> class <text> exceed <value>
✓	<i>set qos policy limiter &lt;policy-name&gt; class &lt;class ID&gt; match &lt;match-name&gt; description &lt;description&gt;</i>	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> description	qos policy limiter <text> class <text> match <text> description <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ether destination	qos policy limiter <text> class <text> match <text> ether destination <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ether protocol	qos policy limiter <text> class <text> match <text> ether protocol <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ether source	qos policy limiter <text> class <text> match <text> ether source <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> interface	qos policy limiter <text> class <text> match <text> interface <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip destination address	qos policy limiter <text> class <text> match <text> ip destination address <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip destination port	qos policy limiter <text> class <text> match <text> ip destination port <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip dscp	qos policy limiter <text> class <text> match <text> ip dscp <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip max-length	qos policy limiter <text> class <text> match <text> ip max-length <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip protocol	qos policy limiter <text> class <text> match <text> ip protocol <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip source address	qos policy limiter <text> class <text> match <text> ip source address <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip source port	qos policy limiter <text> class <text> match <text> ip source port <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip tcp ack	qos policy limiter <text> class <text> match <text> ip tcp ack
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ip tcp syn	qos policy limiter <text> class <text> match <text> ip tcp syn
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 destination address	qos policy limiter <text> class <text> match <text> ipv6 destination address <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 destination port	qos policy limiter <text> class <text> match <text> ipv6 destination port <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 dscp	qos policy limiter <text> class <text> match <text> ipv6 dscp <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 max-length	qos policy limiter <text> class <text> match <text> ipv6 max-length <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 protocol	qos policy limiter <text> class <text> match <text> ipv6 protocol <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 source address	qos policy limiter <text> class <text> match <text> ipv6 source address <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 source port	qos policy limiter <text> class <text> match <text> ipv6 source port <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 tcp ack	qos policy limiter <text> class <text> match <text> ipv6 tcp ack
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> ipv6 tcp syn	qos policy limiter <text> class <text> match <text> ipv6 tcp syn
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> mark	qos policy limiter <text> class <text> match <text> mark <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> match <match> vif	qos policy limiter <text> class <text> match <text> vif <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> mtu	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> class <class> not-exceed	qos policy limiter <text> class <text> not-exceed <value>
✓	<i>set qos policy limiter &lt;policy-name&gt; class &lt;class ID&gt; priority &lt;value&gt;</i>	qos.xml.in: qos policy limiter <lim-iter> class <class> priority	qos policy limiter <text> class <text> priority <value>
✓	<i>set qos policy limiter &lt;policy-name&gt; default bandwidth &lt;rate&gt;</i>	qos.xml.in: qos policy limiter <lim-iter> default bandwidth	qos policy limiter <text> default bandwidth <value>
✓	<i>set qos policy limiter &lt;policy-name&gt; default burst &lt;burst-size&gt;</i>	qos.xml.in: qos policy limiter <lim-iter> default burst	qos policy limiter <text> default burst <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> default exceed	qos policy limiter <text> default exceed <value>
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> default mtu	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> default not-exceed	qos policy limiter <text> default not-exceed <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy limiter <lim-iter> description	qos policy limiter <text> description <value>
✓	<i>set qos policy network-emulator &lt;policy-name&gt; bandwidth &lt;rate&gt;</i>	qos.xml.in: qos policy network-emulator <network-emulator> bandwidth	qos policy network-emulator <text> bandwidth <value>
×	<i>set qos policy network-emulator &lt;policy-name&gt; burst &lt;burst-size&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set qos policy network-emulator &lt;policy-name&gt; corruption &lt;percent&gt;</i>	qos.xml.in: qos policy network-emulator <network-emulator> corruption	qos policy network-emulator <text> corruption <value>
✓	<i>set qos policy network-emulator &lt;policy-name&gt; delay &lt;delay&gt;</i>	qos.xml.in: qos policy network-emulator <network-emulator> delay	qos policy network-emulator <text> delay <value>
×	not yet documented	qos.xml.in: qos policy network-emulator <network-emulator> description	qos policy network-emulator <text> description <value>
×	not yet documented	qos.xml.in: qos policy network-emulator <network-emulator> duplicate	qos policy network-emulator <text> duplicate <value>
✓	<i>set qos policy network-emulator &lt;policy-name&gt; loss &lt;percent&gt;</i>	qos.xml.in: qos policy network-emulator <network-emulator> loss	qos policy network-emulator <text> loss <value>
×	not yet documented	qos.xml.in: qos policy network-emulator <network-emulator> queue-limit	qos policy network-emulator <text> queue-limit <value>
×	not yet documented	qos.xml.in: qos policy network-emulator <network-emulator> reordering	qos policy network-emulator <text> reordering <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> codel-quantum	qos policy priority-queue <text> class <text> codel-quantum <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> description	qos policy priority-queue <text> class <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> flows	qos policy priority-queue <text> class <text> flows <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> interval	qos policy priority-queue <text> class <text> inter- val <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> description	qos policy priority-queue <text> class <text> match <text> description <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ether destination	qos policy priority-queue <text> class <text> match <text> ether destination <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ether protocol	qos policy priority-queue <text> class <text> match <text> ether protocol <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ether source	qos policy priority-queue <text> class <text> match <text> ether source <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> interface	qos policy priority-queue <text> class <text> match <text> interface <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip destination address	qos policy priority-queue <text> class <text> match <text> ip destination ad- dress <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip destination port	qos policy priority-queue <text> class <text> match <text> ip destination port <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip dscp	qos policy priority-queue <text> class <text> match <text> ip dscp <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip max-length	qos policy priority-queue <text> class <text> match <text> ip max-length <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip protocol	qos policy priority-queue <text> class <text> match <text> ip protocol <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip source address	qos policy priority-queue <text> class <text> match <text> ip source address <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip source port	qos policy priority-queue <text> class <text> match <text> ip source port <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip tcp ack	qos policy priority-queue <text> class <text> match <text> ip tcp ack
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ip tcp syn	qos policy priority-queue <text> class <text> match <text> ip tcp syn
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 destination address	qos policy priority-queue <text> class <text> match <text> ipv6 destination ad- dress <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 destination port	qos policy priority-queue <text> class <text> match <text> ipv6 destination port <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 dscp	qos policy priority-queue <text> class <text> match <text> ipv6 dscp <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 max-length	qos policy priority-queue <text> class <text> match <text> ipv6 max-length <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 protocol	qos policy priority-queue <text> class <text> match <text> ipv6 protocol <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 source address	qos policy priority-queue <text> class <text> match <text> ipv6 source address <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 source port	qos policy priority-queue <text> class <text> match <text> ipv6 source port <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 tcp ack	qos policy priority-queue <text> class <text> match <text> ipv6 tcp ack
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> ipv6 tcp syn	qos policy priority-queue <text> class <text> match <text> ipv6 tcp syn
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> mark	qos policy priority-queue <text> class <text> match <text> mark <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> match <match> vif	qos policy priority-queue <text> class <text> match <text> vif <value>
✓	<i>set qos policy priority-queue &lt;policy-name&gt; class &lt;class-ID&gt; queue-limit &lt;limit&gt;</i>	qos.xml.in: qos policy priority-queue <priority-queue> class <class> queue-limit	qos policy priority-queue <text> class <text> queue-limit <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> queue-type	qos policy priority-queue <text> class <text> queue-type <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> class <class> target	qos policy priority-queue <text> class <text> target <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> default codel-quantum	qos policy priority-queue <text> default codel- quantum <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> default flows	qos policy priority-queue <text> default flows <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> default interval	qos policy priority-queue <text> default interval <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> default queue-limit	qos policy priority-queue <text> default queue-limit <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> default queue-type	qos policy priority-queue <text> default queue-type <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> default target	qos policy priority-queue <text> default target <value>
×	not yet documented	qos.xml.in: qos policy priority-queue <priority-queue> descrip- tion	qos policy priority- queue <text> descrip- <value>tion
✓	<i>set qos policy random-detect &lt;policy-name&gt; bandwidth &lt;bandwidth&gt;</i>	qos.xml.in: qos policy random- detect <random-detect> bandwidth	qos policy random-detect <text> bandwidth <value>
×	not yet documented	qos.xml.in: qos policy random-detect <random-detect> descrip- tion	qos policy random- detect <text> descrip- <value>tion
✓	<i>set qos policy random-detect &lt;policy-name&gt; precedence &lt;IP-precedence-value&gt; average-packet &lt;bytes&gt;</i>	qos.xml.in: qos policy random-detect <random-detect> prece- dence <precedence> average-packet	qos policy random-detect <text> precedence <text> average-packet <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set qos policy random-detect &lt;policy-name&gt; precedence &lt;IP-precedence-value&gt; mark-probability &lt;value&gt;</code>	qos.xml.in: qos policy random-detect <random-detect> precedence <precedence> mark-probability	qos policy random-detect <text> precedence <text> mark-probability <value>
✓	<code>set qos policy random-detect &lt;policy-name&gt; precedence &lt;IP-precedence-value&gt; maximum-threshold &lt;packets&gt;</code>	qos.xml.in: qos policy random-detect <random-detect> precedence <precedence> maximum-threshold	qos policy random-detect <text> precedence <text> maximum-threshold <value>
✓	<code>set qos policy random-detect &lt;policy-name&gt; precedence &lt;IP-precedence-value&gt; minimum-threshold &lt;packets&gt;</code>	qos.xml.in: qos policy random-detect <random-detect> precedence <precedence> minimum-threshold	qos policy random-detect <text> precedence <text> minimum-threshold <value>
✓	<code>set qos policy random-detect &lt;policy-name&gt; precedence &lt;IP-precedence-value&gt; queue-limit &lt;packets&gt;</code>	qos.xml.in: qos policy random-detect <random-detect> precedence <precedence> queue-limit	qos policy random-detect <text> precedence <text> queue-limit <value>
✓	<code>set qos policy rate-control &lt;policy-name&gt; bandwidth &lt;rate&gt;</code>	qos.xml.in: qos policy rate-control <rate-control> bandwidth	qos policy rate-control <text> bandwidth <value>
✓	<code>set qos policy rate-control &lt;policy-name&gt; burst &lt;burst-size&gt;</code>	qos.xml.in: qos policy rate-control <rate-control> burst	qos policy rate-control <text> burst <value>
×	not yet documented	qos.xml.in: qos policy rate-control <rate-control> description	qos policy rate-control <text> description <value>
✓	<code>set qos policy rate-control &lt;policy-name&gt; latency</code>	qos.xml.in: qos policy rate-control <rate-control> latency	qos policy rate-control <text> latency <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> codel-quantum	qos policy round-robin <text> class <text> codel-quantum <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> description	qos policy round-robin <text> class <text> description <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> flows	qos policy round-robin <text> class <text> flows <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> interval	qos policy round-robin <text> class <text> interval <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> description	qos policy round-robin <text> class <text> match <text> description <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ether destination	qos policy round-robin <text> class <text> match <text> ether destination <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ether protocol	qos policy round-robin <text> class <text> match <text> ether protocol <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ether source	qos policy round-robin <text> class <text> match <text> ether source <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> interface	qos policy round-robin <text> class <text> match <text> interface <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip destination address	qos policy round-robin <text> class <text> match <text> ip destination address <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip destination port	qos policy round-robin <text> class <text> match <text> ip destination port <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip dscp	qos policy round-robin <text> class <text> match <text> ip dscp <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip max-length	qos policy round-robin <text> class <text> match <text> ip max-length <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip protocol	qos policy round-robin <text> class <text> match <text> ip protocol <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip source address	qos policy round-robin <text> class <text> match <text> ip source address <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip source port	qos policy round-robin <text> class <text> match <text> ip source port <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip tcp ack	qos policy round-robin <text> class <text> match <text> ip tcp ack
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ip tcp syn	qos policy round-robin <text> class <text> match <text> ip tcp syn
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 destination address	qos policy round-robin <text> class <text> match <text> ipv6 destination address <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 destination port	qos policy round-robin <text> class <text> match <text> ipv6 destination port <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 dscp	qos policy round-robin <text> class <text> match <text> ipv6 dscp <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 max-length	qos policy round-robin <text> class <text> match <text> ipv6 max-length <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 protocol	qos policy round-robin <text> class <text> match <text> ipv6 protocol <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 source address	qos policy round-robin <text> class <text> match <text> ipv6 source address <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 source port	qos policy round-robin <text> class <text> match <text> ipv6 source port <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 tcp ack	qos policy round-robin <text> class <text> match <text> ipv6 tcp ack
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> ipv6 tcp syn	qos policy round-robin <text> class <text> match <text> ipv6 tcp syn
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> mark	qos policy round-robin <text> class <text> match <text> mark <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> match <match> vif	qos policy round-robin <text> class <text> match <text> vif <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set qos policy round-robin &lt;policy name&gt; class &lt;class-ID&gt; quantum &lt;packets&gt;</i>	qos.xml.in: qos policy round-robin <round-robin> class <class> quantum	qos policy round-robin <text> class <text> quantum <value>
✓	<i>set qos policy round-robin &lt;policy name&gt; class &lt;class ID&gt; queue-limit &lt;packets&gt;</i>	qos.xml.in: qos policy round-robin <round-robin> class <class> queue-limit	qos policy round-robin <text> class <text> queue-limit <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> queue-type	qos policy round-robin <text> class <text> queue-type <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> class <class> target	qos policy round-robin <text> class <text> target <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> default codel-quantum	qos policy round-robin <text> default codel- quantum <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> default flows	qos policy round-robin <text> default flows <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> default interval	qos policy round-robin <text> default interval <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> default queue-limit	qos policy round-robin <text> default queue-limit <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> default queue-type	qos policy round-robin <text> default queue-type <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> default target	qos policy round-robin <text> default target <value>
×	not yet documented	qos.xml.in: qos policy round-robin <round-robin> description	qos policy round-robin <text> description <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> bandwidth	qos policy shaper-hfsc <text> bandwidth <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> description	qos policy shaper-hfsc <text> class <text> description <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> linkshare d	qos policy shaper-hfsc <text> class <text> linkshare d <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> linkshare m1	qos policy shaper-hfsc <text> class <text> linkshare m1 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> linkshare m2	qos policy shaper-hfsc <text> class <text> linkshare m2 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> description	qos policy shaper-hfsc <text> class <text> match <text> description <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ether destination	qos policy shaper-hfsc <text> class <text> match <text> ether destination <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ether protocol	qos policy shaper-hfsc <text> class <text> match <text> ether protocol <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ether source	qos policy shaper-hfsc <text> class <text> match <text> ether source <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> interface	qos policy shaper-hfsc <text> class <text> match <text> interface <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip destination address	qos policy shaper-hfsc <text> class <text> match <text> ip destination address <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip destination port	qos policy shaper-hfsc <text> class <text> match <text> ip destination port <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip dscp	qos policy shaper-hfsc <text> class <text> match <text> ip dscp <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip max-length	qos policy shaper-hfsc <text> class <text> match <text> ip max-length <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip protocol	qos policy shaper-hfsc <text> class <text> match <text> ip protocol <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip source address	qos policy shaper-hfsc <text> class <text> match <text> ip source address <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip source port	qos policy shaper-hfsc <text> class <text> match <text> ip source port <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip tcp ack	qos policy shaper-hfsc <text> class <text> match <text> ip tcp ack
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ip tcp syn	qos policy shaper-hfsc <text> class <text> match <text> ip tcp syn
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 destination address	qos policy shaper-hfsc <text> class <text> match <text> ipv6 destination address <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 destination port	qos policy shaper-hfsc <text> class <text> match <text> ipv6 destination port <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 dscp	qos policy shaper-hfsc <text> class <text> match <text> ipv6 dscp <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 max-length	qos policy shaper-hfsc <text> class <text> match <text> ipv6 max-length <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 protocol	qos policy shaper-hfsc <text> class <text> match <text> ipv6 protocol <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 source address	qos policy shaper-hfsc <text> class <text> match <text> ipv6 source address <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 source port	qos policy shaper-hfsc <text> class <text> match <text> ipv6 source port <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 tcp ack	qos policy shaper-hfsc <text> class <text> match <text> ipv6 tcp ack
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> ipv6 tcp syn	qos policy shaper-hfsc <text> class <text> match <text> ipv6 tcp syn
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> mark	qos policy shaper-hfsc <text> class <text> match <text> mark <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> match <match> vif	qos policy shaper-hfsc <text> class <text> match <text> vif <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> realtime d	qos policy shaper-hfsc <text> class <text> realtime d <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> realtime m1	qos policy shaper-hfsc <text> class <text> realtime m1 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> realtime m2	qos policy shaper-hfsc <text> class <text> realtime m2 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> upperlimit d	qos policy shaper-hfsc <text> class <text> upperlimit d <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> upperlimit m1	qos policy shaper-hfsc <text> class <text> upperlimit m1 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> class <class> upperlimit m2	qos policy shaper-hfsc <text> class <text> upperlimit m2 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default linkshare d	qos policy shaper-hfsc <text> default linkshare d <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default linkshare m1	qos policy shaper-hfsc <text> default linkshare m1 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default linkshare m2	qos policy shaper-hfsc <text> default linkshare m2 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default realtime d	qos policy shaper-hfsc <text> default realtime d <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default realtime m1	qos policy shaper-hfsc <text> default realtime m1 <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default realtime m2	qos policy shaper-hfsc <text> default realtime m2 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default upperlimit d	qos policy shaper-hfsc <text> default upperlimit d <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default upperlimit m1	qos policy shaper-hfsc <text> default upperlimit m1 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> default upperlimit m2	qos policy shaper-hfsc <text> default upperlimit m2 <value>
×	not yet documented	qos.xml.in: qos policy shaper-hfsc <shaper-hfsc> description	qos policy shaper-hfsc <text> description <value>
✓	<i>set qos policy shaper &lt;policy-name&gt; bandwidth &lt;rate&gt;</i>	qos.xml.in: qos policy shaper <shaper> bandwidth	qos policy shaper <text> bandwidth <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> average-packet	Nothing found in VyOS
✓	<i>set qos policy shaper &lt;policy-name&gt; class &lt;class-ID&gt; bandwidth &lt;rate&gt;</i>	qos.xml.in: qos policy shaper <shaper> class <class> bandwidth	qos policy shaper <text> class <text> bandwidth <value>
✓	<i>set qos policy shaper &lt;policy-name&gt; class &lt;class-ID&gt; burst &lt;bytes&gt;</i>	qos.xml.in: qos policy shaper <shaper> class <class> burst	qos policy shaper <text> class <text> burst <value>
✓	<i>set qos policy shaper &lt;policy-name&gt; class &lt;class-ID&gt; ceiling &lt;bandwidth&gt;</i>	qos.xml.in: qos policy shaper <shaper> class <class> ceiling	qos policy shaper <text> class <text> ceiling <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> codel-quantum	qos policy shaper <text> class <text> codel- quantum <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> description	qos policy shaper <text> class <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> flows	qos policy shaper <text> class <text> flows <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> interval	qos policy shaper <text> class <text> interval <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> mark-probability	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> descrip- tion	qos policy shaper <text> class <text> match <text> description <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ether destination	qos policy shaper <text> class <text> match <text> ether destination <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ether protocol	qos policy shaper <text> class <text> match <text> ether protocol <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ether source	qos policy shaper <text> class <text> match <text> ether source <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> interface	qos policy shaper <text> class <text> match <text> interface <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip desti- nation address	qos policy shaper <text> class <text> match <text> ip destination address <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip desti- nation port	qos policy shaper <text> class <text> match <text> ip destination port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip dscp	qos policy shaper <text> class <text> match <text> ip dscp <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip max-length	qos policy shaper <text> class <text> match <text> ip max-length <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip protocol	qos policy shaper <text> class <text> match <text> ip protocol <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip source address	qos policy shaper <text> class <text> match <text> ip source address <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip source port	qos policy shaper <text> class <text> match <text> ip source port <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip tcp ack	qos policy shaper <text> class <text> match <text> ip tcp ack
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ip tcp syn	qos policy shaper <text> class <text> match <text> ip tcp syn
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 destination address	qos policy shaper <text> class <text> match <text> ipv6 destination address <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 destination port	qos policy shaper <text> class <text> match <text> ipv6 destination port <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 dscp	qos policy shaper <text> class <text> match <text> ipv6 dscp <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 max-length	qos policy shaper <text> class <text> match <text> ipv6 max-length <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 protocol	qos policy shaper <text> class <text> match <text> ipv6 protocol <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 source address	qos policy shaper <text> class <text> match <text> ipv6 source address <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 source port	qos policy shaper <text> class <text> match <text> ipv6 source port <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 tcp ack	qos policy shaper <text> class <text> match <text> ipv6 tcp ack
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> ipv6 tcp syn	qos policy shaper <text> class <text> match <text> ipv6 tcp syn
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> mark	qos policy shaper <text> class <text> match <text> mark <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> match <match> vif	qos policy shaper <text> class <text> match <text> vif <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> maximum-threshold	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> minimum-threshold	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set qos policy shaper &lt;policy-name&gt; class &lt;class-ID&gt; priority &lt;0-7&gt;</i>	qos.xml.in: qos policy shaper <shaper> class <class> priority	qos policy shaper <text> class <text> priority <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> queue-limit	qos policy shaper <text> class <text> queue-limit <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> queue-type	qos policy shaper <text> class <text> queue-type <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> set-dscp	qos policy shaper <text> class <text> set-dscp <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> class <class> target	qos policy shaper <text> class <text> target <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default average- packet	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default band- width	qos policy shaper <text> default bandwidth <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default burst	qos policy shaper <text> default burst <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default ceil- ing	qos policy shaper <text> default ceiling <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default codel- quantum	qos policy shaper <text> default codel-quantum <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default flows	qos policy shaper <text> default flows <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default interval	qos policy shaper <text> default interval <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default mark- probability	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default maximum-threshold	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default minimum-threshold	Nothing found in VyOS
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default pri- ority	qos policy shaper <text> default priority <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default queue- limit	qos policy shaper <text> default queue-limit <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default queue- type	qos policy shaper <text> default queue-type <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default set- dscp	qos policy shaper <text> default set-dscp <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> default tar- get	qos policy shaper <text> default target <value>
×	not yet documented	qos.xml.in: qos policy shaper <shaper> description	qos policy shaper <text> description <value>
×	<i>rename</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>rollback &lt;N&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>run</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>save</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service broadcast-relay disable</i>	service_broadcast- relay.xml.in: service broadcast-relay disable	service broadcast-relay disable
✓	<i>set service broadcast-relay id &lt;n&gt; address &lt;ipv4-address&gt;</i>	service_broadcast- relay.xml.in: service broadcast-relay id <id> address	service broadcast-relay id <text> address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service broadcast-relay id &lt;n&gt; description &lt;description&gt;</i>	service_broadcast-relay.xml.in: service broadcast-relay id <id> description	service broadcast-relay id <text> description <value>
✓	<i>set service broadcast-relay id &lt;n&gt; disable</i>	service_broadcast-relay.xml.in: service broadcast-relay id <id> disable	service broadcast-relay id <text> disable
✓	<i>set service broadcast-relay id &lt;n&gt; interface &lt;interface&gt;</i>	service_broadcast-relay.xml.in: service broadcast-relay id <id> interface	service broadcast-relay id <text> interface <value>
✓	<i>set service broadcast-relay id &lt;n&gt; port &lt;port&gt;</i>	service_broadcast-relay.xml.in: service broadcast-relay id <id> port	service broadcast-relay id <text> port <value>
×	not yet documented	service_config-sync.xml.in: service config-sync mode	service config-sync mode <value>
×	not yet documented	service_config-sync.xml.in: service config-sync secondary address	service config-sync secondary address <value>
×	not yet documented	service_config-sync.xml.in: service config-sync secondary key	service config-sync secondary key <value>
×	not yet documented	service_config-sync.xml.in: service config-sync secondary timeout	service config-sync secondary timeout <value>
×	not yet documented	Nothing found in XML Definitions	service config-sync section <value>
×	not yet documented	service_config-sync.xml.in: service config-sync section firewall	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces bonding	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces bridge	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces dummy	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces ethernet	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces geneve	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces input	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces l2tpv3	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces loopback	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces macsec	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces openvpn	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces pppoe	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces pseudo-ethernet	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces sstpc	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces tunnel	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_config-sync.xml.in: service config-sync section interfaces virtual- ethernet	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion interfaces vti	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion interfaces vxlan	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion interfaces wireguard	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion interfaces wireless	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion interfaces wwan	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion nat	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion nat66	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion pki	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion policy	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion protocols babel	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync sec- tion protocols bfd	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols bgp	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols failover	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols igmp-proxy	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols isis	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols mpls	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols nhrp	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols ospf	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols ospfv3	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols pim	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols pim6	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols rip	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols ripng	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols rpki	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols segment-routing	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section protocols static	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section qos interface	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section qos policy	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service console-server	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service dhcp-relay	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service dhcp-server	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service dhcpv6-relay	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service dhcpv6-server	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service dns	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_config-sync.xml.in: service config-sync section service lldp	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service mdns	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service monitoring	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service ndp-proxy	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service ntp	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service snmp	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service tftp-server	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section service webproxy	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section system conntrack	Nothing found in VyOS
×	not yet documented	service config-sync section system flow-accounting	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section system option	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section system sflow	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_config-sync.xml.in: service config-sync section system static-host-mapping	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section system sysctl	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section vpn	Nothing found in VyOS
×	not yet documented	service_config-sync.xml.in: service config-sync section vrf	Nothing found in VyOS
✓	<b>set service contrack-sync accept-protocol</b>	service_contrack-sync.xml.in: service contrack-sync accept-protocol	service contrack-sync accept-protocol <value>
✓	<b>set service contrack-sync disable-external-cache</b>	service_contrack-sync.xml.in: service contrack-sync disable-external-cache	service contrack-sync disable-external-cache
×	<b>set service contrack-sync disable-syslog</b>	service_contrack-sync.xml.in: service contrack-sync disable-syslog	Nothing found in VyOS
✓	<b>set service contrack-sync event-listen-queue-size &lt;size&gt;</b>	service_contrack-sync.xml.in: service contrack-sync event-listen-queue-size	service contrack-sync event-listen-queue-size <value>
✓	<b>set service contrack-sync expect-sync &lt;all ftp h323/nfs/sip&gt;</b>	service_contrack-sync.xml.in: service contrack-sync expect-sync	service contrack-sync expect-sync <value>
✓	<b>set service contrack-sync failover-mechanism vrrp sync-group &lt;group&gt;</b>	service_contrack-sync.xml.in: service contrack-sync failover-mechanism vrrp sync-group	service contrack-sync failover-mechanism vrrp sync-group <value>
✓	<b>set service contrack-sync ignore-address &lt;x.x.x.x&gt;</b>	service_contrack-sync.xml.in: service contrack-sync ignore-address	service contrack-sync ignore-address <value>
×	<b>set service contrack-sync interface &lt;name&gt;</b>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service connttrack-sync interface &lt;name&gt; peer &lt;address&gt;</code>	service_connttrack-sync.xml.in: service connttrack-sync interface <interface> peer	service connttrack-sync interface <text> peer <value>
✓	<code>set service connttrack-sync interface &lt;name&gt; port &lt;port&gt;</code>	service_connttrack-sync.xml.in: service connttrack-sync interface <interface> port	service connttrack-sync interface <text> port <value>
✓	<code>set service connttrack-sync listen-address &lt;ipv4address&gt;</code>	service_connttrack-sync.xml.in: service connttrack-sync listen-address	service connttrack-sync listen-address <value>
✓	<code>set service connttrack-sync mcast-group &lt;x.x.x.x&gt;</code>	service_connttrack-sync.xml.in: service connttrack-sync mcast-group	service connttrack-sync mcast-group <value>
×	<code>set service connttrack-sync startup-resync</code>	service_connttrack-sync.xml.in: service connttrack-sync startup-resync	Nothing found in VyOS
✓	<code>set service connttrack-sync sync-queue-size &lt;size&gt;</code>	service_connttrack-sync.xml.in: service connttrack-sync sync-queue-size	service connttrack-sync sync-queue-size <value>
✓	<code>set service console-server device &lt;device&gt; alias &lt;string&gt;</code>	service_console-server.xml.in: service console-server device <device> alias	service console-server device <text> alias <value>
✓	<code>set service console-server device &lt;device&gt; data-bits [7   8]</code>	service_console-server.xml.in: service console-server device <device> data-bits	service console-server device <text> data-bits <value>
✓	<code>set service console-server device &lt;device&gt; description &lt;string&gt;</code>	service_console-server.xml.in: service console-server device <device> description	service console-server device <text> description <value>
✓	<code>set service console-server device &lt;device&gt; parity [even   odd   none]</code>	service_console-server.xml.in: service console-server device <device> parity	service console-server device <text> parity <value>
✓	<code>set service console-server device &lt;device&gt; speed [ 300   1200   2400   4800   9600   19200   38400   57600   115200 ]</code>	service_console-server.xml.in: service console-server device <device> speed	service console-server device <text> speed <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service console-server device &lt;device&gt; ssh port &lt;port&gt;</code>	service_console-server.xml.in: service console-server device <device> ssh port	service console-server device <text> ssh port <value>
✓	<code>set service console-server device &lt;device&gt; stop-bits [1   2]</code>	service_console-server.xml.in: service console-server device <device> stop-bits	service console-server device <text> stop-bits <value>
✓	<code>set service dhcp-relay disable</code>	service_dhcp-relay.xml.in: service dhcp-relay disable	service dhcp-relay disable
✓	<code>set service dhcp-relay interface &lt;interface&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay interface	service dhcp-relay interface <value>
✓	<code>set service dhcp-relay listen-interface &lt;interface&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay listen-interface	service dhcp-relay listen-interface <value>
✓	<code>set service dhcp-relay relay-options hop-count &lt;count&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay relay-options hop-count	service dhcp-relay relay-options hop-count <value>
✓	<code>set service dhcp-relay relay-options max-size &lt;size&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay relay-options max-size	service dhcp-relay relay-options max-size <value>
✓	<code>set service dhcp-relay relay-options relay-agents-packets &lt;append   discard   forward   replace&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay relay-options relay-agents-packets	service dhcp-relay relay-options relay-agents-packets <value>
×	<code>set service dhcp-relay relay-options relay-agents-packets discard</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set service dhcp-relay server &lt;server&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay server	service dhcp-relay server <value>
✓	<code>set service dhcp-relay upstream-interface &lt;interface&gt;</code>	service_dhcp-relay.xml.in: service dhcp-relay upstream-interface	service dhcp-relay upstream-interface <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server disable	service dhcp-server disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server dynamic-dns-update	service dhcp-server dynamic-dns-update
×	not yet documented	Nothing found in XML Definitions	service dhcp-server failover name <value>
×	not yet documented	Nothing found in XML Definitions	service dhcp-server failover remote <value>
×	not yet documented	Nothing found in XML Definitions	service dhcp-server failover source-address <value>
×	not yet documented	Nothing found in XML Definitions	service dhcp-server failover status <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server global-parameters	service dhcp-server global-parameters <value>
×	<i>set service dhcp-server high-availability mode [active-active / active-passive]</i>	service_dhcp-server.xml.in: service dhcp-server high-availability mode	Nothing found in VyOS
×	<i>set service dhcp-server high-availability name &lt;name&gt;</i>	service_dhcp-server.xml.in: service dhcp-server high-availability name	Nothing found in VyOS
×	<i>set service dhcp-server high-availability remote &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server high-availability remote	Nothing found in VyOS
×	<i>set service dhcp-server high-availability source-address &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server high-availability source-address	Nothing found in VyOS
×	<i>set service dhcp-server high-availability status &lt;primary / secondary&gt;</i>	service_dhcp-server.xml.in: service dhcp-server high-availability status	Nothing found in VyOS
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server host-decl-name	service dhcp-server host-decl-name
✓	<i>set service dhcp-server hostfile-update</i>	service_dhcp-server.xml.in: service dhcp-server hostfile-update	service dhcp-server hostfile-update

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service dhcp-server listen-address &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server listen-address	service dhcp-server listen-address <value>
✓	<i>set service dhcp-server shared-network-name &lt;name&gt; authoritative</i>	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> authoritative	service dhcp-server shared-network-name <text> authoritative
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> description	service dhcp-server shared-network-name <text> description <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> disable	service dhcp-server shared-network-name <text> disable
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> domain-name	service dhcp-server shared-network-name <text> domain-name <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> domain-search	service dhcp-server shared-network-name <text> domain-search <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> name-server	service dhcp-server shared-network-name <text> name-server <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> ntp-server	service dhcp-server shared-network-name <text> ntp-server <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service dhcp-server shared-network-name &lt;name&gt; option domain-name &lt;domain-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; option domain-search &lt;domain-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; option name-server &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; option vendor-option &lt;option-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> ping-check	service dhcp-server shared-network-name <text> ping-check
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> shared-network-parameters	service dhcp-server shared-network-name <text> shared-network-parameters <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> bootfile-name	service dhcp-server shared-network-name <text> subnet <text> bootfile-name <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> bootfile-server	service dhcp-server shared-network-name <text> subnet <text> bootfile-server <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> bootfile-size	service dhcp-server shared-network-name <text> subnet <text> bootfile-size <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> client-prefix-length	service dhcp-server shared-network-name <text> subnet <text> client-prefix-length <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> default-router	service dhcp-server shared-network-name <text> subnet <text> default-router <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> description	service dhcp-server shared-network-name <text> subnet <text> description <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> domain-name	service dhcp-server shared-network-name <text> subnet <text> domain-name <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> domain-search	service dhcp-server shared-network-name <text> subnet <text> domain-search <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> enable-failover	service dhcp-server shared-network-name <text> subnet <text> enable-failover
✓	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; exclude &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> exclude	service dhcp-server shared-network-name <text> subnet <text> exclude <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> ip-forwarding	service dhcp-server shared-network-name <text> subnet <text> ip-forwarding
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> ipv6-only-preferred	service dhcp-server shared-network-name <text> subnet <text> ipv6-only-preferred <value>
✓	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; lease &lt;time&gt;</i>	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> lease	service dhcp-server shared-network-name <text> subnet <text> lease <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> name-server	service dhcp-server shared-network-name <text> subnet <text> name-server <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> ntp-server	service dhcp-server shared-network-name <text> subnet <text> ntp-server <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; option default-router &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; option domain-name &lt;domain-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; option domain-search &lt;domain-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; option name-server &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; option vendor-option &lt;option-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> ping-check	service dhcp-server shared-network-name <text> subnet <text> ping-check
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> pop-server	service dhcp-server shared-network-name <text> subnet <text> pop-server <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; range &lt;n&gt; start &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> range <range> start	service dhcp-server shared-network-name <text> subnet <text> range <text> start <value>
✓	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; range &lt;n&gt; stop &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> range <range> stop	service dhcp-server shared-network-name <text> subnet <text> range <text> stop <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> server-identifier	service dhcp-server shared-network-name <text> subnet <text> server-identifier <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> smtp-server	service dhcp-server shared-network-name <text> subnet <text> smtp-server <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> disable	service dhcp-server shared-network-name <text> subnet <text> static-mapping <text> disable
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; static-mapping &lt;description&gt; duid &lt;identifier&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; static-mapping &lt;description&gt; ip-address &lt;address&gt;</i>	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> ip-address	service dhcp-server shared-network-name <text> subnet <text> static-mapping <text> ip-address <value>
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; static-mapping &lt;description&gt; mac &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> mac-address	service dhcp-server shared-network-name <text> subnet <text> static-mapping <text> mac-address <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> static-mapping-parameters	service dhcp-server shared-network-name <text> subnet <text> static-mapping <text> static-mapping-parameters <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> static-route <static-route> next-hop	service dhcp-server shared-network-name <text> subnet <text> static-route <text> next-hop <value>
×	<i>set service dhcp-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; subnet-id &lt;id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> subnet-parameters	service dhcp-server shared-network-name <text> subnet <text> subnet-parameters <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> tftp-server-name	service dhcp-server shared-network-name <text> subnet <text> tftp-server-name <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> time-offset	service dhcp-server shared-network-name <text> subnet <text> time-offset <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> time-server	service dhcp-server shared-network-name <text> subnet <text> time-server <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> vendor-option ubiquiti unifi-controller	service dhcp-server shared-network-name <text> subnet <text> vendor-option ubiquiti unifi-controller <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> wins-server	service dhcp-server shared-network-name <text> subnet <text> wins-server <value>
×	not yet documented	service_dhcp-server.xml.in: service dhcp-server shared-network-name <shared-network-name> subnet <subnet> wpad-url	service dhcp-server shared-network-name <text> subnet <text> wpad-url <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service dhcpv6-relay disable</i>	service_dhcpv6-relay.xml.in: service dhcpv6-relay disable	service dhcpv6-relay disable
×	<i>set service dhcpv6-relay listen-interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_dhcpv6-relay.xml.in: service dhcpv6-relay listen-interface <listen-interface> address	service dhcpv6-relay listen-interface <text> address <value>
✓	<i>set service dhcpv6-relay max-hop-count &lt;count&gt;</i>	service_dhcpv6-relay.xml.in: service dhcpv6-relay max-hop-count	service dhcpv6-relay max-hop-count <value>
✓	<i>set service dhcpv6-relay upstream-interface &lt;interface&gt; address &lt;server&gt;</i>	service_dhcpv6-relay.xml.in: service dhcpv6-relay upstream-interface <upstream-interface> address	service dhcpv6-relay upstream-interface <text> address <value>
✓	<i>set service dhcpv6-relay use-interface-id-option</i>	service_dhcpv6-relay.xml.in: service dhcpv6-relay use-interface-id-option	service dhcpv6-relay use-interface-id-option
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server disable	service dhcpv6-server disable
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server global-parameters name-server	service dhcpv6-server global-parameters name-server <value>
✓	<i>set service dhcpv6-server preference &lt;preference value&gt;</i>	service_dhcpv6-server.xml.in: service dhcpv6-server preference	service dhcpv6-server preference <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> common-options domain-search	service dhcpv6-server shared-network-name <text> common-options domain-search <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> common-options info-refresh-time	service dhcpv6-server shared-network-name <text> common-options info-refresh-time <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> common-options name-server	service dhcpv6-server shared-network-name <text> common-options name-server <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> description	service dhcpv6-server shared-network-name <text> description <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> disable	service dhcpv6-server shared-network-name <text> disable
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> address-range prefix <prefix> temporary	service dhcpv6-server shared-network-name <text> subnet <text> address-range prefix <text> temporary
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> address-range start <start> stop	service dhcpv6-server shared-network-name <text> subnet <text> address-range start <text> stop <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> domain-search	service dhcpv6-server shared-network-name <text> subnet <text> domain-search <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> lease-time default	service dhcpv6-server shared-network-name <text> subnet <text> lease-time default <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> lease-time maximum	service dhcpv6-server shared-network-name <text> subnet <text> lease-time maximum <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> lease-time minimum	service dhcpv6-server shared-network-name <text> subnet <text> lease-time minimum <value>
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; lease-time {default   maximum   minimum}</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> name-server	service dhcpv6-server shared-network-name <text> subnet <text> name-server <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> nis-domain	service dhcpv6-server shared-network-name <text> subnet <text> nis-domain <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> nis-server	service dhcpv6-server shared-network-name <text> subnet <text> nis-server <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> nisplus-domain	service dhcpv6-server shared-network-name <text> subnet <text> nisplus-domain <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> nisplus-server	service dhcpv6-server shared-network-name <text> subnet <text> nisplus-server <value>
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; option nis-domain &lt;domain-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; option nis-server &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; option nisplus-domain &lt;domain-name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; option nisplus-server &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; option sip-server &lt;address / fqdn&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; option sntp-server-address &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; prefix-delegation start &lt;address&gt; prefix-length &lt;length&gt;</i>	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> prefix-delegation start <start> prefix-length	service dhcpv6-server shared-network-name <text> subnet <text> prefix-delegation start <text> prefix-length <value>
✓	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;prefix&gt; prefix-delegation start &lt;address&gt; stop &lt;address&gt;</i>	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> prefix-delegation start <start> stop	service dhcpv6-server shared-network-name <text> subnet <text> prefix-delegation start <text> stop <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> sip-server	service dhcpv6-server shared-network-name <text> subnet <text> sip-server <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> sntp-server	service dhcpv6-server shared-network-name <text> subnet <text> sntp-server <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> disable	service dhcpv6-server shared-network-name <text> subnet <text> static-mapping <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> identifier	service dhcpv6-server shared-network-name <text> subnet <text> static-mapping <text> identifier <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> ipv6-address	service dhcpv6-server shared-network-name <text> subnet <text> static-mapping <text> ipv6-address <value>
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> static-mapping <static-mapping> ipv6-prefix	service dhcpv6-server shared-network-name <text> subnet <text> static-mapping <text> ipv6-prefix <value>
×	<i>set service dhcpv6-server shared-network-name &lt;name&gt; subnet &lt;subnet&gt; subnet-id &lt;id&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_dhcpv6-server.xml.in: service dhcpv6-server shared-network-name <shared-network-name> subnet <subnet> vendor-option cisco tftp-server	service dhcpv6-server shared-network-name <text> subnet <text> vendor-option cisco tftp-server <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> rfc2136 <text> description <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> rfc2136 <text> host-name <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> rfc2136 <text> key <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> rfc2136 <text> server <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> rfc2136 <text> ttl <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> rfc2136 <text> zone <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> description <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> host-name <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> ip-version <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> password <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> protocol <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> server <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> username <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> service <text> zone <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> web-options skip <value>
×	not yet documented	Nothing found in XML Definitions	service dns dynamic address <text> web-options url <value>
×	<i>set service dns dynamic interval &lt;60-3600&gt;</i>	service_dns_dynamic.xml.in: service dns dynamic interval	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; address interface &lt;interface&gt;</i>	service_dns_dynamic.xml.in: service dns dynamic name <name> address interface	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service dns dynamic name &lt;service-name&gt; address web &lt;url&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; address web skip &lt;pattern&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> address web skip	Nothing found in VyOS
×	not yet documented	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> address web url	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; description &lt;text&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> description	Nothing found in VyOS
×	not yet documented	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> expiry-time	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; host-name &lt;hostname&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> host-name	Nothing found in VyOS
×	not yet documented	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> ip-version	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; ip-version 'ipv6'</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; key &lt;filename&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> key	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; password &lt;password&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> password	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; protocol &lt;protocol&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> protocol	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service dns dynamic name &lt;service-name&gt; server &lt;server&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> server	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; ttl &lt;ttl&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> ttl	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; username &lt;username&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> username	Nothing found in VyOS
×	not yet documented	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> wait-time	Nothing found in VyOS
×	<i>set service dns dynamic name &lt;service-name&gt; zone &lt;zone&gt;</i>	ser-vice_dns_dynamic.xml.in: service dns dynamic name <name> zone	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service dns dynamic time-out <value>
×	not yet documented	ser-vice_dns_dynamic.xml.in: service dns dynamic vrf	Nothing found in VyOS
✓	<i>set service dns forwarding allow-from &lt;network&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding allow-from	service dns forwarding allow-from <value>
✓	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; disable</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> disable	service dns forwarding authoritative-domain <text> disable
✓	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records aaaa &lt;name&gt; address &lt;h:h:h:h:h:h:h:h&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records aaaa <aaaa> address	service dns forwarding authoritative-domain <text> records aaaa <text> address <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records aaaa <aaaa> disable	service dns forwarding authoritative-domain <text> records aaaa <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records aaaa <aaaa> ttl	service dns forwarding authoritative-domain <text> records aaaa <text> ttl <value>
✓	<b>set service dns forwarding authoritative-domain &lt;domain-name&gt; records a &lt;name&gt; address &lt;x.x.x.x&gt;</b>	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records a <a> address	service dns forwarding authoritative-domain <text> records a <text> address <value>
×	not yet documented	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records a <a> disable	service dns forwarding authoritative-domain <text> records a <text> disable
×	not yet documented	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records a <a> ttl	service dns forwarding authoritative-domain <text> records a <text> ttl <value>
×	not yet documented	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records cname <cname> disable	service dns forwarding authoritative-domain <text> records cname <text> disable
✓	<b>set service dns forwarding authoritative-domain &lt;domain-name&gt; records cname &lt;name&gt; target &lt;target-domain-name&gt;</b>	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records cname <cname> target	service dns forwarding authoritative-domain <text> records cname <text> target <value>
×	not yet documented	ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records cname <cname> ttl	service dns forwarding authoritative-domain <text> records cname <text> ttl <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records &lt;type&gt; &lt;name&gt; disable</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records mx <mx> disable	service dns forwarding authoritative-domain <text> records mx <text> disable
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records mx <mx> server <server> priority	service dns forwarding authoritative-domain <text> records mx <text> server <text> priority <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records mx <mx> ttl	service dns forwarding authoritative-domain <text> records mx <text> ttl <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> disable	service dns forwarding authoritative-domain <text> records naptr <text> disable
×	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records naptr &lt;name&gt; rule &lt;rule-number&gt; &lt;option&gt; &lt;value&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> lookup-a	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> lookup-a

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> lookup-srv	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> lookup-srv
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> order	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> order <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> preference	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> preference <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> protocol-specific	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> protocol-specific
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> regexp	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> regexp <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> replacement	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> replacement <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> resolve-uri	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> resolve-uri

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> rule <rule> service	service dns forwarding authoritative-domain <text> records naptr <text> rule <text> service <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records naptr <naptr> ttl	service dns forwarding authoritative-domain <text> records naptr <text> ttl <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records ns <ns> disable	service dns forwarding authoritative-domain <text> records ns <text> disable
✓	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records ns &lt;name&gt; target &lt;target-name&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records ns <ns> target	service dns forwarding authoritative-domain <text> records ns <text> target <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records ns <ns> ttl	service dns forwarding authoritative-domain <text> records ns <text> ttl <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records ptr <ptr> disable	service dns forwarding authoritative-domain <text> records ptr <text> disable
✓	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records ptr &lt;name&gt; target &lt;target-name&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records ptr <ptr> target	service dns forwarding authoritative-domain <text> records ptr <text> target <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records ptr <ptr> ttl	service dns forwarding authoritative-domain <text> records ptr <text> ttl <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records spf <spf> disable	service dns forwarding authoritative-domain <text> records spf <text> disable
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records spf <spf> ttl	service dns forwarding authoritative-domain <text> records spf <text> ttl <value>
✓	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records spf &lt;name&gt; value &lt;value&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records spf <spf> value	service dns forwarding authoritative-domain <text> records spf <text> value <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records srv <srv> disable	service dns forwarding authoritative-domain <text> records srv <text> disable
×	<i>set service dns forwarding authoritative-domain &lt;domain-name&gt; records srv &lt;name&gt; entry &lt;entry-number&gt; [hostname   port   priority   weight] &lt;value&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records srv <srv> entry <entry> hostname	service dns forwarding authoritative-domain <text> records srv <text> entry <text> hostname <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records srv <srv> entry <entry> port	service dns forwarding authoritative-domain <text> records srv <text> entry <text> port <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records srv <srv> entry <entry> priority	service dns forwarding authoritative-domain <text> records srv <text> entry <text> priority <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records srv <srv> entry <entry> weight	service dns forwarding authoritative-domain <text> records srv <text> entry <text> weight <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records srv <srv> ttl	service dns forwarding authoritative-domain <text> records srv <text> ttl <value>
×	<b>set service dns forwarding authoritative-domain &lt;domain-name&gt; records &lt;type&gt; &lt;name&gt; ttl &lt;seconds&gt;</b>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records txt <txt> disable	service dns forwarding authoritative-domain <text> records txt <text> disable
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain <authoritative-domain> records txt <txt> ttl	service dns forwarding authoritative-domain <text> records txt <text> ttl <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service dns forwarding authoritative-domain &lt;domain-name&gt; records txt &lt;name&gt; value &lt;value&gt;</code>	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding authoritative-domain &lt;authoritative-domain&gt; records txt &lt;txt&gt; value                     </pre>	<pre> service dns forwarding authoritative-domain &lt;text&gt; records txt &lt;text&gt; value &lt;value&gt;                     </pre>
✓	<code>set service dns forwarding cache-size &lt;0-2147483647&gt;</code>	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding cache-size                     </pre>	<pre> service dns forwarding cache-size &lt;value&gt;                     </pre>
✓	<code>set service dns forwarding dhcp &lt;interface&gt;</code>	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding dhcp                     </pre>	<pre> service dns forwarding dhcp &lt;value&gt;                     </pre>
×	not yet documented	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding dns64-prefix                     </pre>	<pre> service dns forwarding dns64-prefix &lt;value&gt;                     </pre>
✓	<code>set service dns forwarding dnssec &lt;off   process-no-validate   process   log-fail   validate&gt;</code>	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding dnssec                     </pre>	<pre> service dns forwarding dnssec &lt;value&gt;                     </pre>
✓	<code>set service dns forwarding domain &lt;domain-name&gt; addnta</code>	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding do- main &lt;domain&gt; addnta                     </pre>	<pre> service dns forwarding do- main &lt;text&gt; addnta                     </pre>
×	<code>set service dns forwarding domain &lt;domain-name&gt; name-server &lt;address&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding domain &lt;domain&gt; name- server &lt;name-server&gt; port                     </pre>	<pre> service dns forwarding do- main &lt;text&gt; name-server &lt;text&gt; port &lt;value&gt;                     </pre>
✓	<code>set service dns forwarding domain &lt;domain-name&gt; recursion-desired</code>	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding do- main &lt;domain&gt; recursion- desired                     </pre>	<pre> service dns forwarding domain &lt;text&gt; recursion- desired                     </pre>
×	not yet documented	<pre> ser- vice_dns_forwarding.xml.ir service dns forwarding exclude-throttle-address                     </pre>	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service dns forwarding ignore-hosts-file</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding ignore-hosts-file	service dns forwarding ignore-hosts-file
✓	<i>set service dns forwarding listen-address &lt;address&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding listen-address	service dns forwarding listen-address <value>
✓	<i>set service dns forwarding name-server &lt;address&gt; port &lt;port&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding name-server <name-server> port	service dns forwarding name-server <text> port <value>
✓	<i>set service dns forwarding negative-ttl &lt;0-7200&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding negative-ttl	service dns forwarding negative-ttl <value>
✓	<i>set service dns forwarding no-serve-rfc1918</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding no-serve-rfc1918	service dns forwarding no-serve-rfc1918
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding options ecs-add-for	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding options ecs-ipv4-bits	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding options edns-subnet-allow-list	Nothing found in VyOS
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding port	service dns forwarding port <value>
×	not yet documented	ser-vice_dns_forwarding.xml.ir service dns forwarding serve-stale-extension	Nothing found in VyOS
✓	<i>set service dns forwarding source-address &lt;address&gt;</i>	ser-vice_dns_forwarding.xml.ir service dns forwarding source-address	service dns forwarding source-address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service dns forwarding system</code>	service_dns_forwarding.xml.ir service dns forwarding system	service dns forwarding system
✓	<code>set service dns forwarding timeout &lt;10-60000&gt;</code>	service_dns_forwarding.xml.ir service dns forwarding timeout	service dns forwarding timeout <value>
×	<code>set service event-handler event &lt;event-handler name&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set service event-handler event &lt;event-handler name&gt; filter pattern &lt;regex&gt;</code>	service_event-handler.xml.in: service event-handler event <event> filter pattern	service event-handler event <text> filter pattern <value>
✓	<code>set service event-handler event &lt;event-handler name&gt; filter syslog-identifier &lt;sylogid name&gt;</code>	service_event-handler.xml.in: service event-handler event <event> filter syslog-identifier	service event-handler event <text> filter syslog-identifier <value>
✓	<code>set service event-handler event &lt;event-handler name&gt; script arguments &lt;arguments&gt;</code>	service_event-handler.xml.in: service event-handler event <event> script arguments	service event-handler event <text> script arguments <value>
✓	<code>set service event-handler event &lt;event-handler name&gt; script environment &lt;env name&gt; value &lt;env value&gt;</code>	service_event-handler.xml.in: service event-handler event <event> script environment <environment> value	service event-handler event <text> script environment <text> value <value>
✓	<code>set service event-handler event &lt;event-handler name&gt; script path &lt;path to script&gt;</code>	service_event-handler.xml.in: service event-handler event <event> script path	service event-handler event <text> script path <value>
×	<code>set service https allow-client address &lt;address&gt;</code>	service_https.xml.in: service https allow-client address	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service https api-restrict virtual-host <value>
✓	<code>set service https api cors allow-origin &lt;origin&gt;</code>	service_https.xml.in: service https api cors allow-origin	service https api cors allow-origin <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service https api debug</code>	service_https.xml.in: service https api debug	service https api debug
✓	<code>set service https api graphql authentication expiration</code>	service_https.xml.in: service https api graphql authentication expiration	service https api graphql authentication expiration <value>
✓	<code>set service https api graphql authentication secret-length</code>	service_https.xml.in: service https api graphql authentication secret-length	service https api graphql authentication secret-length <value>
✓	<code>set service https api graphql authentication type &lt;key   token&gt;</code>	service_https.xml.in: service https api graphql authentication type	service https api graphql authentication type <value>
✓	<code>set service https api graphql introspection</code>	service_https.xml.in: service https api graphql introspection	service https api graphql introspection
✓	<code>set service https api keys id &lt;name&gt; key &lt;apikey&gt;</code>	service_https.xml.in: service https api keys id <id> key	service https api keys id <text> key <value>
×	not yet documented	Nothing found in XML Definitions	service https api port <value>
×	not yet documented	Nothing found in XML Definitions	service https api socket
✓	<code>set service https api strict</code>	service_https.xml.in: service https api strict	service https api strict
✓	<code>set service https certificates ca-certificate &lt;name&gt;</code>	service_https.xml.in: service https certificates ca-certificate	service https certificates ca-certificate <value>
×	not yet documented	Nothing found in XML Definitions	service https certificates certbot domain-name <value>
×	not yet documented	Nothing found in XML Definitions	service https certificates certbot email <value>
✓	<code>set service https certificates certificate &lt;name&gt;</code>	service_https.xml.in: service https certificates certificate	service https certificates certificate <value>
×	<code>set service https certificates dh-params &lt;name&gt;</code>	service_https.xml.in: service https certificates dh-params	Nothing found in VyOS
×	<code>set service https enable-http-redirect</code>	service_https.xml.in: service https enable-http-redirect	Nothing found in VyOS
×	<code>set service https listen-address &lt;address&gt;</code>	service_https.xml.in: service https listen-address	Nothing found in VyOS
×	<code>set service https port &lt;number&gt;</code>	service_https.xml.in: service https port	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set service https request-body-size-limit &lt;size&gt;</code>	service_https.xml.in: service https request-body-size-limit	Nothing found in VyOS
×	<code>set service https tls-version &lt;1.2   1.3&gt;</code>	service_https.xml.in: service https tls-version	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service https virtual-host <text> allow-client address <value>
×	not yet documented	Nothing found in XML Definitions	service https virtual-host <text> listen-address <value>
×	not yet documented	Nothing found in XML Definitions	service https virtual-host <text> listen-port <value>
×	not yet documented	Nothing found in XML Definitions	service https virtual-host <text> server-name <value>
✓	<code>set service https vrf &lt;name&gt;</code>	service_https.xml.in: service https vrf	service https vrf <value>
✓	<code>set service ids ddos-protection alert-script &lt;text&gt;</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection alert-script	service ids ddos-protection alert-script <value>
✓	<code>set service ids ddos-protection ban-time &lt;1-4294967294&gt;</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection ban-time	service ids ddos-protection ban-time <value>
✓	<code>set service ids ddos-protection direction [in   out]</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection direction	service ids ddos-protection direction <value>
×	<code>set service ids ddos-protection exclude-network &lt;x.x.x.x/x&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ids_ddos-protection.xml.in: service ids ddos-protection excluded-network	service ids ddos-protection excluded-network <value>
×	<code>set service ids ddos-protection exclude-network &lt;h:h:h:h:h:h:h/x&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set service ids ddos-protection listen-interface &lt;text&gt;</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection listen-interface	service ids ddos-protection listen-interface <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service ids ddos-protection mode [mirror   sflow]</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection mode	service ids ddos-protection mode <value>
✓	<code>set service ids ddos-protection network &lt;h:h:h:h:h:h:h:h/x&gt;</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection network	service ids ddos-protection network <value>
✓	<code>set service ids ddos-protection sflow listen-address &lt;x.x.x.x&gt;</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection sflow listen-address	service ids ddos-protection sflow listen-address <value>
✓	<code>set service ids ddos-protection sflow port &lt;1-65535&gt;</code>	service_ids_ddos-protection.xml.in: service ids ddos-protection sflow port	service ids ddos-protection sflow port <value>
×	<code>set service ids ddos-protection threshold general [fps   mbps   pps] &lt;0-4294967294&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ids_ddos-protection.xml.in: service ids ddos-protection threshold general fps	service ids ddos-protection threshold general fps <value>
×	not yet documented	service_ids_ddos-protection.xml.in: service ids ddos-protection threshold general mbps	service ids ddos-protection threshold general mbps <value>
×	not yet documented	service_ids_ddos-protection.xml.in: service ids ddos-protection threshold general pps	service ids ddos-protection threshold general pps <value>
×	<code>set service ids ddos-protection threshold icmp [fps   mbps   pps] &lt;0-4294967294&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ids_ddos-protection.xml.in: service ids ddos-protection threshold icmp fps	service ids ddos-protection threshold icmp fps <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold icmp mbps	service_ids_ddos-protection threshold icmp mbps <value>
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold icmp pps	service_ids_ddos-protection threshold icmp pps <value>
×	<i>set service_ids_ddos-protection threshold tcp [fps   mbps   pps] &lt;0-4294967294&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold tcp fps	service_ids_ddos-protection threshold tcp fps <value>
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold tcp mbps	service_ids_ddos-protection threshold tcp mbps <value>
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold tcp pps	service_ids_ddos-protection threshold tcp pps <value>
×	<i>set service_ids_ddos-protection threshold udp [fps   mbps   pps] &lt;0-4294967294&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold udp fps	service_ids_ddos-protection threshold udp fps <value>
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection threshold udp mbps	service_ids_ddos-protection threshold udp mbps <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_ids_ddos-protection.xml.in: service_ids_ddos-protection_threshold udp pps	service_ids_ddos-protection_threshold udp pps <value>
×	<i>set service ipoe-server authentication interface &lt;interface&gt; mac &lt;MAC&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service ipoe-server authentication interface &lt;interface&gt; mac &lt;MAC&gt; rate-limit download &lt;bandwidth&gt;</i>	service_ipoe-server.xml.in: service_ipoe-server_authentication_interface <interface> mac <mac> rate-limit download	service_ipoe-server_authentication_interface <text> mac <text> rate-limit download <value>
✓	<i>set service ipoe-server authentication interface &lt;interface&gt; mac &lt;MAC&gt; rate-limit upload &lt;bandwidth&gt;</i>	service_ipoe-server.xml.in: service_ipoe-server_authentication_interface <interface> mac <mac> rate-limit upload	service_ipoe-server_authentication_interface <text> mac <text> rate-limit upload <value>
✓	<i>set service ipoe-server authentication interface &lt;interface&gt; mac &lt;MAC&gt; vlan &lt;vlan-id&gt;</i>	service_ipoe-server.xml.in: service_ipoe-server_authentication_interface <interface> mac <mac> vlan	service_ipoe-server_authentication_interface <text> mac <text> vlan <value>
✓	<i>set service ipoe-server authentication mode &lt;local   radius&gt;</i>	service_ipoe-server.xml.in: service_ipoe-server_authentication_mode	service_ipoe-server_authentication_mode <value>
×	not yet documented	service_ipoe-server.xml.in: service_ipoe-server_authentication_radius accounting-interim-interval	service_ipoe-server_authentication_radius accounting-interim-interval <value>
×	not yet documented	service_ipoe-server.xml.in: service_ipoe-server_authentication_radius acct-interim-jitter	service_ipoe-server_authentication_radius acct-interim-jitter <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service ipoe-server authentication radius acct-timeout &lt;timeout&gt;</code>	service_ipoe-server.xml.in: service authentication radius acct-timeout	service ipoe-server authentication radius acct-timeout <value>
✓	<code>set service ipoe-server authentication radius dynamic-author key &lt;secret&gt;</code>	service_ipoe-server.xml.in: service authentication radius dynamic-author key	service ipoe-server authentication radius dynamic-author key <value>
✓	<code>set service ipoe-server authentication radius dynamic-author port &lt;port&gt;</code>	service_ipoe-server.xml.in: service authentication radius dynamic-author port	service ipoe-server authentication radius dynamic-author port <value>
✓	<code>set service ipoe-server authentication radius dynamic-author server &lt;address&gt;</code>	service_ipoe-server.xml.in: service authentication radius dynamic-author server	service ipoe-server authentication radius dynamic-author server <value>
✓	<code>set service ipoe-server authentication radius max-try &lt;number&gt;</code>	service_ipoe-server.xml.in: service authentication radius max-try	service ipoe-server authentication radius max-try <value>
✓	<code>set service ipoe-server authentication radius nas-identifier &lt;identifier&gt;</code>	service_ipoe-server.xml.in: service authentication radius nas-identifier	service ipoe-server authentication radius nas-identifier <value>
✓	<code>set service ipoe-server authentication radius nas-ip-address &lt;address&gt;</code>	service_ipoe-server.xml.in: service authentication radius nas-ip-address	service ipoe-server authentication radius nas-ip-address <value>
×	not yet documented	service_ipoe-server.xml.in: service authentication radius preallocate-vif	service ipoe-server authentication radius preallocate-vif

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service ipoe-server authentication radius rate-limit attribute &lt;attribute&gt;</i>	service_ipoe-server.xml.in: service ipoe-server authentication radius rate-limit attribute	service ipoe-server authentication radius rate-limit attribute <value>
✓	<i>set service ipoe-server authentication radius rate-limit enable</i>	service_ipoe-server.xml.in: service ipoe-server authentication radius rate-limit enable	service ipoe-server authentication radius rate-limit enable
×	not yet documented	service_ipoe-server.xml.in: service ipoe-server authentication radius rate-limit multiplier	service ipoe-server authentication radius rate-limit multiplier <value>
✓	<i>set service ipoe-server authentication radius rate-limit vendor</i>	service_ipoe-server.xml.in: service ipoe-server authentication radius rate-limit vendor	service ipoe-server authentication radius rate-limit vendor <value>
×	not yet documented	service_ipoe-server.xml.in: service ipoe-server authentication radius server <server> acct-port	service ipoe-server authentication radius server <text> acct-port <value>
✓	<i>set service ipoe-server authentication radius server &lt;server&gt; disable</i>	service_ipoe-server.xml.in: service ipoe-server authentication radius server <server> disable	service ipoe-server authentication radius server <text> disable
×	not yet documented	service_ipoe-server.xml.in: service ipoe-server authentication radius server <server> disable-accounting	service ipoe-server authentication radius server <text> disable-accounting
✓	<i>set service ipoe-server authentication radius server &lt;server&gt; fail-time &lt;time&gt;</i>	service_ipoe-server.xml.in: service ipoe-server authentication radius server <server> fail-time	service ipoe-server authentication radius server <text> fail-time <value>
✓	<i>set service ipoe-server authentication radius server &lt;server&gt; key &lt;secret&gt;</i>	service_ipoe-server.xml.in: service ipoe-server authentication radius server <server> key	service ipoe-server authentication radius server <text> key <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service ipoe-server authentication radius server &lt;server&gt; port &lt;port&gt;</code>	service_ipoe-server.xml.in: service ipoe-server authentication radius server <server> port	service ipoe-server authentication radius server <text> port <value>
✓	<code>set service ipoe-server authentication radius source-address &lt;address&gt;</code>	service_ipoe-server.xml.in: service ipoe-server authentication radius source-address	service ipoe-server authentication radius source-address <value>
✓	<code>set service ipoe-server authentication radius timeout &lt;timeout&gt;</code>	service_ipoe-server.xml.in: service ipoe-server authentication radius timeout	service ipoe-server authentication radius timeout <value>
×	not yet documented	Nothing found in XML Definitions	service ipoe-server client-ip-pool name <text> gateway-address <value>
×	not yet documented	Nothing found in XML Definitions	service ipoe-server client-ip-pool name <text> next-pool <value>
×	not yet documented	Nothing found in XML Definitions	service ipoe-server client-ip-pool name <text> subnet <value>
×	<code>set service ipoe-server client-ip-pool &lt;POOL-NAME&gt; next-pool &lt;NEXT-POOL-NAME&gt;</code>	service_ipoe-server.xml.in: service ipoe-server client-ip-pool <client-ip-pool> next-pool	Nothing found in VyOS
×	<code>set service ipoe-server client-ip-pool &lt;POOL-NAME&gt; range &lt;x.x.x.x-x.x.x.x / x.x.x.x/x&gt;</code>	service_ipoe-server.xml.in: service ipoe-server client-ip-pool <client-ip-pool> range	Nothing found in VyOS
✓	<code>set service ipoe-server client-ipv6-pool &lt;IPv6-POOL-NAME&gt; delegate &lt;address&gt; delegation-prefix &lt;number-of-bits&gt;</code>	service_ipoe-server.xml.in: service ipoe-server client-ipv6-pool <client-ipv6-pool> delegate <delegate> delegation-prefix	service ipoe-server client-ipv6-pool delegate <text> delegation-prefix <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service ipoe-server client-ipv6-pool &lt;IPv6-POOL-NAME&gt; prefix &lt;address&gt; mask &lt;number-of-bits&gt;</code>	service_ipoe-server.xml.in: service ipoe-server client-ipv6-pool <client-ipv6-pool> prefix <prefix> mask	service ipoe-server client-ipv6-pool prefix <text> mask <value>
×	<code>set service ipoe-server default-ipv6-pool &lt;IPv6-POOL-NAME&gt;</code>	service_ipoe-server.xml.in: service ipoe-server default-ipv6-pool	Nothing found in VyOS
×	<code>set service ipoe-server default-pool &lt;POOL-NAME&gt;</code>	service_ipoe-server.xml.in: service ipoe-server default-pool	Nothing found in VyOS
×	<code>set service ipoe-server description &lt;description&gt;</code>	service_ipoe-server.xml.in: service ipoe-server description	Nothing found in VyOS
×	<code>set service ipoe-server extended-scripts on-change &lt;path_to_script&gt;</code>	service_ipoe-server.xml.in: service ipoe-server extended-scripts on-change	Nothing found in VyOS
×	<code>set service ipoe-server extended-scripts on-down &lt;path_to_script&gt;</code>	service_ipoe-server.xml.in: service ipoe-server extended-scripts on-down	Nothing found in VyOS
×	<code>set service ipoe-server extended-scripts on-pre-up &lt;path_to_script&gt;</code>	service_ipoe-server.xml.in: service ipoe-server extended-scripts on-pre-up	Nothing found in VyOS
×	<code>set service ipoe-server extended-scripts on-up &lt;path_to_script&gt;</code>	service_ipoe-server.xml.in: service ipoe-server extended-scripts on-up	Nothing found in VyOS
×	<code>set service ipoe-server gateway-address &lt;x.x.x.x/x&gt;</code>	service_ipoe-server.xml.in: service ipoe-server gateway-address	Nothing found in VyOS
✓	<code>set service ipoe-server interface &lt;interface&gt; client-subnet &lt;x.x.x.x/x&gt;</code>	service_ipoe-server.xml.in: service ipoe-server interface <interface> client-subnet	service ipoe-server interface <text> client-subnet <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service ipoe-server interface &lt;interface&gt; external-dhcp dhcp-relay &lt;x.x.x.x&gt;</code>	service_ipoe-server.xml.in: service ipoe-server interface <interface> external-dhcp dhcp-relay	service ipoe-server interface <text> external-dhcp dhcp-relay <value>
✓	<code>set service ipoe-server interface &lt;interface&gt; external-dhcp giaddr &lt;x.x.x.x&gt;</code>	service_ipoe-server.xml.in: service ipoe-server interface <interface> external-dhcp giaddr	service ipoe-server interface <text> external-dhcp giaddr <value>
✓	<code>set service ipoe-server interface &lt;interface&gt; mode &lt;12   13&gt;</code>	service_ipoe-server.xml.in: service ipoe-server interface <interface> mode	service ipoe-server interface <text> mode <value>
✓	<code>set service ipoe-server interface &lt;interface&gt; network &lt;shared   vlan&gt;</code>	service_ipoe-server.xml.in: service ipoe-server interface <interface> network	service ipoe-server interface <text> network <value>
×	not yet documented	service_ipoe-server.xml.in: service ipoe-server interface <interface> vlan	service ipoe-server interface <text> vlan <value>
×	<code>set service ipoe-server limits burst &lt;value&gt;</code>	service_ipoe-server.xml.in: service ipoe-server limits burst	Nothing found in VyOS
×	<code>set service ipoe-server limits connection-limit &lt;value&gt;</code>	service_ipoe-server.xml.in: service ipoe-server limits connection-limit	Nothing found in VyOS
×	<code>set service ipoe-server limits timeout &lt;value&gt;</code>	service_ipoe-server.xml.in: service ipoe-server limits timeout	Nothing found in VyOS
×	<code>set service ipoe-server max-concurrent-sessio</code>	service_ipoe-server.xml.in: service ipoe-server max-concurrent-sessions	Nothing found in VyOS
✓	<code>set service ipoe-server name-server &lt;address&gt;</code>	service_ipoe-server.xml.in: service ipoe-server name-server	service ipoe-server name-server <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service ipoe-server shaper fwmark &lt;1-2147483647&gt;</i>	service_ipoe-server.xml.in: service ipoe-server shaper fwmark	Nothing found in VyOS
×	<i>set service ipoe-server snmp master-agent</i>	service_ipoe-server.xml.in: service ipoe-server snmp master-agent	Nothing found in VyOS
×	<i>set service lldp</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set service lldp interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service lldp interface &lt;interface&gt; disable</i>	service_lldp.xml.in: service lldp interface <interface> disable	service lldp interface <text> disable
×	not yet documented	service_lldp.xml.in: service lldp interface <interface> location coordinate-based altitude	service lldp interface <text> location coordinate-based altitude <value>
×	not yet documented	service_lldp.xml.in: service lldp interface <interface> location coordinate-based datum	service lldp interface <text> location coordinate-based datum <value>
×	not yet documented	service_lldp.xml.in: service lldp interface <interface> location coordinate-based latitude	service lldp interface <text> location coordinate-based latitude <value>
×	not yet documented	service_lldp.xml.in: service lldp interface <interface> location coordinate-based longitude	service lldp interface <text> location coordinate-based longitude <value>
×	not yet documented	service_lldp.xml.in: service lldp interface <interface> location elin	service lldp interface <text> location elin <value>
×	<i>set service lldp legacy-protocols &lt;cdp edp fdp sonmp&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_lldp.xml.in: service lldp legacy-protocols cdp	service lldp legacy-protocols cdp
×	not yet documented	service_lldp.xml.in: service lldp legacy-protocols edp	service lldp legacy-protocols edp
×	not yet documented	service_lldp.xml.in: service lldp legacy-protocols fdp	service lldp legacy-protocols fdp

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_lddp.xml.in: service lldp legacy-protocols sonmp	service lldp legacy-protocols sonmp
✓	<i>set service lldp management-address &lt;address&gt;</i>	service_lddp.xml.in: service lldp management-address	service lldp management-address <value>
×	<i>set service lldp snmp</i>	service_lddp.xml.in: service lldp snmp	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service lldp snmp enable
✓	<i>set service mdns repeater allow-service &lt;service&gt;</i>	service_mdns_repeater.xml.in: service mdns repeater allow-service	service mdns repeater allow-service <value>
✓	<i>set service mdns repeater browse-domain &lt;domain&gt;</i>	service_mdns_repeater.xml.in: service mdns repeater browse-domain	service mdns repeater browse-domain <value>
✓	<i>set service mdns repeater disable</i>	service_mdns_repeater.xml.in: service mdns repeater disable	service mdns repeater disable
✓	<i>set service mdns repeater interface &lt;interface&gt;</i>	service_mdns_repeater.xml.in: service mdns repeater interface	service mdns repeater interface <value>
×	<i>set service mdns repeater ip-version &lt;ipv4   ipv6   both&gt;</i>	service_mdns_repeater.xml.in: service mdns repeater ip-version	Nothing found in VyOS
×	not yet documented	service_mdns_repeater.xml.in: service mdns repeater vrrp-disable	service mdns repeater vrrp-disable
✓	<i>set service monitoring telegraf azure-data-explorer authentication client-id &lt;client-id&gt;</i>	service_monitoring_telegraf.xml.in: service monitoring telegraf azure-data-explorer authentication client-id	service monitoring telegraf azure-data-explorer authentication client-id <value>
✓	<i>set service monitoring telegraf azure-data-explorer authentication client-secret &lt;client-secret&gt;</i>	service_monitoring_telegraf.xml.in: service monitoring telegraf azure-data-explorer authentication client-secret	service monitoring telegraf azure-data-explorer authentication client-secret <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service monitoring telegraf azure-data-explorer authentication tenant-id &lt;tenant-id&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf azure-data-explorer authentication tenant-id                     </pre>	<pre> service monitoring tele- graf azure-data-explorer authentication tenant-id &lt;value&gt;                     </pre>
✓	<code>set service monitoring telegraf azure-data-explorer database &lt;name&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf azure-data-explorer database                     </pre>	<pre> service monitoring tele- graf azure-data-explorer database &lt;value&gt;                     </pre>
✓	<code>set service monitoring telegraf azure-data-explorer group-metrics &lt;single-table   table-per-metric&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf azure-data-explorer group-metrics                     </pre>	<pre> service monitoring tele- graf azure-data-explorer group-metrics &lt;value&gt;                     </pre>
✓	<code>set service monitoring telegraf azure-data-explorer table &lt;name&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf azure-data-explorer table                     </pre>	<pre> service monitoring tele- graf azure-data-explorer table &lt;value&gt;                     </pre>
✓	<code>set service monitoring telegraf azure-data-explorer url &lt;url&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf azure-data-explorer url                     </pre>	<pre> service monitoring tele- graf azure-data-explorer url &lt;value&gt;                     </pre>
×	<code>set service monitoring telegraf bucket &lt;bucket&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set service monitoring telegraf influxdb authentication organization &lt;organization&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf influxdb authentica- tion organization                     </pre>	<pre> service monitoring tele- graf influxdb authentica- tion organization &lt;value&gt;                     </pre>
✓	<code>set service monitoring telegraf influxdb authentication token &lt;token&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf influxdb authentica- tion token                     </pre>	<pre> service monitoring tele- graf influxdb authentica- tion token &lt;value&gt;                     </pre>
×	not yet documented	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf influxdb bucket                     </pre>	<pre> service monitoring tele- graf influxdb bucket &lt;value&gt;                     </pre>
✓	<code>set service monitoring telegraf influxdb port &lt;port&gt;</code>	<pre> ser- vice_monitoring_telegraf.x1 service monitoring tele- graf influxdb port                     </pre>	<pre> service monitoring tele- graf influxdb port &lt;value&gt;                     </pre>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service monitoring telegraf influxdb url &lt;url&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf influxdb url	service monitoring tele- graf influxdb url <value>
×	<code>set service monitoring telegraf prometheus-client</code>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<code>set service monitoring telegraf prometheus-client allow-from &lt;prefix&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf prometheus-client allow-from	service monitoring tele- graf prometheus-client allow-from <value>
✓	<code>set service monitoring telegraf prometheus-client authentication password &lt;password&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf prometheus-client au- thentication password	service monitoring tele- graf prometheus-client authentication password <value>
✓	<code>set service monitoring telegraf prometheus-client authentication username &lt;username&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf prometheus-client au- thentication username	service monitoring tele- graf prometheus-client authentication username <value>
✓	<code>set service monitoring telegraf prometheus-client listen-address &lt;address&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf prometheus-client listen-address	service monitoring tele- graf prometheus-client listen-address <value>
✓	<code>set service monitoring telegraf prometheus-client metric-version &lt;1   2&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf prometheus-client metric-version	service monitoring tele- graf prometheus-client metric-version <value>
✓	<code>set service monitoring telegraf prometheus-client port &lt;port&gt;</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf prometheus-client port	service monitoring tele- graf prometheus-client port <value>
×	not yet documented	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf source	service monitoring tele- graf source <value>
✓	<code>set service monitoring telegraf splunk authentication insecure</code>	ser- vice_monitoring_telegraf.x1 service monitoring tele- graf splunk authentication insecure	service monitoring tele- graf splunk authentication insecure

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service monitoring telegraf splunk authentication token &lt;token&gt;</code>	<code>service_monitoring_telegraf.xml</code> <code>service_monitoring_telegraf splunk authentication token</code>	<code>service_monitoring_telegraf splunk authentication token &lt;value&gt;</code>
×	<code>set service monitoring telegraf splunk authentication url &lt;url&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	<code>service_monitoring_telegraf.xml</code> <code>service_monitoring_telegraf splunk url</code>	<code>service_monitoring_telegraf splunk url &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_telegraf.xml</code> <code>service_monitoring_telegraf vrf</code>	<code>service_monitoring_telegraf vrf &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_zabbix-agent.xml.in</code> <code>service_monitoring_zabbix-agent directory</code>	<code>service_monitoring_zabbix-agent directory &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_zabbix-agent.xml.in</code> <code>service_monitoring_zabbix-agent host-name</code>	<code>service_monitoring_zabbix-agent host-name &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_zabbix-agent.xml.in</code> <code>service_monitoring_zabbix-agent limits buffer-flush-interval</code>	<code>service_monitoring_zabbix-agent limits buffer-flush-interval &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_zabbix-agent.xml.in</code> <code>service_monitoring_zabbix-agent limits buffer-size</code>	<code>service_monitoring_zabbix-agent limits buffer-size &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_zabbix-agent.xml.in</code> <code>service_monitoring_zabbix-agent listen-address</code>	<code>service_monitoring_zabbix-agent listen-address &lt;value&gt;</code>
×	not yet documented	<code>service_monitoring_zabbix-agent.xml.in</code> <code>service_monitoring_zabbix-agent log debug-level</code>	<code>service_monitoring_zabbix-agent log debug-level &lt;value&gt;</code>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_monitoring_zabbix-agent.xml.in: service monitoring zabbix-agent log remote-commands	service monitoring zabbix-agent log remote-commands
×	not yet documented	service_monitoring_zabbix-agent.xml.in: service monitoring zabbix-agent log size	service monitoring zabbix-agent log size <value>
×	not yet documented	service_monitoring_zabbix-agent.xml.in: service monitoring zabbix-agent port	service monitoring zabbix-agent port <value>
×	not yet documented	service_monitoring_zabbix-agent.xml.in: service monitoring zabbix-agent server	service monitoring zabbix-agent server <value>
×	not yet documented	service_monitoring_zabbix-agent.xml.in: service monitoring zabbix-agent server-active <server-active> port	service monitoring zabbix-agent server-active <text> port <value>
×	not yet documented	service_monitoring_zabbix-agent.xml.in: service monitoring zabbix-agent timeout	service monitoring zabbix-agent timeout <value>
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy interface <interface> disable	Nothing found in VyOS
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy interface <interface> enable-router-bit	Nothing found in VyOS
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy interface <interface> prefix <prefix> disable	Nothing found in VyOS
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy interface <interface> prefix <prefix> interface	Nothing found in VyOS
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy interface <interface> prefix <prefix> mode	Nothing found in VyOS
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy interface <interface> timeout	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy inter- face <interface> ttl	Nothing found in VyOS
×	not yet documented	service_ndp-proxy.xml.in: service ndp-proxy route- refresh	Nothing found in VyOS
✓	<b>set service ntp allow-client address &lt;address&gt;</b>	service_ntp.xml.in: service ntp allow-client address	service ntp allow-client address <value>
×	not yet documented	service_ntp.xml.in: service ntp interface	service ntp interface <value>
×	<b>set service ntp leap-second [ignore/smear/system/</b>	service_ntp.xml.in: service ntp leap-second	Nothing found in VyOS
✓	<b>set service ntp listen-address &lt;address&gt;</b>	service_ntp.xml.in: service ntp listen-address	service ntp listen-address <value>
×	<b>set service ntp server &lt;address&gt; &lt;noselect   nts   pool   prefer&gt;</b>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ntp.xml.in: service ntp server <server> noselect	service ntp server <text> noselect
×	not yet documented	service_ntp.xml.in: service ntp server <server> nts	service ntp server <text> nts
×	not yet documented	service_ntp.xml.in: service ntp server <server> pool	service ntp server <text> pool
×	not yet documented	service_ntp.xml.in: service ntp server <server> prefer	service ntp server <text> prefer
✓	<b>set service ntp vrf &lt;name&gt;</b>	service_ntp.xml.in: service ntp vrf	service ntp vrf <value>
✓	<b>set service pppoe-server access-concentrator &lt;name&gt;</b>	service_pppoe- server.xml.in: service pppoe-server access-concentrator	service pppoe-server access-concentrator <value>
✓	<b>set service pppoe-server authentication local-users username &lt;user&gt; disable</b>	service_pppoe- server.xml.in: service pppoe-server authentication local-users username <username> disable	service pppoe-server authentication local-users username <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service pppoe-server authentication local-users username &lt;name&gt; password &lt;password&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication local-users username <username> password	service pppoe-server authentication local-users username <text> password <value>
✓	<code>set service pppoe-server authentication local-users username &lt;user&gt; rate-limit download &lt;bandwidth&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication local-users username <username> rate-limit download	service pppoe-server authentication local-users username <text> rate-limit download <value>
✓	<code>set service pppoe-server authentication local-users username &lt;user&gt; rate-limit upload &lt;bandwidth&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication local-users username <username> rate-limit upload	service pppoe-server authentication local-users username <text> rate-limit upload <value>
✓	<code>set service pppoe-server authentication local-users username &lt;user&gt; static-ip &lt;address&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication local-users username <username> static-ip	service pppoe-server authentication local-users username <text> static-ip <value>
✓	<code>set service pppoe-server authentication mode &lt;local   radius&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication mode	service pppoe-server authentication mode <value>
✓	<code>set service pppoe-server authentication protocols &lt;pap   chap   mschap   mschap-v2&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication protocols	service pppoe-server authentication protocols <value>
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius accounting-interim-interval	service pppoe-server authentication radius accounting-interim-interval <value>
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius acct-interim-jitter	service pppoe-server authentication radius acct-interim-jitter <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service pppoe-server authentication radius acct-timeout &lt;timeout&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius acct-timeout	service pppoe-server authentication radius acct-timeout <value>
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius called-sid-format	service pppoe-server authentication radius called-sid-format <value>
✓	<i>set service pppoe-server authentication radius dynamic-author key &lt;secret&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius dynamic-author key	service pppoe-server authentication radius dynamic-author key <value>
✓	<i>set service pppoe-server authentication radius dynamic-author port &lt;port&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius dynamic-author port	service pppoe-server authentication radius dynamic-author port <value>
✓	<i>set service pppoe-server authentication radius dynamic-author server &lt;address&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius dynamic-author server	service pppoe-server authentication radius dynamic-author server <value>
✓	<i>set service pppoe-server authentication radius max-try &lt;number&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius max-try	service pppoe-server authentication radius max-try <value>
✓	<i>set service pppoe-server authentication radius nas-identifier &lt;identifier&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius nas-identifier	service pppoe-server authentication radius nas-identifier <value>
✓	<i>set service pppoe-server authentication radius nas-ip-address &lt;address&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius nas-ip-address	service pppoe-server authentication radius nas-ip-address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius preallocate-vif	service pppoe-server authentication radius preallocate-vif
✓	<i>set service pppoe-server authentication radius rate-limit attribute &lt;attribute&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius rate-limit attribute	service pppoe-server authentication radius rate-limit attribute <value>
✓	<i>set service pppoe-server authentication radius rate-limit enable</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius rate-limit enable	service pppoe-server authentication radius rate-limit enable
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius rate-limit multiplier	service pppoe-server authentication radius rate-limit multiplier <value>
✓	<i>set service pppoe-server authentication radius rate-limit vendor</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius rate-limit vendor	service pppoe-server authentication radius rate-limit vendor <value>
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius server <server> acct-port	service pppoe-server authentication radius server <text> acct-port <value>
✓	<i>set service pppoe-server authentication radius server &lt;server&gt; disable</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius server <server> disable	service pppoe-server authentication radius server <text> disable
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server authentication radius server <server> disable-accounting	service pppoe-server authentication radius server <text> disable-accounting
✓	<i>set service pppoe-server authentication radius server &lt;server&gt; fail-time &lt;time&gt;</i>	service_pppoe-server.xml.in: service pppoe-server authentication radius server <server> fail-time	service pppoe-server authentication radius server <text> fail-time <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service pppoe-server authentication radius server &lt;server&gt; key &lt;secret&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication radius server <server> key	service pppoe-server authentication radius server <text> key <value>
✓	<code>set service pppoe-server authentication radius server &lt;server&gt; port &lt;port&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication radius server <server> port	service pppoe-server authentication radius server <text> port <value>
✓	<code>set service pppoe-server authentication radius source-address &lt;address&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication radius source-address	service pppoe-server authentication radius source-address <value>
✓	<code>set service pppoe-server authentication radius timeout &lt;timeout&gt;</code>	service_pppoe-server.xml.in: service pppoe-server authentication radius timeout	service pppoe-server authentication radius timeout <value>
×	not yet documented	Nothing found in XML Definitions	service pppoe-server client-ip-pool name <text> gateway-address <value>
×	not yet documented	Nothing found in XML Definitions	service pppoe-server client-ip-pool name <text> next-pool <value>
×	not yet documented	Nothing found in XML Definitions	service pppoe-server client-ip-pool name <text> subnet <value>
×	<code>set service pppoe-server client-ip-pool &lt;POOL-NAME&gt; next-pool &lt;NEXT-POOL-NAME&gt;</code>	service_pppoe-server.xml.in: service pppoe-server client-ip-pool <client-ip-pool> next-pool	Nothing found in VyOS
×	<code>set service pppoe-server client-ip-pool &lt;POOL-NAME&gt; range &lt;x.x.x.x-x.x.x.x / x.x.x.x/x&gt;</code>	service_pppoe-server.xml.in: service pppoe-server client-ip-pool <client-ip-pool> range	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service pppoe-server client-ip-pool start <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	service pppoe-server client-ip-pool stop <value>
×	not yet documented	Nothing found in XML Definitions	service pppoe-server client-ip-pool subnet <value>
✓	<i>set service pppoe-server client-ipv6-pool &lt;IPv6-POOL-NAME&gt; delegate &lt;address&gt; delegation-prefix &lt;number-of-bits&gt;</i>	service_pppoe-server.xml.in: service pppoe-server client-ipv6-pool <client-ipv6-pool> delegate <delegate> delegation-prefix	service pppoe-server client-ipv6-pool delegate <text> delegation-prefix <value>
✓	<i>set service pppoe-server client-ipv6-pool &lt;IPv6-POOL-NAME&gt; prefix &lt;address&gt; mask &lt;number-of-bits&gt;</i>	service_pppoe-server.xml.in: service pppoe-server client-ipv6-pool <client-ipv6-pool> prefix <prefix> mask	service pppoe-server client-ipv6-pool prefix <text> mask <value>
×	<i>set service pppoe-server default-ipv6-pool &lt;IPv6-POOL-NAME&gt;</i>	service_pppoe-server.xml.in: service pppoe-server default-ipv6-pool	Nothing found in VyOS
×	<i>set service pppoe-server default-pool &lt;POOL-NAME&gt;</i>	service_pppoe-server.xml.in: service pppoe-server default-pool	Nothing found in VyOS
×	<i>set service pppoe-server description &lt;description&gt;</i>	service_pppoe-server.xml.in: service pppoe-server description	Nothing found in VyOS
✓	<i>set service pppoe-server extended-scripts on-change &lt;path_to_script&gt;</i>	service_pppoe-server.xml.in: service pppoe-server extended-scripts on-change	service pppoe-server extended-scripts on-change <value>
✓	<i>set service pppoe-server extended-scripts on-down &lt;path_to_script&gt;</i>	service_pppoe-server.xml.in: service pppoe-server extended-scripts on-down	service pppoe-server extended-scripts on-down <value>
✓	<i>set service pppoe-server extended-scripts on-pre-up &lt;path_to_script&gt;</i>	service_pppoe-server.xml.in: service pppoe-server extended-scripts on-pre-up	service pppoe-server extended-scripts on-pre-up <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service pppoe-server extended-scripts on-up &lt;path_to_script&gt;</i>	service_pppoe-server.xml.in: service pppoe-server extended-scripts on-up	service pppoe-server extended-scripts on-up <value>
✓	<i>set service pppoe-server gateway-address &lt;address&gt;</i>	service_pppoe-server.xml.in: service pppoe-server gateway-address	service pppoe-server gateway-address <value>
×	<i>set service pppoe-server interface &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service pppoe-server interface &lt;interface&gt; vlan &lt;id   range&gt;</i>	service_pppoe-server.xml.in: service pppoe-server interface <interface> vlan	service pppoe-server interface <text> vlan <value>
✓	<i>set service pppoe-server limits burst &lt;value&gt;</i>	service_pppoe-server.xml.in: service pppoe-server limits burst	service pppoe-server limits burst <value>
✓	<i>set service pppoe-server limits connection-limit &lt;value&gt;</i>	service_pppoe-server.xml.in: service pppoe-server limits connection-limit	service pppoe-server limits connection-limit <value>
✓	<i>set service pppoe-server limits timeout &lt;value&gt;</i>	service_pppoe-server.xml.in: service pppoe-server limits timeout	service pppoe-server limits timeout <value>
×	<i>set service pppoe-server max-concurrent-sessio</i>	service_pppoe-server.xml.in: service pppoe-server max-concurrent-sessions	Nothing found in VyOS
✓	<i>set service pppoe-server mtu</i>	service_pppoe-server.xml.in: service pppoe-server mtu	service pppoe-server mtu <value>
✓	<i>set service pppoe-server name-server &lt;address&gt;</i>	service_pppoe-server.xml.in: service pppoe-server name-server	service pppoe-server name-server <value>
✓	<i>set service pppoe-server pado-delay &lt;number-of-ms&gt; sessions &lt;number-of-sessions&gt;</i>	service_pppoe-server.xml.in: service pppoe-server pado-delay <pado-delay> sessions	service pppoe-server pado-delay <text> sessions <value>
×	not yet documented	Nothing found in XML Definitions	service pppoe-server ppp-options ccp

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service pppoe-server ppp-options disable-ccp</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options disable-ccp	Nothing found in VyOS
✓	<i>set service pppoe-server ppp-options interface-cache &lt;number&gt;</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options interface-cache	service pppoe-server ppp-options interface-cache <value>
✓	<i>set service pppoe-server ppp-options ipv4 &lt;require   prefer   allow   deny&gt;</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options ipv4	service pppoe-server ppp-options ipv4 <value>
✓	<i>set service pppoe-server ppp-options ipv6 &lt;require   prefer   allow   deny&gt;</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options ipv6	service pppoe-server ppp-options ipv6 <value>
×	<i>set service pppoe-server ppp-options ipv6-accept-peer-inte</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options ipv6-accept-peer-interface-id	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service pppoe-server ppp-options ipv6-accept-peer-intf-id
×	<i>set service pppoe-server ppp-options ipv6-interface-id &lt;random   x:x:x:x&gt;</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options ipv6-interface-id	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service pppoe-server ppp-options ipv6-intf-id <value>
×	not yet documented	service_pppoe-server.xml.in: service pppoe-server ppp-options ipv6-peer-interface-id	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	service pppoe-server ppp-options ipv6-peer-intf-id <value>
✓	<i>set service pppoe-server ppp-options lcp-echo-failure &lt;number&gt;</i>	service_pppoe-server.xml.in: service pppoe-server ppp-options lcp-echo-failure	service pppoe-server ppp-options lcp-echo-failure <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service pppoe-server ppp-options lcp-echo-interval &lt;interval&gt;</code>	service_pppoe-server.xml.in: service pppoe-server ppp-options lcp-echo-interval	service pppoe-server ppp-options lcp-echo-interval <value>
✓	<code>set service pppoe-server ppp-options lcp-echo-timeout</code>	service_pppoe-server.xml.in: service pppoe-server ppp-options lcp-echo-timeout	service pppoe-server ppp-options lcp-echo-timeout <value>
✓	<code>set service pppoe-server ppp-options min-mtu &lt;number&gt;</code>	service_pppoe-server.xml.in: service pppoe-server ppp-options min-mtu	service pppoe-server ppp-options min-mtu <value>
✓	<code>set service pppoe-server ppp-options mppe &lt;require   prefer   deny&gt;</code>	service_pppoe-server.xml.in: service pppoe-server ppp-options mppe	service pppoe-server ppp-options mppe <value>
✓	<code>set service pppoe-server ppp-options mru &lt;number&gt;</code>	service_pppoe-server.xml.in: service pppoe-server ppp-options mru	service pppoe-server ppp-options mru <value>
✓	<code>set service pppoe-server service-name &lt;names&gt;</code>	service_pppoe-server.xml.in: service pppoe-server service-name	service pppoe-server service-name <value>
✓	<code>set service pppoe-server session-control</code>	service_pppoe-server.xml.in: service pppoe-server session-control	service pppoe-server session-control <value>
✓	<code>set service pppoe-server shaper fwmark &lt;1-2147483647&gt;</code>	service_pppoe-server.xml.in: service pppoe-server shaper fwmark	service pppoe-server shaper fwmark <value>
✓	<code>set service pppoe-server snmp master-agent</code>	service_pppoe-server.xml.in: service pppoe-server snmp master-agent	service pppoe-server snmp master-agent
✓	<code>set service pppoe-server wins-server &lt;address&gt;</code>	service_pppoe-server.xml.in: service pppoe-server wins-server	service pppoe-server wins-server <value>
×	<code>set service router-advert interface &lt;interface&gt; ...</code>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> default-lifetime	service router-advert interface <text> default-lifetime <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> default-preference	service router-advert interface <text> default-preference <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> dnssl	service router-advert interface <text> dnssl <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> hop-limit	service router-advert interface <text> hop-limit <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> interval max	service router-advert interface <text> interval max <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> interval min	service router-advert interface <text> interval min <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> link-mtu	service router-advert interface <text> link-mtu <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> managed-flag	service router-advert interface <text> managed-flag
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> name-server	service router-advert interface <text> name-server <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> name-server-lifetime	service router-advert interface <text> name-server-lifetime <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set service router-advert interface &lt;interface&gt; nat64prefix &lt;prefix/mask&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> nat64prefix <nat64prefix> valid-lifetime	Nothing found in VyOS
✓	<i>set service router-advert interface &lt;interface&gt; no-send-advert</i>	service_router-advert.xml.in: service router-advert interface <interface> no-send-advert	service router-advert interface <text> no-send-advert
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> other-config-flag	service router-advert interface <text> other-config-flag
×	<i>set service router-advert interface &lt;interface&gt; prefix &lt;prefix/mask&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> prefix <prefix> decrement-lifetime	service router-advert interface <text> prefix <text> decrement-lifetime
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> prefix <prefix> deprecate-prefix	service router-advert interface <text> prefix <text> deprecate-prefix
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> prefix <prefix> no-autonomous-flag	service router-advert interface <text> prefix <text> no-autonomous-flag
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> prefix <prefix> no-on-link-flag	service router-advert interface <text> prefix <text> no-on-link-flag

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> prefix <prefix> preferred-lifetime	service router-advert interface <text> prefix <text> preferred-lifetime <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> prefix <prefix> valid-lifetime	service router-advert interface <text> prefix <text> valid-lifetime <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> reachable-time	service router-advert interface <text> reachable-time <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> retrans-timer	service router-advert interface <text> retrans-timer <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> route <route> no-remove-route	service router-advert interface <text> route <text> no-remove-route
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> route <route> route-preference	service router-advert interface <text> route <text> route-preference <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> route <route> valid-lifetime	service router-advert interface <text> route <text> valid-lifetime <value>
×	not yet documented	service_router-advert.xml.in: service router-advert interface <interface> source-address	service router-advert interface <text> source-address <value>
✓	<i>set service salt-minion hash &lt;type&gt;</i>	service_salt-minion.xml.in: service salt-minion hash	service salt-minion hash <value>
✓	<i>set service salt-minion id &lt;id&gt;</i>	service_salt-minion.xml.in: service salt-minion id	service salt-minion id <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service salt-minion interval &lt;1-1440&gt;</code>	service_salt-minion.xml.in: service salt-minion interval	service salt-minion interval <value>
✓	<code>set service salt-minion master &lt;hostname   IP&gt;</code>	service_salt-minion.xml.in: service salt-minion master	service salt-minion master <value>
✓	<code>set service salt-minion master-key &lt;key&gt;</code>	service_salt-minion.xml.in: service salt-minion master-key	service salt-minion master-key <value>
×	not yet documented	service_salt-minion.xml.in: service salt-minion source-interface	service salt-minion source-interface <value>
×	not yet documented	service_sla.xml.in: service sla owamp-server port	service sla owamp-server port <value>
×	not yet documented	service_sla.xml.in: service sla twamp-server port	service sla twamp-server port <value>
×	not yet documented	service_snmp.xml.in: service snmp community <community> authorization	service snmp community <text> authorization <value>
×	not yet documented	service_snmp.xml.in: service snmp community <community> client	service snmp community <text> client <value>
×	not yet documented	service_snmp.xml.in: service snmp community <community> network	service snmp community <text> network <value>
×	not yet documented	service_snmp.xml.in: service snmp contact	service snmp contact <value>
×	not yet documented	service_snmp.xml.in: service snmp description	service snmp description <value>
×	not yet documented	service_snmp.xml.in: service snmp listen-address <listen-address> port	service snmp listen-address <text> port <value>
×	not yet documented	service_snmp.xml.in: service snmp location	service snmp location <value>
×	not yet documented	service_snmp.xml.in: service snmp mib interface	Nothing found in VyOS
×	not yet documented	service_snmp.xml.in: service snmp mib interface-max	Nothing found in VyOS
×	not yet documented	service_snmp.xml.in: service snmp oid-enable	service snmp oid-enable <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_snmp.xml.in: service snmp protocol	service snmp protocol <value>
×	not yet documented	service_snmp.xml.in: service snmp script- extensions extension- name <extension-name> script	service snmp script- extensions extension- name <text> script <value>
×	not yet documented	service_snmp.xml.in: service snmp smux-peer	service snmp smux-peer <value>
×	not yet documented	service_snmp.xml.in: service snmp trap-source	service snmp trap-source <value>
×	not yet documented	service_snmp.xml.in: service snmp trap-target <trap-target> community	service snmp trap- target <text> community <value>
×	not yet documented	service_snmp.xml.in: service snmp trap-target <trap-target> port	service snmp trap-target <text> port <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 engineid	service snmp v3 engineid <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 group <group> mode	service snmp v3 group <text> mode <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 group <group> secllevel	service snmp v3 group <text> secllevel <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 group <group> view	service snmp v3 group <text> view <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap- target <trap-target> auth encrypted-password	service snmp v3 trap- target <text> auth encrypted-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap- target <trap-target> auth plaintext-password	service snmp v3 trap- target <text> auth plaintext-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap- target <trap-target> auth type	service snmp v3 trap- target <text> auth type <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap- target <trap-target> port	service snmp v3 trap- target <text> port <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap- target <trap-target> pri- vacy encrypted-password	service snmp v3 trap- target <text> privacy encrypted-password <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_snmp.xml.in: service snmp v3 trap-target <trap-target> privacy plaintext-password	service snmp v3 trap-target <text> privacy plaintext-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap-target <trap-target> privacy type	service snmp v3 trap-target <text> privacy type <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap-target <trap-target> protocol	service snmp v3 trap-target <text> protocol <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap-target <trap-target> type	service snmp v3 trap-target <text> type <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 trap-target <trap-target> user	service snmp v3 trap-target <text> user <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> auth encrypted-password	service snmp v3 user <text> auth encrypted-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> auth plaintext-password	service snmp v3 user <text> auth plaintext-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> auth type	service snmp v3 user <text> auth type <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> group	service snmp v3 user <text> group <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> mode	service snmp v3 user <text> mode <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> privacy encrypted-password	service snmp v3 user <text> privacy encrypted-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> privacy plaintext-password	service snmp v3 user <text> privacy plaintext-password <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 user <user> privacy type	service snmp v3 user <text> privacy type <value>
×	not yet documented	service_snmp.xml.in: service snmp v3 view <view> oid <oid> exclude	service snmp v3 view <text> oid <text> exclude <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_snmp.xml.in: service snmp v3 view <view> oid <oid> mask	service snmp v3 view <text> oid <text> mask <value>
×	not yet documented	service_snmp.xml.in: service snmp vrf	service snmp vrf <value>
×	<i>set service ssh access-control &lt;allow   deny&gt; &lt;group   user&gt; &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	service_ssh.xml.in: service ssh access-control allow group	service ssh access-control allow group <value>
×	not yet documented	service_ssh.xml.in: service ssh access-control allow user	service ssh access-control allow user <value>
×	not yet documented	service_ssh.xml.in: service ssh access-control deny group	service ssh access-control deny group <value>
×	not yet documented	service_ssh.xml.in: service ssh access-control deny user	service ssh access-control deny user <value>
✓	<i>set service ssh ciphers &lt;cipher&gt;</i>	service_ssh.xml.in: service ssh ciphers	service ssh ciphers <value>
✓	<i>set service ssh client-keepalive-inte &lt;interval&gt;</i>	service_ssh.xml.in: service ssh client-keepalive-interval	service ssh client-keepalive-interval <value>
✓	<i>set service ssh disable-host-validati</i>	service_ssh.xml.in: service ssh disable-host-validation	service ssh disable-host-validation
✓	<i>set service ssh disable-password-auth</i>	service_ssh.xml.in: service ssh disable-password-authentication	service ssh disable-password-authentication
×	<i>set service ssh dynamic-protection</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service ssh dynamic-protection allow-from &lt;address   prefix&gt;</i>	service_ssh.xml.in: service ssh dynamic-protection allow-from	service ssh dynamic-protection allow-from <value>
✓	<i>set service ssh dynamic-protection block-time &lt;sec&gt;</i>	service_ssh.xml.in: service ssh dynamic-protection block-time	service ssh dynamic-protection block-time <value>
✓	<i>set service ssh dynamic-protection detect-time &lt;sec&gt;</i>	service_ssh.xml.in: service ssh dynamic-protection detect-time	service ssh dynamic-protection detect-time <value>
✓	<i>set service ssh dynamic-protection threshold &lt;sec&gt;</i>	service_ssh.xml.in: service ssh dynamic-protection threshold	service ssh dynamic-protection threshold <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_ssh.xml.in: service ssh hostkey- algorithm	service ssh hostkey- algorithm <value>
✓	<i>set service ssh key-exchange &lt;kex&gt;</i>	service_ssh.xml.in: service ssh key-exchange	service ssh key-exchange <value>
✓	<i>set service ssh listen-address &lt;address&gt;</i>	service_ssh.xml.in: service ssh listen-address	service ssh listen-address <value>
✓	<i>set service ssh loglevel &lt;quiet / fatal / error / info / verbose&gt;</i>	service_ssh.xml.in: service ssh loglevel	service ssh loglevel <value>
×	not yet documented	service_ssh.xml.in: service ssh mac	service ssh mac <value>
×	<i>set service ssh macs &lt;mac&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service ssh port &lt;port&gt;</i>	service_ssh.xml.in: service ssh port	service ssh port <value>
×	not yet documented	service_ssh.xml.in: service ssh rekey data	service ssh rekey data <value>
×	not yet documented	service_ssh.xml.in: service ssh rekey time	service ssh rekey time <value>
✓	<i>set service ssh vrf &lt;name&gt;</i>	service_ssh.xml.in: service ssh vrf	service ssh vrf <value>
✓	<i>set service tftp-server allow-upload</i>	service_tftp- server.xml.in: service tftp-server allow- upload	service tftp-server allow- upload
✓	<i>set service tftp-server directory &lt;directory&gt;</i>	service_tftp- server.xml.in: service tftp-server direc- tory	service tftp-server direc- tory <value>
×	<i>set service tftp-server listen-address &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service tftp-server listen-address &lt;address&gt; vrf &lt;name&gt;</i>	service_tftp- server.xml.in: service tftp-server listen- address <listen-address> vrf	service tftp-server listen-address <text> vrf <value>
×	not yet documented	service_tftp- server.xml.in: service tftp-server port	service tftp-server port <value>
×	not yet documented	Nothing found in XML Definitions	service upnp friendly- name <value>
×	not yet documented	Nothing found in XML Definitions	service upnp listen <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	service upnp nat-pmp
×	not yet documented	Nothing found in XML Definitions	service upnp pcp-lifetime max <value>
×	not yet documented	Nothing found in XML Definitions	service upnp pcp-lifetime min <value>
×	not yet documented	Nothing found in XML Definitions	service upnp presentation-url <value>
×	not yet documented	Nothing found in XML Definitions	service upnp rule <text> action <value>
×	not yet documented	Nothing found in XML Definitions	service upnp rule <text> disable
×	not yet documented	Nothing found in XML Definitions	service upnp rule <text> external-port-range <value>
×	not yet documented	Nothing found in XML Definitions	service upnp rule <text> internal-port-range <value>
×	not yet documented	Nothing found in XML Definitions	service upnp rule <text> ip <value>
×	not yet documented	Nothing found in XML Definitions	service upnp secure-mode
×	not yet documented	Nothing found in XML Definitions	service upnp stun host <value>
×	not yet documented	Nothing found in XML Definitions	service upnp stun port <value>
×	not yet documented	Nothing found in XML Definitions	service upnp wan-interface <value>
×	not yet documented	Nothing found in XML Definitions	service upnp wan-ip <value>
✓	<i>set service webproxy append-domain &lt;domain&gt;</i>	service_webproxy.xml.in: service webproxy append-domain	service webproxy append-domain <value>
✓	<i>set service webproxy authentication children &lt;number&gt;</i>	service_webproxy.xml.in: service webproxy authentication children	service webproxy authentication children <value>
✓	<i>set service webproxy authentication credentials-ttl &lt;time&gt;</i>	service_webproxy.xml.in: service webproxy authentication credentials-ttl	service webproxy authentication credentials-ttl <value>
✓	<i>set service webproxy authentication ldap base-dn &lt;base-dn&gt;</i>	service_webproxy.xml.in: service webproxy authentication ldap base-dn	service webproxy authentication ldap base-dn <value>
✓	<i>set service webproxy authentication ldap bind-dn &lt;bind-dn&gt;</i>	service_webproxy.xml.in: service webproxy authentication ldap bind-dn	service webproxy authentication ldap bind-dn <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set service webproxy authentication ldap filter-expression &lt;expr&gt;</code>	service_webproxy.xml.in: service webproxy authentication ldap filter-expression	service webproxy authentication ldap filter-expression <value>
✓	<code>set service webproxy authentication ldap password &lt;password&gt;</code>	service_webproxy.xml.in: service webproxy authentication ldap password	service webproxy authentication ldap password <value>
✓	<code>set service webproxy authentication ldap persistent-connection</code>	service_webproxy.xml.in: service webproxy authentication ldap persistent-connection	service webproxy authentication ldap persistent-connection
✓	<code>set service webproxy authentication ldap port &lt;port&gt;</code>	service_webproxy.xml.in: service webproxy authentication ldap port	service webproxy authentication ldap port <value>
✓	<code>set service webproxy authentication ldap server &lt;server&gt;</code>	service_webproxy.xml.in: service webproxy authentication ldap server	service webproxy authentication ldap server <value>
✓	<code>set service webproxy authentication ldap use-ssl</code>	service_webproxy.xml.in: service webproxy authentication ldap use-ssl	service webproxy authentication ldap use-ssl
✓	<code>set service webproxy authentication ldap username-attribute &lt;attr&gt;</code>	service_webproxy.xml.in: service webproxy authentication ldap username-attribute	service webproxy authentication ldap username-attribute <value>
✓	<code>set service webproxy authentication ldap version &lt;2   3&gt;</code>	service_webproxy.xml.in: service webproxy authentication ldap version	service webproxy authentication ldap version <value>
✓	<code>set service webproxy authentication method &lt;ldap&gt;</code>	service_webproxy.xml.in: service webproxy authentication method	service webproxy authentication method <value>
✓	<code>set service webproxy authentication realm</code>	service_webproxy.xml.in: service webproxy authentication realm	service webproxy authentication realm <value>
×	not yet documented	service_webproxy.xml.in: service webproxy cache-peer <cache-peer> address	service webproxy cache-peer <text> address <value>
×	not yet documented	service_webproxy.xml.in: service webproxy cache-peer <cache-peer> http-port	service webproxy cache-peer <text> http-port <value>
×	not yet documented	service_webproxy.xml.in: service webproxy cache-peer <cache-peer> icp-port	service webproxy cache-peer <text> icp-port <value>
×	not yet documented	service_webproxy.xml.in: service webproxy cache-peer <cache-peer> options	service webproxy cache-peer <text> options <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_webproxy.xml.in: service webproxy cache-peer <cache-peer> type	service webproxy cache-peer <text> type <value>
✓	<i>set service webproxy cache-size &lt;size&gt;</i>	service_webproxy.xml.in: service webproxy cache-size	service webproxy cache-size <value>
✓	<i>set service webproxy default-port &lt;port&gt;</i>	service_webproxy.xml.in: service webproxy default-port	service webproxy default-port <value>
×	not yet documented	service_webproxy.xml.in: service webproxy disable-access-log	service webproxy disable-access-log
✓	<i>set service webproxy domain-block &lt;domain&gt;</i>	service_webproxy.xml.in: service webproxy domain-block	service webproxy domain-block <value>
✓	<i>set service webproxy domain-noncache &lt;domain&gt;</i>	service_webproxy.xml.in: service webproxy domain-noncache	service webproxy domain-noncache <value>
×	<i>set service webproxy listen-address &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set service webproxy listen-address &lt;address&gt; disable-transparent</i>	service_webproxy.xml.in: service webproxy listen-address <listen-address> disable-transparent	service webproxy listen-address <text> disable-transparent
✓	<i>set service webproxy listen-address &lt;address&gt; port &lt;port&gt;</i>	service_webproxy.xml.in: service webproxy listen-address <listen-address> port	service webproxy listen-address <text> port <value>
×	not yet documented	service_webproxy.xml.in: service webproxy maximum-object-size	service webproxy maximum-object-size <value>
×	not yet documented	service_webproxy.xml.in: service webproxy mem-cache-size	service webproxy mem-cache-size <value>
×	not yet documented	service_webproxy.xml.in: service webproxy minimum-object-size	service webproxy minimum-object-size <value>
×	not yet documented	service_webproxy.xml.in: service webproxy outgoing-address	service webproxy outgoing-address <value>
✓	<i>set service webproxy reply-block-mime &lt;mime&gt;</i>	service_webproxy.xml.in: service webproxy reply-block-mime	service webproxy reply-block-mime <value>
✓	<i>set service webproxy reply-body-max-size &lt;size&gt;</i>	service_webproxy.xml.in: service webproxy reply-body-max-size	service webproxy reply-body-max-size <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set service webproxy safe-ports &lt;port&gt;</i>	service_webproxy.xml.in: service webproxy safe-ports	service webproxy safe-ports <value>
✓	<i>set service webproxy ssl-safe-ports &lt;port&gt;</i>	service_webproxy.xml.in: service webproxy ssl-safe-ports	service webproxy ssl-safe-ports <value>
✓	<i>set service webproxy url-filtering disable</i>	service_webproxy.xml.in: service webproxy url-filtering disable	service webproxy url-filtering disable
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard allow-category	service webproxy url-filtering squidguard allow-category <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard allow-ipaddr-url	service webproxy url-filtering squidguard allow-ipaddr-url
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard auto-update update-hour	service webproxy url-filtering squidguard auto-update update-hour <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard block-category	service webproxy url-filtering squidguard block-category <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard default-action	service webproxy url-filtering squidguard default-action <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard enable-safe-search	service webproxy url-filtering squidguard enable-safe-search
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard local-block	service webproxy url-filtering squidguard local-block <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard local-block-keyword	service webproxy url-filtering squidguard local-block-keyword <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard local-block-url	service webproxy url-filtering squidguard local-block-url <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url-filtering squidguard local-ok	service webproxy url-filtering squidguard local-ok <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard local-ok-url	service webproxy url- filtering squidguard local-ok-url <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard log	service webproxy url- filtering squidguard log <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard redirect-url	service webproxy url- filtering squidguard redirect-url <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> allow-category	service webproxy url- filtering squidguard rule <text> allow-category <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> allow-ipaddr-url	service webproxy url- filtering squidguard rule <text> allow-ipaddr-url
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> block-category	service webproxy url- filtering squidguard rule <text> block-category <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> default-action	service webproxy url- filtering squidguard rule <text> default-action <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> enable-safe-search	service webproxy url- filtering squidguard rule <text> enable-safe-search
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> local-block	service webproxy url- filtering squidguard rule <text> local-block <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> local-block- keyword	service webproxy url- filtering squidguard rule <text> local-block- keyword <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> local-block-url	service webproxy url- filtering squidguard rule <text> local-block-url <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> local-ok	service webproxy url- filtering squidguard rule <text> local-ok <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> local-ok-url	service webproxy url- filtering squidguard rule <text> local-ok-url <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> log	service webproxy url- filtering squidguard rule <text> log <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> redirect-url	service webproxy url- filtering squidguard rule <text> redirect-url <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> source-group	service webproxy url- filtering squidguard rule <text> source-group <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard rule <rule> time-period	service webproxy url- filtering squidguard rule <text> time-period <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard source-group <source- group> address	service webproxy url- filtering squidguard source-group <text> address <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard source-group <source- group> description	service webproxy url- filtering squidguard source-group <text> description <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard source-group <source- group> domain	service webproxy url- filtering squidguard source-group <text> domain <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard source-group <source- group> ldap-ip-search	service webproxy url- filtering squidguard source-group <text> ldap-ip-search <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard source-group <source- group> ldap-user-search	service webproxy url- filtering squidguard source-group <text> ldap-user-search <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard source-group <source- group> user	service webproxy url- filtering squidguard source-group <text> user <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard time- period <time-period> days <days> time	service webproxy url- filtering squidguard time-period <text> days <text> time <value>
×	not yet documented	service_webproxy.xml.in: service webproxy url- filtering squidguard time- period <time-period> description	service webproxy url- filtering squidguard time- period <text> description <value>
×	<i>show</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>sh system login authentication user &lt;username&gt; otp &lt;full key-b32 qrcode </i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set system acceleration qat</i>	sys- tem_acceleration.xml.in: system acceleration qat	system acceleration qat
✓	<i>set system config-management commit-archive location &lt;URI&gt;</i>	system_config- management.xml.in: system config- management commit- archive location	system config- management commit- archive location <value>
×	not yet documented	system_config- management.xml.in: system config- management commit- archive source-address	system config- management commit- archive source-address <value>
✓	<i>set system config-management commit-revisions &lt;N&gt;</i>	system_config- management.xml.in: system config- management commit- revisions	system config- management commit- revisions <value>
✓	<i>set system contrack expect-table-size &lt;1-50000000&gt;</i>	system_contrack.xml.in: system contrack expect- table-size	system contrack expect- table-size <value>
×	not yet documented	system_contrack.xml.in: system contrack flow- accounting	Nothing found in VyOS
✓	<i>set system contrack hash-size &lt;1-50000000&gt;</i>	system_contrack.xml.in: system contrack hash- size	system contrack hash- size <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> descrip- tion	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> destina- tion address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> destina- tion group address-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> destina- tion group domain-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> destina- tion group network-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> destina- tion group port-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> destina- tion port	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> inbound- interface	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> protocol	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> source address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> source group address-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> source group domain-group	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> source group network-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> source group port-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> source port	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags ack	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags cwr	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags ecn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags fin	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not ack	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not cwr	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not ecn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not fin	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not psh	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not rst	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not syn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags not urg	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags psh	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags rst	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags syn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv4 rule <rule> tcp flags urg	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> descrip- tion	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destina- tion address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destina- tion group address-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destina- tion group domain-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destina- tion group mac-group	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destination group network-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destination group port-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> destination port	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> inbound-interface	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> protocol	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source group address-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source group domain-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source group mac-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source group network-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source group port-group	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> source port	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags ack	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags cwr	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags ecn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags fin	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not ack	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not cwr	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not ecn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not fin	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not psh	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not rst	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not syn	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack ignore ipv6 rule <rule> tcp flags not urg	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_contrack.xml.in: system contrack ignore ipv6 rule <rule> tcp flags psh	Nothing found in VyOS
×	not yet documented	system_contrack.xml.in: system contrack ignore ipv6 rule <rule> tcp flags rst	Nothing found in VyOS
×	not yet documented	system_contrack.xml.in: system contrack ignore ipv6 rule <rule> tcp flags syn	Nothing found in VyOS
×	not yet documented	system_contrack.xml.in: system contrack ignore ipv6 rule <rule> tcp flags urg	Nothing found in VyOS
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; description &lt;text&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> description <value>
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; destination address &lt;ip-address&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> destination address <value>
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; destination port &lt;port&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> destination port <value>
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; inbound-interface &lt;interface&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> inbound-interface <value>
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; protocol &lt;protocol&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> protocol <value>
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; source address &lt;ip-address&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> source address <value>
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; source port &lt;port&gt;</i>	Nothing found in XML Definitions	system contrack ignore rule <text> source port <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set system contrack ignore [ipv4   ipv6] rule &lt;1-999999&gt; tcp flags [not] &lt;text&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set system contrack log icmp destroy</i>	system_contrack.xml.in: system contrack log icmp destroy	system contrack log icmp destroy
✓	<i>set system contrack log icmp new</i>	system_contrack.xml.in: system contrack log icmp new	system contrack log icmp new
✓	<i>set system contrack log icmp update</i>	system_contrack.xml.in: system contrack log icmp update	system contrack log icmp update
✓	<i>set system contrack log other destroy</i>	system_contrack.xml.in: system contrack log other destroy	system contrack log other destroy
✓	<i>set system contrack log other new</i>	system_contrack.xml.in: system contrack log other new	system contrack log other new
✓	<i>set system contrack log other update</i>	system_contrack.xml.in: system contrack log other update	system contrack log other update
✓	<i>set system contrack log tcp destroy</i>	system_contrack.xml.in: system contrack log tcp destroy	system contrack log tcp destroy
✓	<i>set system contrack log tcp new</i>	system_contrack.xml.in: system contrack log tcp new	system contrack log tcp new
×	not yet documented	system_contrack.xml.in: system contrack log tcp update	system contrack log tcp update
×	<i>set system contrack log tcp update close-wait</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system contrack log tcp update established</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system contrack log tcp update fin-wait</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system contrack log tcp update last-ack</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system contrack log tcp update syn-received</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system contrack log tcp update time-wait</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system contrack log udp destroy</i>	system_contrack.xml.in: system contrack log udp destroy	system contrack log udp destroy
✓	<i>set system contrack log udp new</i>	system_contrack.xml.in: system contrack log udp new	system contrack log udp new
✓	<i>set system contrack log udp update</i>	system_contrack.xml.in: system contrack log udp update	system contrack log udp update
✓	<i>set system contrack modules ftp</i>	system_contrack.xml.in: system contrack modules ftp	system contrack modules ftp
✓	<i>set system contrack modules h323</i>	system_contrack.xml.in: system contrack modules h323	system contrack modules h323
✓	<i>set system contrack modules nfs</i>	system_contrack.xml.in: system contrack modules nfs	system contrack modules nfs
✓	<i>set system contrack modules pptp</i>	system_contrack.xml.in: system contrack modules pptp	system contrack modules pptp
✓	<i>set system contrack modules sip</i>	system_contrack.xml.in: system contrack modules sip	system contrack modules sip
✓	<i>set system contrack modules sqlnet</i>	system_contrack.xml.in: system contrack modules sqlnet	system contrack modules sqlnet
✓	<i>set system contrack modules tftp</i>	system_contrack.xml.in: system contrack modules tftp	system contrack modules tftp
✓	<i>set system contrack table-size &lt;1-50000000&gt;</i>	system_contrack.xml.in: system contrack table- size	system contrack table- size <value>
✓	<i>set system contrack tcp half-open-connections &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack tcp half- open-connections	system contrack tcp half- open-connections <value>
✓	<i>set system contrack tcp loose &lt;enable   disable&gt;</i>	system_contrack.xml.in: system contrack tcp loose	system contrack tcp loose <value>
✓	<i>set system contrack tcp max-retrans &lt;1-2147483647&gt;</i>	system_contrack.xml.in: system contrack tcp max- retrans	system contrack tcp max- retrans <value>
×	not yet documented	system_contrack.xml.in: system contrack timeout custom ipv4 rule <rule> description	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> destination address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> destination port	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> inbound-interface	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp close	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp close-wait	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp established	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp fin-wait	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp last-ack	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp syn-recv	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp syn-sent	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol tcp time-wait	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol udp replied	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> protocol udp unreplied	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> source address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv4 rule <rule> source port	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> description	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> destination address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> destination port	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> inbound-interface	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp close	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp close-wait	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp established	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp fin-wait	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp last-ack	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp syn-recv	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp syn-sent	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol tcp time-wait	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol udp replied	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> protocol udp unreplied	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> source address	Nothing found in VyOS
×	not yet documented	system_conntrack.xml.in: system conntrack timeout custom ipv6 rule <rule> source port	Nothing found in VyOS
×	<i>set system conntrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; description &lt;text&gt;</i>	Nothing found in XML Definitions	system conntrack timeout custom rule <text> description <value>
×	<i>set system conntrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; destination address &lt;ip-address&gt;</i>	Nothing found in XML Definitions	system conntrack timeout custom rule <text> destination address <value>
×	<i>set system conntrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; destination port &lt;value&gt;</i>	Nothing found in XML Definitions	system conntrack timeout custom rule <text> destination port <value>
×	not yet documented	Nothing found in XML Definitions	system conntrack timeout custom rule <text> inbound-interface <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol icmp <value>
×	not yet documented	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol other <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp close &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp close <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp close-wait &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp close-wait <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp established &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp established <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp fin-wait &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp fin-wait <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp last-ack &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp last-ack <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp syn-recv &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp syn-recv <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp syn-sent &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp syn-sent <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol tcp time-wait &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol tcp time-wait <value>
×	not yet documented	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol udp other <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol udp replied &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	system contrack timeout custom rule <text> protocol udp stream <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; protocol udp unreplied &lt;1-21474836&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; source address &lt;ip-address&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> source address <value>
×	<code>set system contrack timeout custom [ipv4   ipv6] rule &lt;1-999999&gt; source port &lt;value&gt;</code>	Nothing found in XML Definitions	system contrack timeout custom rule <text> source port <value>
✓	<code>set system contrack timeout icmp &lt;1-21474836&gt;</code>	system_contrack.xml.in: system_contrack timeout icmp	system contrack timeout icmp <value>
✓	<code>set system contrack timeout other &lt;1-21474836&gt;</code>	system_contrack.xml.in: system_contrack timeout other	system contrack timeout other <value>
✓	<code>set system contrack timeout tcp close &lt;1-21474836&gt;</code>	system_contrack.xml.in: system_contrack timeout tcp close	system contrack timeout tcp close <value>
✓	<code>set system contrack timeout tcp close-wait &lt;1-21474836&gt;</code>	system_contrack.xml.in: system_contrack timeout tcp close-wait	system contrack timeout tcp close-wait <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system contrack timeout tcp established &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout tcp established	system contrack timeout tcp established <value>
✓	<i>set system contrack timeout tcp fin-wait &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout tcp fin-wait	system contrack timeout tcp fin-wait <value>
✓	<i>set system contrack timeout tcp last-ack &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout tcp last-ack	system contrack timeout tcp last-ack <value>
✓	<i>set system contrack timeout tcp syn-recv &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout tcp syn-recv	system contrack timeout tcp syn-recv <value>
✓	<i>set system contrack timeout tcp syn-sent &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout tcp syn-sent	system contrack timeout tcp syn-sent <value>
✓	<i>set system contrack timeout tcp time-wait &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout tcp time-wait	system contrack timeout tcp time-wait <value>
✓	<i>set system contrack timeout udp other &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout udp other	system contrack timeout udp other <value>
✓	<i>set system contrack timeout udp stream &lt;1-21474836&gt;</i>	system_contrack.xml.in: system contrack timeout udp stream	system contrack timeout udp stream <value>
×	<i>set system console device &lt;device&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set system console device &lt;device&gt; speed &lt;speed&gt;</i>	system_console.xml.in: system console device <device> speed	system console device <text> speed <value>
×	not yet documented	system_console.xml.in: system console powersave	system console powersave
✓	<i>set system domain-name &lt;domain&gt;</i>	system_domain- name.xml.in: system domain-name	system domain-name <value>
×	<i>set system domain-search &lt;domain&gt;</i>	system_domain- search.xml.in: system domain-search	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	system domain-search do- main <value>
✓	<i>set system flow-accounting buffer-size &lt;buffer size&gt;</i>	system_flow- accounting.xml.in: system flow-accounting buffer-size	system flow-accounting buffer-size <value>
✓	<i>set system flow-accounting disable-imt</i>	system_flow- accounting.xml.in: system flow-accounting disable-imt	system flow-accounting disable-imt

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system flow-accounting enable-egress</i>	system_flow-accounting.xml.in: system flow-accounting enable-egress	system flow-accounting enable-egress
✓	<i>set system flow-accounting interface &lt;interface&gt;</i>	system_flow-accounting.xml.in: system flow-accounting interface	system flow-accounting interface <value>
✓	<i>set system flow-accounting netflow engine-id &lt;id&gt;</i>	system_flow-accounting.xml.in: system flow-accounting netflow engine-id	system flow-accounting netflow engine-id <value>
✓	<i>set system flow-accounting netflow max-flows &lt;n&gt;</i>	system_flow-accounting.xml.in: system flow-accounting netflow max-flows	system flow-accounting netflow max-flows <value>
✓	<i>set system flow-accounting netflow sampling-rate &lt;rate&gt;</i>	system_flow-accounting.xml.in: system flow-accounting netflow sampling-rate	system flow-accounting netflow sampling-rate <value>
×	<i>set system flow-accounting netflow server &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow server <server> port	system flow-accounting netflow server <text> port <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow source-address	system flow-accounting netflow source-address <value>
×	<i>set system flow-accounting netflow source-ip &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set system flow-accounting netflow timeout expiry-interval &lt;interval&gt;</i>	system_flow-accounting.xml.in: system flow-accounting netflow timeout expiry-interval	system flow-accounting netflow timeout expiry-interval <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout flow-generic	system flow-accounting netflow timeout flow-generic <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout icmp	system flow-accounting netflow timeout icmp <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout max-active-life	system flow-accounting netflow timeout max-active-life <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout tcp-fin	system flow-accounting netflow timeout tcp-fin <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout tcp-generic	system flow-accounting netflow timeout tcp-generic <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout tcp-rst	system flow-accounting netflow timeout tcp-rst <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting netflow timeout udp	system flow-accounting netflow timeout udp <value>
✓	<i>set system flow-accounting netflow version &lt;version&gt;</i>	system_flow-accounting.xml.in: system flow-accounting netflow version	system flow-accounting netflow version <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting packet-length	system flow-accounting packet-length <value>
✓	<i>set system flow-accounting sflow agent-address &lt;address&gt;</i>	system_flow-accounting.xml.in: system flow-accounting sflow agent-address	system flow-accounting sflow agent-address <value>
✓	<i>set system flow-accounting sflow sampling-rate &lt;rate&gt;</i>	system_flow-accounting.xml.in: system flow-accounting sflow sampling-rate	system flow-accounting sflow sampling-rate <value>
×	<i>set system flow-accounting sflow server &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting sflow server <server> port <value>	system flow-accounting sflow server <text> port <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting sflow source-address	system flow-accounting sflow source-address <value>
✓	<i>set system flow-accounting syslog-facility &lt;facility&gt;</i>	system_flow-accounting.xml.in: system flow-accounting syslog-facility	system flow-accounting syslog-facility <value>
×	not yet documented	system_flow-accounting.xml.in: system flow-accounting vrf	system flow-accounting vrf <value>
✓	<i>set system frr bmp</i>	system_frr.xml.in: system frr bmp	system frr bmp
×	<i>set system frr descriptors &lt;number&gt;</i>	system_frr.xml.in: system frr descriptors	Nothing found in VyOS
✓	<i>set system frr irdp</i>	system_frr.xml.in: system frr irdp	system frr irdp
×	<i>set system frr snmp &lt;daemon&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	system_frr.xml.in: system frr snmp bgpd	system frr snmp bgpd
×	not yet documented	system_frr.xml.in: system frr snmp isisd	system frr snmp isisd
×	not yet documented	system_frr.xml.in: system frr snmp ldpd	system frr snmp ldpd
×	not yet documented	system_frr.xml.in: system frr snmp ospf6d	system frr snmp ospf6d
×	not yet documented	system_frr.xml.in: system frr snmp ospfd	system frr snmp ospfd
×	not yet documented	system_frr.xml.in: system frr snmp ripd	system frr snmp ripd
×	not yet documented	system_frr.xml.in: system frr snmp zebra	system frr snmp zebra
✓	<i>set system host-name &lt;hostname&gt;</i>	system_host-name.xml.in: system host-name	system host-name <value>
✓	<i>set system ip arp table-size &lt;number&gt;</i>	system_ip.xml.in: system ip arp table-size	system ip arp table-size <value>
×	<i>set system ip disable-directed-broa</i>	Nothing found in XML Definitions	system ip disable-directed-broadcast
✓	<i>set system ip disable-forwarding</i>	system_ip.xml.in: system ip disable-forwarding	system ip disable-forwarding

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_ip.xml.in: system ip multipath ignore-unreachable- nexthops	system ip multipath ignore-unreachable- nexthops
✓	<i>set system ip multipath layer4-hashing</i>	system_ip.xml.in: system ip multipath layer4-hashing	system ip multipath layer4-hashing
×	<i>set system ip nht no-resolve-via-default</i>	system_ip.xml.in: system ip nht no-resolve- via-default	Nothing found in VyOS
✓	<i>set system ip protocol &lt;protocol&gt; route-map &lt;route-map&gt;</i>	system_ip.xml.in: system ip protocol <proto- col> route-map	system ip protocol <text> route-map <value>
×	not yet documented	system_ip.xml.in: system ip tcp mss base	system ip tcp mss base <value>
×	not yet documented	system_ip.xml.in: system ip tcp mss floor	system ip tcp mss floor <value>
×	not yet documented	system_ip.xml.in: system ip tcp mss probing	system ip tcp mss probing <value>
✓	<i>set system ipv6 disable-forwarding</i>	system_ipv6.xml.in: system ipv6 disable- forwarding	system ipv6 disable- forwarding
✓	<i>set system ipv6 multipath layer4-hashing</i>	system_ipv6.xml.in: system ipv6 multipath layer4-hashing	system ipv6 multipath layer4-hashing
✓	<i>set system ipv6 neighbor table-size &lt;number&gt;</i>	system_ipv6.xml.in: system ipv6 neighbor table-size	system ipv6 neighbor table-size <value>
×	<i>set system ipv6 nht no-resolve-via-default</i>	system_ipv6.xml.in: system ipv6 nht no- resolve-via-default	Nothing found in VyOS
✓	<i>set system ipv6 protocol &lt;protocol&gt; route-map &lt;route-map&gt;</i>	system_ipv6.xml.in: system ipv6 protocol <protocol> route-map	system ipv6 protocol <text> route-map <value>
✓	<i>set system ipv6 strict-dad</i>	system_ipv6.xml.in: system ipv6 strict-dad	system ipv6 strict-dad
✓	<i>set system lcd device &lt;device&gt;</i>	system_lcd.xml.in: system lcd device	system lcd device <value>
✓	<i>set system lcd model &lt;model&gt;</i>	system_lcd.xml.in: system lcd model	system lcd model <value>
✓	<i>set system login banner post-login &lt;message&gt;</i>	sys- tem_login_banner.xml.in: system login banner post- login	system login banner post- login <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system login banner pre-login &lt;message&gt;</i>	sys-tem_login_banner.xml.in: system login banner pre-login	system login banner pre-login <value>
✓	<i>set system login max-login-session &lt;number&gt;</i>	system_login.xml.in: system login max-login-session	system login max-login-session <value>
×	not yet documented	system_login.xml.in: system login radius security-mode	Nothing found in VyOS
✓	<i>set system login radius server &lt;address&gt; disable</i>	system_login.xml.in: system login radius server <server> disable	system login radius server <text> disable
✓	<i>set system login radius server &lt;address&gt; key &lt;secret&gt;</i>	system_login.xml.in: system login radius server <server> key	system login radius server <text> key <value>
✓	<i>set system login radius server &lt;address&gt; port &lt;port&gt;</i>	system_login.xml.in: system login radius server <server> port	system login radius server <text> port <value>
×	not yet documented	system_login.xml.in: system login radius server <server> priority	system login radius server <text> priority <value>
✓	<i>set system login radius server &lt;address&gt; timeout &lt;timeout&gt;</i>	system_login.xml.in: system login radius server <server> timeout	system login radius server <text> timeout <value>
✓	<i>set system login radius source-address &lt;address&gt;</i>	system_login.xml.in: system login radius source-address	system login radius source-address <value>
✓	<i>set system login radius vrf &lt;name&gt;</i>	system_login.xml.in: system login radius vrf	system login radius vrf <value>
×	not yet documented	system_login.xml.in: system login tacacs security-mode	Nothing found in VyOS
×	not yet documented	system_login.xml.in: system login tacacs server <server> disable	system login tacacs server <text> disable
×	not yet documented	system_login.xml.in: system login tacacs server <server> key	system login tacacs server <text> key <value>
×	not yet documented	system_login.xml.in: system login tacacs server <server> port	system login tacacs server <text> port <value>
×	not yet documented	system_login.xml.in: system login tacacs source-address	system login tacacs source-address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	system_login.xml.in: system login tacacs time-out	system login tacacs time-out <value>
×	not yet documented	system_login.xml.in: system login tacacs vrf	system login tacacs vrf <value>
×	<i>set system login tacas server &lt;address&gt; disable</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system login tacas server &lt;address&gt; key &lt;secret&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system login tacas server &lt;address&gt; port &lt;port&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system login tacas server &lt;address&gt; timeout &lt;timeout&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system login tacas source-address &lt;address&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set system login tacas vrf &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>set system login timeout &lt;timeout&gt;</i>	system_login.xml.in: system login timeout	system login timeout <value>
✓	<i>set system login user &lt;name&gt; authentication encrypted-password &lt;password&gt;</i>	system_login.xml.in: system login user <user> authentication encrypted-password	system login user <text> authentication encrypted-password <value>
✓	<i>set system login user &lt;username&gt; authentication otp key &lt;key&gt;</i>	system_login.xml.in: system login user <user> authentication otp key	system login user <text> authentication otp key <value>
✓	<i>set system login user &lt;username&gt; authentication otp rate-limit &lt;limit&gt;</i>	system_login.xml.in: system login user <user> authentication otp rate-limit	system login user <text> authentication otp rate-limit <value>
✓	<i>set system login user &lt;username&gt; authentication otp rate-time &lt;seconds&gt;</i>	system_login.xml.in: system login user <user> authentication otp rate-time	system login user <text> authentication otp rate-time <value>
✓	<i>set system login user &lt;username&gt; authentication otp window-size &lt;size&gt;</i>	system_login.xml.in: system login user <user> authentication otp window-size	system login user <text> authentication otp window-size <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system login user &lt;name&gt; authentication plaintext-password &lt;password&gt;</i>	system_login.xml.in: system login user <user> authentication plaintext-password	system login user <text> authentication plaintext-password <value>
✓	<i>set system login user &lt;username&gt; authentication public-keys &lt;identifier&gt; key &lt;key&gt;</i>	system_login.xml.in: system login user <user> authentication public-keys <public-keys> key	system login user <text> authentication public-keys <text> key <value>
✓	<i>set system login user &lt;username&gt; authentication public-keys &lt;identifier&gt; options &lt;options&gt;</i>	system_login.xml.in: system login user <user> authentication public-keys <public-keys> options	system login user <text> authentication public-keys <text> options <value>
✓	<i>set system login user &lt;username&gt; authentication public-keys &lt;identifier&gt; type &lt;type&gt;</i>	system_login.xml.in: system login user <user> authentication public-keys <public-keys> type	system login user <text> authentication public-keys <text> type <value>
×	<i>set system login user &lt;name&gt; disable</i>	system_login.xml.in: system login user <user> disable	Nothing found in VyOS
×	not yet documented	system_login.xml.in: system login user <user> full-name	system login user <text> full-name <value>
×	<i>set system login user &lt;name&gt; full-name "&lt;string&gt;"</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	system_login.xml.in: system login user <user> home-directory	system login user <text> home-directory <value>
×	not yet documented	system_logs.xml.in: system logs logrotate atop max-size	system logs logrotate atop max-size <value>
×	not yet documented	system_logs.xml.in: system logs logrotate atop rotate	system logs logrotate atop rotate <value>
×	not yet documented	system_logs.xml.in: system logs logrotate mes- sages max-size	system logs logrotate mes- sages max-size <value>
×	not yet documented	system_logs.xml.in: system logs logrotate mes- sages rotate	system logs logrotate mes- sages rotate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set system name-server &lt;address&gt;</code>	system_name-server.xml.in: system name-server	system name-server <value>
✓	<code>set system option ctrl-alt-delete &lt;ignore   reboot   poweroff&gt;</code>	system_option.xml.in: system option ctrl-alt-delete	system option ctrl-alt-delete <value>
✓	<code>set system option http-client source-address &lt;address&gt;</code>	system_option.xml.in: system option http-client source-address	system option http-client source-address <value>
✓	<code>set system option http-client source-interface &lt;interface&gt;</code>	system_option.xml.in: system option http-client source-interface	system option http-client source-interface <value>
×	<code>set system option kernel disable-mitigations</code>	system_option.xml.in: system option kernel disable-mitigations	Nothing found in VyOS
×	<code>set system option kernel disable-power-saving</code>	system_option.xml.in: system option kernel disable-power-saving	Nothing found in VyOS
✓	<code>set system option keyboard-layout &lt;us   fr   de   fi   no   dk&gt;</code>	system_option.xml.in: system option keyboard-layout	system option keyboard-layout <value>
✓	<code>set system option performance &lt;throughput   latency &gt;</code>	system_option.xml.in: system option performance	system option performance <value>
✓	<code>set system option reboot-on-panic</code>	system_option.xml.in: system option reboot-on-panic	system option reboot-on-panic
✓	<code>set system option root-partition-auto-r</code>	system_option.xml.in: system option root-partition-auto-resize	system option root-partition-auto-resize
✓	<code>set system option ssh-client source-address &lt;address&gt;</code>	system_option.xml.in: system option ssh-client source-address	system option ssh-client source-address <value>
✓	<code>set system option ssh-client source-interface &lt;interface&gt;</code>	system_option.xml.in: system option ssh-client source-interface	system option ssh-client source-interface <value>
✓	<code>set system option startup-beep</code>	system_option.xml.in: system option startup-beep	system option startup-beep
×	not yet documented	system_option.xml.in: system option time-format	system option time-format <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system proxy password &lt;password&gt;</i>	system_proxy.xml.in: system proxy password	system proxy password <value>
✓	<i>set system proxy port &lt;port&gt;</i>	system_proxy.xml.in: system proxy port	system proxy port <value>
✓	<i>set system proxy url &lt;url&gt;</i>	system_proxy.xml.in: system proxy url	system proxy url <value>
✓	<i>set system proxy username &lt;username&gt;</i>	system_proxy.xml.in: system proxy username	system proxy username <value>
✓	<i>set system sflow agent-address &lt;address&gt;</i>	system_sflow.xml.in: system sflow agent-address	system sflow agent-address <value>
✓	<i>set system sflow agent-interface &lt;interface&gt;</i>	system_sflow.xml.in: system sflow agent-interface	system sflow agent-interface <value>
✓	<i>set system sflow drop-monitor-limit &lt;limit&gt;</i>	system_sflow.xml.in: system sflow drop-monitor-limit	system sflow drop-monitor-limit <value>
✓	<i>set system sflow interface &lt;interface&gt;</i>	system_sflow.xml.in: system sflow interface	system sflow interface <value>
✓	<i>set system sflow polling &lt;sec&gt;</i>	system_sflow.xml.in: system sflow polling	system sflow polling <value>
✓	<i>set system sflow sampling-rate &lt;rate&gt;</i>	system_sflow.xml.in: system sflow sampling-rate	system sflow sampling-rate <value>
✓	<i>set system sflow server &lt;address&gt; port &lt;port&gt;</i>	system_sflow.xml.in: system sflow server <server> port	system sflow server <text> port <value>
×	not yet documented	system_sflow.xml.in: system sflow vrf	Nothing found in VyOS
✓	<i>set system static-host-mapping host-name &lt;hostname&gt; alias &lt;alias&gt;</i>	system_static-host-mapping.xml.in: system static-host-mapping host-name <host-name> alias	system static-host-mapping host-name <text> alias <value>
✓	<i>set system static-host-mapping host-name &lt;hostname&gt; inet &lt;address&gt;</i>	system_static-host-mapping.xml.in: system static-host-mapping host-name <host-name> inet	system static-host-mapping host-name <text> inet <value>
✓	<i>set system sysctl parameter &lt;parameter&gt; value &lt;value&gt;</i>	system_sysctl.xml.in: system sysctl parameter <parameter> value	system sysctl parameter <text> value <value>
✓	<i>set system syslog console facility &lt;keyword&gt; level &lt;keyword&gt;</i>	system_syslog.xml.in: system syslog console facility <facility> level	system syslog console facility <text> level <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system syslog file &lt;filename&gt; archive file &lt;number&gt;</i>	system_syslog.xml.in: system syslog file <file> archive file	system syslog file <text> archive file <value>
✓	<i>set system syslog file &lt;filename&gt; archive size &lt;size&gt;</i>	system_syslog.xml.in: system syslog file <file> archive size	system syslog file <text> archive size <value>
✓	<i>set system syslog file &lt;filename&gt; facility &lt;keyword&gt; level &lt;keyword&gt;</i>	system_syslog.xml.in: system syslog file <file> facility <facility> level	system syslog file <text> facility <text> level <value>
×	not yet documented	system_syslog.xml.in: system syslog global facility <facility> level	system syslog global facility <text> level <value>
×	not yet documented	system_syslog.xml.in: system syslog global marker interval	system syslog global marker interval <value>
×	not yet documented	system_syslog.xml.in: system syslog global preserve-fqdn	system syslog global preserve-fqdn
✓	<i>set system syslog host &lt;address&gt; facility &lt;keyword&gt; level &lt;keyword&gt;</i>	system_syslog.xml.in: system syslog host <host> facility <facility> level	system syslog host <text> facility <text> level <value>
×	<i>set system syslog host &lt;address&gt; facility &lt;keyword&gt; protocol &lt;udp/tcp&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	system_syslog.xml.in: system syslog host <host> format octet-counted	system syslog host <text> format octet-counted
×	not yet documented	system_syslog.xml.in: system syslog host <host> port	system syslog host <text> port <value>
×	not yet documented	system_syslog.xml.in: system syslog host <host> protocol	system syslog host <text> protocol <value>
✓	<i>set system syslog user &lt;username&gt; facility &lt;keyword&gt; level &lt;keyword&gt;</i>	system_syslog.xml.in: system syslog user <user> facility <facility> level	system syslog user <text> facility <text> level <value>
✓	<i>set system syslog vrf &lt;name&gt;</i>	system_syslog.xml.in: system syslog vrf	system syslog vrf <value>
✓	<i>set system task-scheduler task &lt;task&gt; crontab-spec &lt;spec&gt;</i>	system_task-scheduler.xml.in: system task-scheduler task <task> crontab-spec	system task-scheduler task <text> crontab-spec <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set system task-scheduler task &lt;task&gt; executable arguments &lt;args&gt;</i>	system_task-scheduler.xml.in: system task-scheduler task <task> executable arguments	system task-scheduler task <text> executable arguments <value>
✓	<i>set system task-scheduler task &lt;task&gt; executable path &lt;path&gt;</i>	system_task-scheduler.xml.in: system task-scheduler task <task> executable path	system task-scheduler task <text> executable path <value>
✓	<i>set system task-scheduler task &lt;task&gt; interval &lt;interval&gt;</i>	system_task-scheduler.xml.in: system task-scheduler task <task> interval	system task-scheduler task <text> interval <value>
✓	<i>set system time-zone &lt;timezone&gt;</i>	system_time-zone.xml.in: system time-zone	system time-zone <value>
✓	<i>set system update-check auto-check</i>	system_update-check.xml.in: system update-check auto-check	system update-check auto-check
✓	<i>set system update-check url &lt;url&gt;</i>	system_update-check.xml.in: system update-check url	system update-check url <value>
×	<i>set traffic-policy network-emulator &lt;policy-name&gt; queue-limit &lt;limit&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set traffic-policy network-emulator &lt;policy-name&gt; reordering &lt;percent&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec authentication psk <psk> dhcp-interface	vpn ipsec authentication psk <text> dhcp-interface <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec authentication psk <psk> id	vpn ipsec authentication psk <text> id <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec authentication psk <psk> secret	vpn ipsec authentication psk <text> secret <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec disable-uniqreqids	vpn ipsec disable-uniqreqids
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> compression	vpn ipsec esp-group <text> compression
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> life-bytes	vpn ipsec esp-group <text> life-bytes <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> life-packets	vpn ipsec esp-group <text> life-packets <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> lifetime	vpn ipsec esp-group <text> lifetime <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> mode	vpn ipsec esp-group <text> mode <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> pfs	vpn ipsec esp-group <text> pfs <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> proposal <proposal> encryption	vpn ipsec esp-group <text> proposal <text> encryption <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec esp-group <esp-group> proposal <proposal> hash	vpn ipsec esp-group <text> proposal <text> hash <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> close-action	vpn ipsec ike-group <text> close-action <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> dead-peer-detection action	vpn ipsec ike-group <text> dead-peer-detection action <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> dead-peer-detection interval	vpn ipsec ike-group <text> dead-peer-detection interval <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> dead-peer-detection timeout	vpn ipsec ike-group <text> dead-peer-detection timeout <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> disable-mobike	vpn ipsec ike-group <text> disable-mobike
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> ikev2-reauth	vpn ipsec ike-group <text> ikev2-reauth
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> key-exchange	vpn ipsec ike-group <text> key-exchange <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> lifetime	vpn ipsec ike-group <text> lifetime <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> mode	vpn ipsec ike-group <text> mode <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> proposal <proposal> dh-group	vpn ipsec ike-group <text> proposal <text> dh-group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> proposal <proposal> encryption	vpn ipsec ike-group <text> proposal <text> encryption <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> proposal <proposal> hash	vpn ipsec ike-group <text> proposal <text> hash <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec ike-group <ike-group> proposal <proposal> prf	vpn ipsec ike-group <text> proposal <text> prf <value>
✓	<i>set vpn ipsec interface &lt;INTERFACE&gt;</i>	vpn_ipsec.xml.in: vpn ipsec interface	vpn ipsec interface <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec log level	vpn ipsec log level <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec log subsystem	vpn ipsec log subsystem <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec options disable-route-autoinstall	vpn ipsec options disable-route-autoinstall
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec options flexvpn	vpn ipsec options flexvpn
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec options interface	vpn ipsec options interface <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec options virtual-ip	vpn ipsec options virtual-ip
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec profile <profile> authentication mode	vpn ipsec profile <text> authentication mode <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec profile <profile> authentication pre-shared-secret	vpn ipsec profile <text> authentication pre-shared-secret <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec profile <profile> bind tunnel	vpn ipsec profile <text> bind tunnel <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec profile <profile> disable	vpn ipsec profile <text> disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec profile <profile> esp-group	vpn ipsec profile <text> esp-group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec profile <profile> ike-group	vpn ipsec profile <text> ike-group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connec- tion> authentication client-mode	vpn ipsec remote-access connection <text> au- thentication client-mode <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> authentication eap-id	Nothing found in VyOS
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> authentication local-id	vpn ipsec remote-access connection <text> authen- tication local-id <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> authentication local-users username <username> disable	vpn ipsec remote-access connection <text> authen- tication local-users user- name <text> disable
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> authentication local-users username <username> password	vpn ipsec remote-access connection <text> au- thentication local-users username <text> password <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> authentication pre-shared- secret	vpn ipsec remote-access connection <text> authen- tication pre-shared-secret <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connec- tion> authentication server-mode	vpn ipsec remote-access connection <text> au- thentication server-mode <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connec- tion> authentication x509 ca-certificate	vpn ipsec remote-access connection <text> authen- tication x509 ca-certificate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> authentication x509 cer- tificate	vpn ipsec remote-access connection <text> authen- tication x509 certificate <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connec- tion> authentication x509 passphrase	vpn ipsec remote-access connection <text> authen- tication x509 passphrase <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> description	vpn ipsec remote-access connection <text> de- scription <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> dhcp-interface	Nothing found in VyOS
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> disable	vpn ipsec remote-access connection <text> disable
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> esp-group	vpn ipsec remote-access connection <text> esp- group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> ike-group	vpn ipsec remote-access connection <text> ike- group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> local-address	vpn ipsec remote-access connection <text> local- address <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> local port	vpn ipsec remote-access connection <text> local port <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> local prefix	vpn ipsec remote-access connection <text> local prefix <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> pool	vpn ipsec remote-access connection <text> pool <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> replay-window	Nothing found in VyOS
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> timeout	vpn ipsec remote-access connection <text> timeout <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access connection <connection> unique	vpn ipsec remote-access connection <text> unique <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access dhcp interface	vpn ipsec remote-access dhcp interface <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access dhcp server	vpn ipsec remote-access dhcp server <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access pool <pool> exclude	vpn ipsec remote-access pool <text> exclude <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access pool <pool> name-server	vpn ipsec remote-access pool <text> name-server <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access pool <pool> prefix	vpn ipsec remote-access pool <text> prefix <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius nas-identifier	vpn ipsec remote-access radius nas-identifier <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius server <server> dis- able	vpn ipsec remote-access radius server <text> dis- able
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius server <server> disable-accounting	vpn ipsec remote-access radius server <text> disable-accounting
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius server <server> key	vpn ipsec remote-access radius server <text> key <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius server <server> port	vpn ipsec remote-access radius server <text> port <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius source-address	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec remote-access radius timeout	vpn ipsec remote-access radius timeout <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication local-id	vpn ipsec site-to-site peer <text> authentication local-id <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication mode	vpn ipsec site-to-site peer <text> authentication mode <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication remote-id	vpn ipsec site-to-site peer <text> authentication remote-id <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication rsa local-key	vpn ipsec site-to-site peer <text> authentication rsa local-key <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication rsa passphrase	vpn ipsec site-to-site peer <text> authentication rsa passphrase <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication rsa remote-key	vpn ipsec site-to-site peer <text> authentication rsa remote-key <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication use- x509-id	vpn ipsec site-to-site peer <text> authentication use- x509-id
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication x509 ca-certificate	vpn ipsec site-to-site peer <text> authentica- tion x509 ca-certificate <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication x509 certificate	vpn ipsec site-to-site peer <text> authentication x509 certificate <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> authentication x509 passphrase	vpn ipsec site-to-site peer <text> authentication x509 passphrase <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> connection-type	vpn ipsec site-to-site peer <text> connection-type <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> default-esp-group	vpn ipsec site-to-site peer <text> default-esp-group <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> description	vpn ipsec site-to-site peer <text> description <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> dhcp-interface	vpn ipsec site-to-site peer <text> dhcp-interface <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> disable	vpn ipsec site-to-site peer <text> disable
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> force-udp- encapsulation	vpn ipsec site-to-site peer <text> force-udp- encapsulation
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> ike-group	vpn ipsec site-to-site peer <text> ike-group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> ikev2-reauth	vpn ipsec site-to-site peer <text> ikev2-reauth <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> local-address	vpn ipsec site-to-site peer <text> local-address <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> remote-address	vpn ipsec site-to-site peer <text> remote-address <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> replay-window	Nothing found in VyOS
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> disable	vpn ipsec site-to-site peer <text> tunnel <text> dis- able
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> esp-group	vpn ipsec site-to-site peer <text> tunnel <text> esp- group <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> local port	vpn ipsec site-to-site peer <text> tunnel <text> local port <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> local prefix	vpn ipsec site-to-site peer <text> tunnel <text> local prefix <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> priority	vpn ipsec site-to-site peer <text> tunnel <text> prior- ity <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> protocol	vpn ipsec site-to-site peer <text> tunnel <text> pro- tocol <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> remote port	vpn ipsec site-to-site peer <text> tunnel <text> re- mote port <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> tunnel <tunnel> remote prefix	vpn ipsec site-to-site peer <text> tunnel <text> re- mote prefix <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> virtual-address	vpn ipsec site-to-site peer <text> virtual-address <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> vti bind	vpn ipsec site-to-site peer <text> vti bind <value>
×	not yet documented	vpn_ipsec.xml.in: vpn ipsec site-to-site peer <peer> vti esp-group	vpn ipsec site-to-site peer <text> vti esp-group <value>
✓	<i>set vpn l2tp remote-access authentication local-users username &lt;user&gt; disable</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication local-users username <username> disable	vpn l2tp remote-access authentication local-users username <text> disable
✓	<i>set vpn l2tp remote-access authentication local-users username &lt;user&gt; password &lt;pass&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication local-users username <username> password	vpn l2tp remote-access authentication local-users username <text> password <value>
✓	<i>set vpn l2tp remote-access authentication local-users username &lt;user&gt; rate-limit download &lt;bandwidth&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication local-users username <username> rate-limit download	vpn l2tp remote-access authentication local-users username <text> rate-limit download <value>
✓	<i>set vpn l2tp remote-access authentication local-users username &lt;user&gt; rate-limit upload &lt;bandwidth&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication local-users username <username> rate-limit upload	vpn l2tp remote-access authentication local-users username <text> rate-limit upload <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set vpn l2tp remote-access authentication local-users username &lt;user&gt; static-ip &lt;address&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication local-users username <username> static-ip	vpn l2tp remote-access authentication local-users username <text> static-ip <value>
✓	<i>set vpn l2tp remote-access authentication mode &lt;local   radius&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication mode	vpn l2tp remote-access authentication mode <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access authentication mppe <value>
×	<i>set vpn l2tp remote-access authentication protocols &lt;pap   chap   mschap   mschap-v2&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication protocols	Nothing found in VyOS
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius accounting-interim-interval	vpn l2tp remote-access authentication radius accounting-interim-interval <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius acct-interim-jitter	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access authentication radius acct-timeout &lt;timeout&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius acct-timeout	vpn l2tp remote-access authentication radius acct-timeout <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access authentication radius dae-server ip-address <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access authentication radius dae-server port <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access authentication radius dae-server secret <value>
×	<i>set vpn l2tp remote-access authentication radius dynamic-author key &lt;secret&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius dynamic-author key	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set vpn l2tp remote-access authentication radius dynamic-author port &lt;port&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius dynamic-author port	Nothing found in VyOS
×	<i>set vpn l2tp remote-access authentication radius dynamic-author server &lt;address&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius dynamic-author server	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access authentication radius max-try &lt;number&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius max-try	vpn l2tp remote-access authentication radius max-try <value>
✓	<i>set vpn l2tp remote-access authentication radius nas-identifier &lt;identifier&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius nas-identifier	vpn l2tp remote-access authentication radius nas-identifier <value>
✓	<i>set vpn l2tp remote-access authentication radius nas-ip-address &lt;address&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius nas-ip-address	vpn l2tp remote-access authentication radius nas-ip-address <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius preallocate-vif	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access authentication radius rate-limit attribute &lt;attribute&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius rate-limit attribute	vpn l2tp remote-access authentication radius rate-limit attribute <value>
✓	<i>set vpn l2tp remote-access authentication radius rate-limit enable</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius rate-limit enable	vpn l2tp remote-access authentication radius rate-limit enable
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius rate-limit multiplier	vpn l2tp remote-access authentication radius rate-limit multiplier <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set vpn l2tp remote-access authentication radius rate-limit vendor</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius rate-limit vendor	vpn l2tp remote-access authentication radius rate-limit vendor <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius server <server> acct-port	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access authentication radius server &lt;server&gt; disable</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius server <server> disable	vpn l2tp remote-access authentication radius server <text> disable
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius server <server> disable-accounting	vpn l2tp remote-access authentication radius server <text> disable-accounting
✓	<i>set vpn l2tp remote-access authentication radius server &lt;server&gt; fail-time &lt;time&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius server <server> fail-time	vpn l2tp remote-access authentication radius server <text> fail-time <value>
✓	<i>set vpn l2tp remote-access authentication radius server &lt;server&gt; key &lt;secret&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius server <server> key	vpn l2tp remote-access authentication radius server <text> key <value>
✓	<i>set vpn l2tp remote-access authentication radius server &lt;server&gt; port &lt;port&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius server <server> port	vpn l2tp remote-access authentication radius server <text> port <value>
✓	<i>set vpn l2tp remote-access authentication radius source-address &lt;address&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius source-address	vpn l2tp remote-access authentication radius source-address <value>
✓	<i>set vpn l2tp remote-access authentication radius timeout &lt;timeout&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access authentication radius timeout	vpn l2tp remote-access authentication radius timeout <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access authentication require <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access ccp-disable
×	<code>set vpn l2tp remote-access client-ip-pool &lt;POOL-NAME&gt; next-pool &lt;NEXT-POOL-NAME&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access client-ip-pool <client-ip-pool> next-pool	Nothing found in VyOS
×	<code>set vpn l2tp remote-access client-ip-pool &lt;POOL-NAME&gt; range &lt;x.x.x.x-x.x.x.x / x.x.x.x/x&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access client-ip-pool <client-ip-pool> range	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access client-ip-pool start <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access client-ip-pool stop <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access client-ip-pool subnet <value>
✓	<code>set vpn l2tp remote-access client-ipv6-pool &lt;IPv6-POOL-NAME&gt; delegate &lt;address&gt; delegation-prefix &lt;number-of-bits&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access client-ipv6-pool <client-ipv6-pool> delegate <delegate> delegation-prefix	vpn l2tp remote-access client-ipv6-pool delegate <text> delegation-prefix <value>
✓	<code>set vpn l2tp remote-access client-ipv6-pool &lt;IPv6-POOL-NAME&gt; prefix &lt;address&gt; mask &lt;number-of-bits&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access client-ipv6-pool <client-ipv6-pool> prefix <prefix> mask	vpn l2tp remote-access client-ipv6-pool prefix <text> mask <value>
×	<code>set vpn l2tp remote-access default-ipv6-pool &lt;IPv6-POOL-NAME&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access default-ipv6-pool	Nothing found in VyOS
×	<code>set vpn l2tp remote-access default-pool &lt;POOL-NAME&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access default-pool	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set vpn l2tp remote-access description &lt;description&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access description	vpn l2tp remote-access description <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access dhcp-interface <value>
×	<i>set vpn l2tp remote-access extended-scripts on-change &lt;path_to_script&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access extended-scripts on-change	Nothing found in VyOS
×	<i>set vpn l2tp remote-access extended-scripts on-down &lt;path_to_script&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access extended-scripts on-down	Nothing found in VyOS
×	<i>set vpn l2tp remote-access extended-scripts on-pre-up &lt;path_to_script&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access extended-scripts on-pre-up	Nothing found in VyOS
×	<i>set vpn l2tp remote-access extended-scripts on-up &lt;path_to_script&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access extended-scripts on-up	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access gateway-address &lt;gateway&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access gateway-address	vpn l2tp remote-access gateway-address <value>
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access idle <value>
✓	<i>set vpn l2tp remote-access ipsec-settings authentication mode &lt;pre-shared-secret / x509&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings authentication mode	vpn l2tp remote-access ipsec-settings authentication mode <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings authentication pre-shared-secret	vpn l2tp remote-access ipsec-settings authentication pre-shared-secret <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings authentication x509 ca-certificate	vpn l2tp remote-access ipsec-settings authentication x509 ca-certificate <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings authentication x509 certificate	vpn l2tp remote-access ipsec-settings authentication x509 certificate <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings authentication x509 passphrase	vpn l2tp remote-access ipsec-settings authentication x509 passphrase <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings esp-group	vpn l2tp remote-access ipsec-settings esp-group <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings ike-group	vpn l2tp remote-access ipsec-settings ike-group <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings ike-lifetime	vpn l2tp remote-access ipsec-settings ike-lifetime <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ipsec-settings lifetime	vpn l2tp remote-access ipsec-settings lifetime <value>
×	<i>set vpn l2tp remote-access limits burst &lt;value&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access limits burst	Nothing found in VyOS
×	<i>set vpn l2tp remote-access limits connection-limit &lt;value&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access limits connection-limit	Nothing found in VyOS
×	<i>set vpn l2tp remote-access limits timeout &lt;value&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access limits timeout	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access lns host-name &lt;hostname&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access lns host-name	vpn l2tp remote-access lns host-name <value>
✓	<i>set vpn l2tp remote-access lns shared-secret &lt;secret&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access lns shared-secret	vpn l2tp remote-access lns shared-secret <value>
×	<i>set vpn l2tp remote-access max-concurrent-sessio</i>	vpn_l2tp.xml.in: vpn l2tp remote-access max-concurrent-sessions	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access mtu</i>	vpn_l2tp.xml.in: vpn l2tp remote-access mtu	vpn l2tp remote-access mtu <value>
✓	<i>set vpn l2tp remote-access name-server &lt;address&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access name-server	vpn l2tp remote-access name-server <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access outside-address	vpn l2tp remote-access outside-address <value>
×	<i>set vpn l2tp remote-access ppp-options disable-ccp</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options disable-ccp	Nothing found in VyOS
×	<i>set vpn l2tp remote-access ppp-options interface-cache &lt;number&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options interface- cache	Nothing found in VyOS
×	<i>set vpn l2tp remote-access ppp-options ipv4 &lt;require   prefer   allow   deny&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options ipv4	Nothing found in VyOS
✓	<i>set vpn l2tp remote-access ppp-options ipv6 &lt;require   prefer   allow   deny&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options ipv6	vpn l2tp remote-access ppp-options ipv6 <value>
×	<i>set vpn l2tp remote-access ppp-options ipv6-accept-peer-inte</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options ipv6-accept- peer-interface-id	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access ppp-options ipv6-accept- peer-intf-id
×	<i>set vpn l2tp remote-access ppp-options ipv6-interface-id &lt;random   x:x:x:x&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options ipv6- interface-id	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access ppp-options ipv6-intf-id <value>
×	not yet documented	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options ipv6-peer- interface-id	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	vpn l2tp remote-access ppp-options ipv6-peer- intf-id <value>
✓	<i>set vpn l2tp remote-access ppp-options lcp-echo-failure &lt;number&gt;</i>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options lcp-echo- failure	vpn l2tp remote-access ppp-options lcp-echo- failure <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set vpn l2tp remote-access ppp-options lcp-echo-interval &lt;interval&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options lcp-echo-interval	vpn l2tp remote-access ppp-options lcp-echo-interval <value>
×	<code>set vpn l2tp remote-access ppp-options lcp-echo-timeout</code>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options lcp-echo-timeout	Nothing found in VyOS
×	<code>set vpn l2tp remote-access ppp-options min-mtu &lt;number&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options min-mtu	Nothing found in VyOS
×	<code>set vpn l2tp remote-access ppp-options mppe &lt;require   prefer   deny&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options mppe	Nothing found in VyOS
×	<code>set vpn l2tp remote-access ppp-options mru &lt;number&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access ppp-options mru	Nothing found in VyOS
×	<code>set vpn l2tp remote-access shaper fwmark &lt;1-2147483647&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access shaper fwmark	Nothing found in VyOS
×	<code>set vpn l2tp remote-access snmp master-agent</code>	vpn_l2tp.xml.in: vpn l2tp remote-access snmp master-agent	Nothing found in VyOS
✓	<code>set vpn l2tp remote-access wins-server &lt;address&gt;</code>	vpn_l2tp.xml.in: vpn l2tp remote-access wins-server	vpn l2tp remote-access wins-server <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect accounting mode radius	vpn openconnect accounting mode radius
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect accounting radius server <server> disable	vpn openconnect accounting radius server <text> disable
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect accounting radius server <server> key	vpn openconnect accounting radius server <text> key <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect accounting radius server <server> port	vpn openconnect accounting radius server <text> port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication group	vpn openconnect authentication group <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication identity-based-config default-config	vpn openconnect authentication identity-based-config default-config <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication identity-based-config directory	vpn openconnect authentication identity-based-config directory <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication identity-based-config disable	vpn openconnect authentication identity-based-config disable
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication identity-based-config mode	vpn openconnect authentication identity-based-config mode <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication local-users username <username> disable	vpn openconnect authentication local-users username <text> disable
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication local-users username <username> otp interval	vpn openconnect authentication local-users username <text> otp interval <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication local-users username <username> otp key	vpn openconnect authentication local-users username <text> otp key <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication local-users username <username> otp otp-length	vpn openconnect authentication local-users username <text> otp otp-length <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication local-users username <username> otp token-type	vpn openconnect authentication local-users username <text> otp token-type <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication local-users username <username> password	vpn openconnect authentication local-users username <text> password <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication mode local	vpn openconnect authentication mode local <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication mode radius	vpn openconnect authentication mode radius
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication radius groupconfig	vpn openconnect authentication radius groupconfig <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication radius server <server> disable	vpn openconnect authentication radius server <text> disable
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication radius server <server> key	vpn openconnect authentication radius server <text> key <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication radius server <server> port	vpn openconnect authentication radius server <text> port <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication radius source-address	vpn openconnect authentication radius source-address <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect authentication radius timeout	vpn openconnect authentication radius timeout <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect http-security-headers	Nothing found in VyOS
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect listen-address	vpn openconnect listen-address <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect listen-ports tcp	vpn openconnect listen-ports tcp <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect listen-ports udp	vpn openconnect listen-ports udp <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network-settings client-ip-settings subnet	vpn openconnect network-settings client-ip-settings subnet <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network-settings client-ipv6-pool mask	vpn openconnect network-settings client-ipv6-pool mask <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network- settings client-ipv6-pool prefix	vpn openconnect network- settings client-ipv6-pool prefix <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network- settings name-server	vpn openconnect network- settings name-server <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network- settings push-route	vpn openconnect network- settings push-route <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network- settings split-dns	vpn openconnect network- settings split-dns <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect network- settings tunnel-all-dns	vpn openconnect network- settings tunnel-all-dns <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect ssl ca- certificate	vpn openconnect ssl ca- certificate <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect ssl cer- tificate	vpn openconnect ssl cer- tificate <value>
×	not yet documented	vpn_openconnect.xml.in: vpn openconnect ssl passphrase	vpn openconnect ssl passphrase <value>
✓	<i>set vpn pptp remote-access authentication local-users username &lt;user&gt; disable</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication local-users username <username> disable	vpn pptp remote-access authentication local-users username <text> disable
✓	<i>set vpn pptp remote-access authentication local-users username &lt;user&gt; password &lt;pass&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication local-users username <username> password	vpn pptp remote-access authentication local-users username <text> password <value>
×	<i>set vpn pptp remote-access authentication local-users username &lt;user&gt; rate-limit download &lt;bandwidth&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication local-users username <username> rate-limit download	Nothing found in VyOS
×	<i>set vpn pptp remote-access authentication local-users username &lt;user&gt; rate-limit upload &lt;bandwidth&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication local-users username <username> rate-limit upload	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set vpn pptp remote-access authentication local-users username &lt;user&gt; static-ip &lt;address&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication local-users username <username> static-ip	vpn pptp remote-access authentication local-users username <text> static-ip <value>
✓	<i>set vpn pptp remote-access authentication mode &lt;local   radius&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication mode	vpn pptp remote-access authentication mode <value>
×	not yet documented	Nothing found in XML Definitions	vpn pptp remote-access authentication mppe <value>
×	<i>set vpn pptp remote-access authentication protocols &lt;pap   chap   mschap   mschap-v2&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication protocols	Nothing found in VyOS
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access authentication radius accounting-interim-interval	vpn pptp remote-access authentication radius accounting-interim-interval <value>
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access authentication radius acct-interim-jitter	vpn pptp remote-access authentication radius acct-interim-jitter <value>
✓	<i>set vpn pptp remote-access authentication radius acct-timeout &lt;timeout&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius acct-timeout	vpn pptp remote-access authentication radius acct-timeout <value>
✓	<i>set vpn pptp remote-access authentication radius dynamic-author key &lt;secret&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius dynamic-author key	vpn pptp remote-access authentication radius dynamic-author key <value>
✓	<i>set vpn pptp remote-access authentication radius dynamic-author port &lt;port&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius dynamic-author port	vpn pptp remote-access authentication radius dynamic-author port <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set vpn pptp remote-access authentication radius dynamic-author server &lt;address&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius dynamic-author server	vpn pptp remote-access authentication radius dynamic-author server <value>
✓	<i>set vpn pptp remote-access authentication radius max-try &lt;number&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius max-try	vpn pptp remote-access authentication radius max-try <value>
✓	<i>set vpn pptp remote-access authentication radius nas-identifier &lt;identifier&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius nas-identifier	vpn pptp remote-access authentication radius nas-identifier <value>
✓	<i>set vpn pptp remote-access authentication radius nas-ip-address &lt;address&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius nas-ip-address	vpn pptp remote-access authentication radius nas-ip-address <value>
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access authentication radius preallocate-vif	vpn pptp remote-access authentication radius preallocate-vif
✓	<i>set vpn pptp remote-access authentication radius rate-limit attribute &lt;attribute&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius rate-limit attribute	vpn pptp remote-access authentication radius rate-limit attribute <value>
✓	<i>set vpn pptp remote-access authentication radius rate-limit enable</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius rate-limit enable	vpn pptp remote-access authentication radius rate-limit enable
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access authentication radius rate-limit multiplier	vpn pptp remote-access authentication radius rate-limit multiplier <value>
✓	<i>set vpn pptp remote-access authentication radius rate-limit vendor</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius rate-limit vendor	vpn pptp remote-access authentication radius rate-limit vendor <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access authentication radius server <server> acct-port	vpn pptp remote-access authentication radius server <text> acct-port <value>
✓	<i>set vpn pptp remote-access authentication radius server &lt;server&gt; disable</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius server <server> disable	vpn pptp remote-access authentication radius server <text> disable
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access authentication radius server <server> disable-accounting	vpn pptp remote-access authentication radius server <text> disable-accounting
✓	<i>set vpn pptp remote-access authentication radius server &lt;server&gt; fail-time &lt;time&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius server <server> fail-time	vpn pptp remote-access authentication radius server <text> fail-time <value>
✓	<i>set vpn pptp remote-access authentication radius server &lt;server&gt; key &lt;secret&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius server <server> key	vpn pptp remote-access authentication radius server <text> key <value>
✓	<i>set vpn pptp remote-access authentication radius server &lt;server&gt; port &lt;port&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius server <server> port	vpn pptp remote-access authentication radius server <text> port <value>
✓	<i>set vpn pptp remote-access authentication radius source-address &lt;address&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius source-address	vpn pptp remote-access authentication radius source-address <value>
✓	<i>set vpn pptp remote-access authentication radius timeout &lt;timeout&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access authentication radius timeout	vpn pptp remote-access authentication radius timeout <value>
×	not yet documented	Nothing found in XML Definitions	vpn pptp remote-access authentication require <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set vpn pptp remote-access client-ip-pool &lt;POOL-NAME&gt; next-pool &lt;NEXT-POOL-NAME&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access client-ip-pool <client-ip-pool> next-pool	Nothing found in VyOS
×	<i>set vpn pptp remote-access client-ip-pool &lt;POOL-NAME&gt; range &lt;x.x.x.x-x.x.x.x / x.x.x.x/x&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access client-ip-pool <client-ip-pool> range	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	vpn pptp remote-access client-ip-pool start <value>
×	not yet documented	Nothing found in XML Definitions	vpn pptp remote-access client-ip-pool stop <value>
×	<i>set vpn pptp remote-access client-ipv6-pool &lt;IPv6-POOL-NAME&gt; delegate &lt;address&gt; delegation-prefix &lt;number-of-bits&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access client-ipv6-pool <client-ipv6-pool> delegate <delegate> delegation-prefix	Nothing found in VyOS
×	<i>set vpn pptp remote-access client-ipv6-pool &lt;IPv6-POOL-NAME&gt; prefix &lt;address&gt; mask &lt;number-of-bits&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access client-ipv6-pool <client-ipv6-pool> prefix <prefix> mask	Nothing found in VyOS
×	<i>set vpn pptp remote-access default-ipv6-pool &lt;IPv6-POOL-NAME&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access default-ipv6-pool	Nothing found in VyOS
×	<i>set vpn pptp remote-access default-pool &lt;POOL-NAME&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access default-pool	Nothing found in VyOS
×	<i>set vpn pptp remote-access description &lt;description&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access description	Nothing found in VyOS
×	<i>set vpn pptp remote-access extended-scripts on-change &lt;path_to_script&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access extended-scripts on-change	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set vpn pptp remote-access extended-scripts on-down &lt;path_to_script&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access extended-scripts on-down	Nothing found in VyOS
×	<i>set vpn pptp remote-access extended-scripts on-pre-up &lt;path_to_script&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access extended-scripts on-pre-up	Nothing found in VyOS
×	<i>set vpn pptp remote-access extended-scripts on-up &lt;path_to_script&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access extended-scripts on-up	Nothing found in VyOS
✓	<i>set vpn pptp remote-access gateway-address &lt;gateway&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access gateway-address	vpn pptp remote-access gateway-address <value>
×	<i>set vpn pptp remote-access limits burst &lt;value&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access limits burst	Nothing found in VyOS
×	<i>set vpn pptp remote-access limits connection-limit &lt;value&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access limits connection-limit	Nothing found in VyOS
×	<i>set vpn pptp remote-access limits timeout &lt;value&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access limits timeout	Nothing found in VyOS
×	<i>set vpn pptp remote-access max-concurrent-sessio</i>	vpn_pptp.xml.in: vpn pptp remote-access max-concurrent-sessions	Nothing found in VyOS
✓	<i>set vpn pptp remote-access mtu</i>	vpn_pptp.xml.in: vpn pptp remote-access mtu	vpn pptp remote-access mtu <value>
✓	<i>set vpn pptp remote-access name-server &lt;address&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access name-server	vpn pptp remote-access name-server <value>
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access outside-address	vpn pptp remote-access outside-address <value>
×	<i>set vpn pptp remote-access ppp-options disable-ccp</i>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options disable-ccp	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set vpn pptp remote-access ppp-options interface-cache &lt;number&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options interface-cache	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options ipv4 &lt;require   prefer   allow   deny&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options ipv4	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options ipv6 &lt;require   prefer   allow   deny&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options ipv6	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options ipv6-accept-peer-inte</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options ipv6-accept-peer-interface-id	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options ipv6-interface-id &lt;random   x:x:x:x&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options ipv6-interface-id	Nothing found in VyOS
×	not yet documented	vpn_pptp.xml.in: vpn pptp remote-access ppp-options ipv6-peer-interface-id	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options lcp-echo-failure &lt;number&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options lcp-echo-failure	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options lcp-echo-interval &lt;interval&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options lcp-echo-interval	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options lcp-echo-timeout</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options lcp-echo-timeout	Nothing found in VyOS
×	<code>set vpn pptp remote-access ppp-options min-mtu &lt;number&gt;</code>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options min-mtu	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set vpn pptp remote-access ppp-options mppe &lt;require   prefer   deny&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options mppe	Nothing found in VyOS
×	<i>set vpn pptp remote-access ppp-options mru &lt;number&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access ppp-options mru	Nothing found in VyOS
×	<i>set vpn pptp remote-access shaper fwmark &lt;1-2147483647&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access shaper fwmark	Nothing found in VyOS
×	<i>set vpn pptp remote-access snmp master-agent</i>	vpn_pptp.xml.in: vpn pptp remote-access snmp master-agent	Nothing found in VyOS
✓	<i>set vpn pptp remote-access wins-server &lt;address&gt;</i>	vpn_pptp.xml.in: vpn pptp remote-access wins-server	vpn pptp remote-access wins-server <value>
✓	<i>set vpn sstp authentication local-users username &lt;user&gt; disable</i>	vpn_sstp.xml.in: vpn sstp authentication local-users username <username> disable	vpn sstp authentication local-users username <text> disable
✓	<i>set vpn sstp authentication local-users username &lt;user&gt; password &lt;pass&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication local-users username <username> password	vpn sstp authentication local-users username <text> password <value>
✓	<i>set vpn sstp authentication local-users username &lt;user&gt; rate-limit download &lt;bandwidth&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication local-users username <username> rate-limit download	vpn sstp authentication local-users username <text> rate-limit down- load <value>
✓	<i>set vpn sstp authentication local-users username &lt;user&gt; rate-limit upload &lt;bandwidth&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication local-users username <username> rate-limit upload	vpn sstp authentication local-users username <text> rate-limit upload <value>
✓	<i>set vpn sstp authentication local-users username &lt;user&gt; static-ip &lt;address&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication local-users username <username> static-ip	vpn sstp authentication local-users username <text> static-ip <value>
✓	<i>set vpn sstp authentication mode &lt;local   radius&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication mode	vpn sstp authentication mode <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set vpn sstp authentication protocols &lt;pap / chap / mschap / mschap-v2&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication protocols	vpn sstp authentication protocols <value>
×	not yet documented	vpn_sstp.xml.in: vpn sstp authentication radius accounting-interim-interval	vpn sstp authentication radius accounting-interim-interval <value>
×	not yet documented	vpn_sstp.xml.in: vpn sstp authentication radius acct-interim-jitter	vpn sstp authentication radius acct-interim-jitter <value>
✓	<code>set vpn sstp authentication radius acct-timeout &lt;timeout&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius acct-timeout	vpn sstp authentication radius acct-timeout <value>
✓	<code>set vpn sstp authentication radius dynamic-author key &lt;secret&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius dynamic-author key	vpn sstp authentication radius dynamic-author key <value>
✓	<code>set vpn sstp authentication radius dynamic-author port &lt;port&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius dynamic-author port	vpn sstp authentication radius dynamic-author port <value>
✓	<code>set vpn sstp authentication radius dynamic-author server &lt;address&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius dynamic-author server	vpn sstp authentication radius dynamic-author server <value>
✓	<code>set vpn sstp authentication radius max-try &lt;number&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius max-try	vpn sstp authentication radius max-try <value>
✓	<code>set vpn sstp authentication radius nas-identifier &lt;identifier&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius nas-identifier	vpn sstp authentication radius nas-identifier <value>
✓	<code>set vpn sstp authentication radius nas-ip-address &lt;address&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius nas-ip-address	vpn sstp authentication radius nas-ip-address <value>
×	not yet documented	vpn_sstp.xml.in: vpn sstp authentication radius preallocate-vif	vpn sstp authentication radius preallocate-vif

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>set vpn sstp authentication radius rate-limit attribute &lt;attribute&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication radius rate-limit attribute	vpn sstp authentication radius rate-limit attribute <value>
✓	<i>set vpn sstp authentication radius rate-limit enable</i>	vpn_sstp.xml.in: vpn sstp authentication radius rate-limit enable	vpn sstp authentication radius rate-limit enable
×	not yet documented	vpn_sstp.xml.in: vpn sstp authentication radius rate-limit multiplier	vpn sstp authentication radius rate-limit multiplier <value>
✓	<i>set vpn sstp authentication radius rate-limit vendor</i>	vpn_sstp.xml.in: vpn sstp authentication radius rate-limit vendor	vpn sstp authentication radius rate-limit vendor <value>
×	not yet documented	vpn_sstp.xml.in: vpn sstp authentication radius server <server> acct-port	vpn sstp authentication radius server <text> acct-port <value>
✓	<i>set vpn sstp authentication radius server &lt;server&gt; disable</i>	vpn_sstp.xml.in: vpn sstp authentication radius server <server> disable	vpn sstp authentication radius server <text> disable
×	not yet documented	vpn_sstp.xml.in: vpn sstp authentication radius server <server> disable-accounting	vpn sstp authentication radius server <text> disable-accounting
✓	<i>set vpn sstp authentication radius server &lt;server&gt; fail-time &lt;time&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication radius server <server> fail-time	vpn sstp authentication radius server <text> fail-time <value>
✓	<i>set vpn sstp authentication radius server &lt;server&gt; key &lt;secret&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication radius server <server> key	vpn sstp authentication radius server <text> key <value>
✓	<i>set vpn sstp authentication radius server &lt;server&gt; port &lt;port&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication radius server <server> port	vpn sstp authentication radius server <text> port <value>
✓	<i>set vpn sstp authentication radius source-address &lt;address&gt;</i>	vpn_sstp.xml.in: vpn sstp authentication radius source-address	vpn sstp authentication radius source-address <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set vpn sstp authentication radius timeout &lt;timeout&gt;</code>	vpn_sstp.xml.in: vpn sstp authentication radius timeout	vpn sstp authentication radius timeout <value>
×	<code>set vpn sstp client-ip-pool &lt;POOL-NAME&gt; next-pool &lt;NEXT-POOL-NAME&gt;</code>	vpn_sstp.xml.in: vpn sstp client-ip-pool <client-ip-pool> next-pool	Nothing found in VyOS
×	<code>set vpn sstp client-ip-pool &lt;POOL-NAME&gt; range &lt;x.x.x.x-x.x.x.x / x.x.x.x/x&gt;</code>	vpn_sstp.xml.in: vpn sstp client-ip-pool <client-ip-pool> range	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	vpn sstp client-ip-pool subnet <value>
✓	<code>set vpn sstp client-ipv6-pool &lt;IPv6-POOL-NAME&gt; delegate &lt;address&gt; delegation-prefix &lt;number-of-bits&gt;</code>	vpn_sstp.xml.in: vpn sstp client-ipv6-pool <client-ipv6-pool> delegate <delegate> delegation-prefix	vpn sstp client-ipv6-pool delegate <text> delegation-prefix <value>
✓	<code>set vpn sstp client-ipv6-pool &lt;IPv6-POOL-NAME&gt; prefix &lt;address&gt; mask &lt;number-of-bits&gt;</code>	vpn_sstp.xml.in: vpn sstp client-ipv6-pool <client-ipv6-pool> prefix <prefix> mask	vpn sstp client-ipv6-pool prefix <text> mask <value>
×	<code>set vpn sstp default-ipv6-pool &lt;IPv6-POOL-NAME&gt;</code>	vpn_sstp.xml.in: vpn sstp default-ipv6-pool	Nothing found in VyOS
×	<code>set vpn sstp default-pool &lt;POOL-NAME&gt;</code>	vpn_sstp.xml.in: vpn sstp default-pool	Nothing found in VyOS
×	<code>set vpn sstp description &lt;description&gt;</code>	vpn_sstp.xml.in: vpn sstp description	Nothing found in VyOS
×	<code>set vpn sstp extended-scripts on-change &lt;path_to_script&gt;</code>	vpn_sstp.xml.in: vpn sstp extended-scripts on-change	Nothing found in VyOS
×	<code>set vpn sstp extended-scripts on-down &lt;path_to_script&gt;</code>	vpn_sstp.xml.in: vpn sstp extended-scripts on-down	Nothing found in VyOS
×	<code>set vpn sstp extended-scripts on-pre-up &lt;path_to_script&gt;</code>	vpn_sstp.xml.in: vpn sstp extended-scripts on-pre-up	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>set vpn sstp extended-scripts on-up &lt;path_to_script&gt;</i>	vpn_sstp.xml.in: vpn sstp extended-scripts on-up	Nothing found in VyOS
✓	<i>set vpn sstp gateway-address &lt;gateway&gt;</i>	vpn_sstp.xml.in: vpn sstp gateway-address	vpn sstp gateway-address <value>
×	<i>set vpn sstp limits burst &lt;value&gt;</i>	vpn_sstp.xml.in: vpn sstp limits burst	Nothing found in VyOS
×	<i>set vpn sstp limits connection-limit &lt;value&gt;</i>	vpn_sstp.xml.in: vpn sstp limits connection-limit	Nothing found in VyOS
×	<i>set vpn sstp limits timeout &lt;value&gt;</i>	vpn_sstp.xml.in: vpn sstp limits timeout	Nothing found in VyOS
×	<i>set vpn sstp max-concurrent-sessio</i>	vpn_sstp.xml.in: vpn sstp max-concurrent-sessions	Nothing found in VyOS
✓	<i>set vpn sstp mtu</i>	vpn_sstp.xml.in: vpn sstp mtu	vpn sstp mtu <value>
✓	<i>set vpn sstp name-server &lt;address&gt;</i>	vpn_sstp.xml.in: vpn sstp name-server	vpn sstp name-server <value>
×	not yet documented	vpn_sstp.xml.in: vpn sstp port	vpn sstp port <value>
×	<i>set vpn sstp ppp-options disable-ccp</i>	vpn_sstp.xml.in: vpn sstp ppp-options disable-ccp	Nothing found in VyOS
×	<i>set vpn sstp ppp-options interface-cache &lt;number&gt;</i>	vpn_sstp.xml.in: vpn sstp ppp-options interface-cache	Nothing found in VyOS
✓	<i>set vpn sstp ppp-options ipv4 &lt;require   prefer   allow   deny&gt;</i>	vpn_sstp.xml.in: vpn sstp ppp-options ipv4	vpn sstp ppp-options ipv4 <value>
✓	<i>set vpn sstp ppp-options ipv6 &lt;require   prefer   allow   deny&gt;</i>	vpn_sstp.xml.in: vpn sstp ppp-options ipv6	vpn sstp ppp-options ipv6 <value>
×	<i>set vpn sstp ppp-options ipv6-accept-peer-inte</i>	vpn_sstp.xml.in: vpn sstp ppp-options ipv6-accept-peer-interface-id	Nothing found in VyOS
×	<i>set vpn sstp ppp-options ipv6-interface-id &lt;random   x:x:x:x&gt;</i>	vpn_sstp.xml.in: vpn sstp ppp-options ipv6-interface-id	Nothing found in VyOS
×	not yet documented	vpn_sstp.xml.in: vpn sstp ppp-options ipv6-peer-interface-id	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<code>set vpn sstp ppp-options lcp-echo-failure &lt;number&gt;</code>	vpn_sstp.xml.in: vpn sstp ppp-options lcp-echo-failure	vpn sstp ppp-options lcp-echo-failure <value>
✓	<code>set vpn sstp ppp-options lcp-echo-interval &lt;interval&gt;</code>	vpn_sstp.xml.in: vpn sstp ppp-options lcp-echo-interval	vpn sstp ppp-options lcp-echo-interval <value>
✓	<code>set vpn sstp ppp-options lcp-echo-timeout</code>	vpn_sstp.xml.in: vpn sstp ppp-options lcp-echo-timeout	vpn sstp ppp-options lcp-echo-timeout <value>
×	<code>set vpn sstp ppp-options min-mtu &lt;number&gt;</code>	vpn_sstp.xml.in: vpn sstp ppp-options min-mtu	Nothing found in VyOS
✓	<code>set vpn sstp ppp-options mppe &lt;require   prefer   deny&gt;</code>	vpn_sstp.xml.in: vpn sstp ppp-options mppe	vpn sstp ppp-options mppe <value>
×	<code>set vpn sstp ppp-options mru &lt;number&gt;</code>	vpn_sstp.xml.in: vpn sstp ppp-options mru	Nothing found in VyOS
×	<code>set vpn sstp shaper fwmark &lt;1-2147483647&gt;</code>	vpn_sstp.xml.in: vpn sstp shaper fwmark	Nothing found in VyOS
×	<code>set vpn sstp snmp master-agent</code>	vpn_sstp.xml.in: vpn sstp snmp master-agent	Nothing found in VyOS
✓	<code>set vpn sstp ssl ca-certificate &lt;file&gt;</code>	vpn_sstp.xml.in: vpn sstp ssl ca-certificate	vpn sstp ssl ca-certificate <value>
✓	<code>set vpn sstp ssl certificate &lt;file&gt;</code>	vpn_sstp.xml.in: vpn sstp ssl certificate	vpn sstp ssl certificate <value>
×	<code>set vpn sstp wins-server &lt;address&gt;</code>	vpn_sstp.xml.in: vpn sstp wins-server	Nothing found in VyOS
✓	<code>set vrf bind-to-all</code>	vrf.xml.in: vrf bind-to-all	vrf bind-to-all
×	<code>set vrf &lt;name&gt; ip protocol &lt;protocol&gt; route-map &lt;route-map&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set vrf &lt;name&gt; ipv6 protocol &lt;protocol&gt; route-map &lt;route-map&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set vrf name &lt;name&gt;</code>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> description	vrf name <text> description <value>
×	not yet documented	vrf.xml.in: vrf name <name> disable	vrf name <text> disable
×	not yet documented	vrf.xml.in: vrf name <name> ip disable-forwarding	vrf name <text> ip disable-forwarding
×	<i>set vrf name &lt;name&gt; ip nht no-resolve-via-default</i>	vrf.xml.in: vrf name <name> ip nht no-resolve-via-default	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> ip protocol <protocol> route-map	vrf name <text> ip protocol <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> ipv6 disable-forwarding	vrf name <text> ipv6 disable-forwarding
×	<i>set vrf name &lt;name&gt; ipv6 nht no-resolve-via-default</i>	vrf.xml.in: vrf name <name> ipv6 nht no-resolve-via-default	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> ipv6 protocol <protocol> route-map	vrf name <text> ipv6 protocol <text> route-map <value>
×	<i>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-unicast&gt; import vrf &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-flowspec local-install interface	vrf name <text> protocols bgp address-family ipv4-flowspec local-install interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast aggregate-address <aggregate-address> as-set	vrf name <text> protocols bgp address-family ipv4-labeled-unicast aggregate-address <text> as-set
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast aggregate-address <aggregate-address> route-map	vrf name <text> protocols bgp address-family ipv4-labeled-unicast aggregate-address <text> route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast aggregate-address <aggregate-address> summary-only	vrf name <text> protocols bgp address-family ipv4-labeled-unicast aggregate-address <text> summary-only
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast maximum-paths ebgp	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast maximum-paths ibgp	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast network <network> backdoor	vrf name <text> protocols bgp address-family ipv4-labeled-unicast network <text> backdoor
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-labeled-unicast network <network> route-map	vrf name <text> protocols bgp address-family ipv4-labeled-unicast network <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast aggregate-address <aggregate-address> as-set	vrf name <text> protocols bgp address-family ipv4-multicast aggregate-address <text> as-set
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast aggregate-address <aggregate-address> route-map	vrf name <text> protocols bgp address-family ipv4-multicast aggregate-address <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast aggregate-address <aggregate-address> summary-only	vrf name <text> protocols bgp address-family ipv4-multicast aggregate-address <text> summary-only

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast distance external	vrf name <text> protocols bgp address-family ipv4-multicast distance external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast distance internal	vrf name <text> protocols bgp address-family ipv4-multicast distance internal <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast distance local	vrf name <text> protocols bgp address-family ipv4-multicast distance local <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast distance prefix <prefix> distance	vrf name <text> protocols bgp address-family ipv4-multicast distance prefix <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast network <network> backdoor	vrf name <text> protocols bgp address-family ipv4-multicast network <text> backdoor
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-multicast network <network> route-map	vrf name <text> protocols bgp address-family ipv4-multicast network <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast aggregate-address <aggregate-address> as-set	vrf name <text> protocols bgp address-family ipv4-unicast aggregate-address <text> as-set
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast aggregate-address <aggregate-address> route-map	vrf name <text> protocols bgp address-family ipv4-unicast aggregate-address <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast aggregate-address <aggregate-address> summary-only	vrf name <text> protocols bgp address-family ipv4-unicast aggregate-address <text> summary-only

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast distance external	vrf name <text> protocols bgp address-family ipv4-unicast distance external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast distance internal	vrf name <text> protocols bgp address-family ipv4-unicast distance internal <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast distance local	vrf name <text> protocols bgp address-family ipv4-unicast distance local <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast distance prefix <prefix> distance	vrf name <text> protocols bgp address-family ipv4-unicast distance prefix <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast export vpn	vrf name <text> protocols bgp address-family ipv4-unicast export vpn
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast import vpn	vrf name <text> protocols bgp address-family ipv4-unicast import vpn
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast import vrf	vrf name <text> protocols bgp address-family ipv4-unicast import vrf <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast label vpn allocation-mode pernextthop	vrf name <text> protocols bgp address-family ipv4-unicast label vpn allocation-mode pernextthop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast label vpn export	vrf name <text> protocols bgp address-family ipv4-unicast label vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast maximum-paths ebgp	vrf name <text> protocols bgp address-family ipv4-unicast maximum-paths ebgp <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast maximum-paths ibgp	vrf name <text> protocols bgp address-family ipv4-unicast maximum-paths ibgp <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast network <network> backdoor	vrf name <text> protocols bgp address-family ipv4-unicast network <text> backdoor
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast network <network> route-map	vrf name <text> protocols bgp address-family ipv4-unicast network <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast nexthop vpn export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast rd vpn export	vrf name <text> protocols bgp address-family ipv4-unicast rd vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute babel metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute babel metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute babel route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute babel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute connected metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute connected metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute connected route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute connected route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute isis metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute isis metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute isis route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute isis route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute kernel metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute kernel metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute kernel route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute kernel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute ospf metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute ospf metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute ospf route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute ospf route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute rip metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute rip metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute rip route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute rip route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute static metric	vrf name <text> protocols bgp address-family ipv4-unicast redistribute static metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute static route-map	vrf name <text> protocols bgp address-family ipv4-unicast redistribute static route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast redistribute table	vrf name <text> protocols bgp address-family ipv4-unicast redistribute table <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast route-map vpn export	vrf name <text> protocols bgp address-family ipv4-unicast route-map vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast route-map vpn import	vrf name <text> protocols bgp address-family ipv4-unicast route-map vpn import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast route-target vpn both	vrf name <text> protocols bgp address-family ipv4-unicast route-target vpn both <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast route-target vpn export	vrf name <text> protocols bgp address-family ipv4-unicast route-target vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast route-target vpn import	vrf name <text> protocols bgp address-family ipv4-unicast route-target vpn import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-unicast sid vpn export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-vpn network <network> label	vrf name <text> protocols bgp address-family ipv4-vpn network <text> label <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv4-vpn network <network> rd	vrf name <text> protocols bgp address-family ipv4-vpn network <text> rd <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-flowspec local-install interface	vrf name <text> protocols bgp address-family ipv6-flowspec local-install interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-labeled-unicast aggregate-address <aggregate-address> as-set	vrf name <text> protocols bgp address-family ipv6-labeled-unicast aggregate-address <text> as-set
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-labeled-unicast aggregate-address <aggregate-address> route-map	vrf name <text> protocols bgp address-family ipv6-labeled-unicast aggregate-address <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-labeled-unicast aggregate-address <aggregate-address> summary-only	vrf name <text> protocols bgp address-family ipv6-labeled-unicast aggregate-address <text> summary-only
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-labeled-unicast network <network> backdoor	vrf name <text> protocols bgp address-family ipv6-labeled-unicast network <text> backdoor
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-labeled-unicast network <network> route-map	vrf name <text> protocols bgp address-family ipv6-labeled-unicast network <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast aggregate-address <aggregate-address> as-set	vrf name <text> protocols bgp address-family ipv6-multicast aggregate-address <text> as-set
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast aggregate-address <aggregate-address> route-map	vrf name <text> protocols bgp address-family ipv6-multicast aggregate-address <text> route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast aggregate-address <aggregate-address> summary-only	vrf name <text> protocols bgp address-family ipv6-multicast aggregate-address <text> summary-only
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast distance external	vrf name <text> protocols bgp address-family ipv6-multicast distance external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast distance internal	vrf name <text> protocols bgp address-family ipv6-multicast distance internal <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast distance local	vrf name <text> protocols bgp address-family ipv6-multicast distance local <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast distance prefix <prefix> distance	vrf name <text> protocols bgp address-family ipv6-multicast distance prefix <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast network <network> path-limit	vrf name <text> protocols bgp address-family ipv6-multicast network <text> path-limit <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-multicast network <network> route-map	vrf name <text> protocols bgp address-family ipv6-multicast network <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast aggregate-address <aggregate-address> as-set	vrf name <text> protocols bgp address-family ipv6-unicast aggregate-address <text> as-set
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast aggregate-address <aggregate-address> route-map	vrf name <text> protocols bgp address-family ipv6-unicast aggregate-address <text> route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast aggregate-address <aggregate-address> summary-only	vrf name <text> protocols bgp address-family ipv6-unicast aggregate-address <text> summary-only
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast distance external	vrf name <text> protocols bgp address-family ipv6-unicast distance external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast distance internal	vrf name <text> protocols bgp address-family ipv6-unicast distance internal <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast distance local	vrf name <text> protocols bgp address-family ipv6-unicast distance local <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast distance prefix <prefix> distance	vrf name <text> protocols bgp address-family ipv6-unicast distance prefix <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast export vpn	vrf name <text> protocols bgp address-family ipv6-unicast export vpn
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast import vpn	vrf name <text> protocols bgp address-family ipv6-unicast import vpn
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast import vrf	vrf name <text> protocols bgp address-family ipv6-unicast import vrf <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast label vpn allocation-mode per-nexthop	vrf name <text> protocols bgp address-family ipv6-unicast label vpn allocation-mode per-nexthop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast label vpn export	vrf name <text> protocols bgp address-family ipv6-unicast label vpn export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast maximum-paths ebgp	vrf name <text> protocols bgp address-family ipv6-unicast maximum-paths ebgp <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast maximum-paths ibgp	vrf name <text> protocols bgp address-family ipv6-unicast maximum-paths ibgp <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast network <network> path-limit	vrf name <text> protocols bgp address-family ipv6-unicast network <text> path-limit <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast network <network> route-map	vrf name <text> protocols bgp address-family ipv6-unicast network <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast nexthop vpn export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast rd vpn export	vrf name <text> protocols bgp address-family ipv6-unicast rd vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute babel metric	vrf name <text> protocols bgp address-family ipv6-unicast redistribute babel metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute babel route-map	vrf name <text> protocols bgp address-family ipv6-unicast redistribute babel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute connected metric	vrf name <text> protocols bgp address-family ipv6-unicast redistribute connected metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute connected route-map	vrf name <text> protocols bgp address-family ipv6-unicast redistribute connected route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute kernel metric	vrf name <text> protocols bgp address-family ipv6-unicast redistribute kernel metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute kernel route-map	vrf name <text> protocols bgp address-family ipv6-unicast redistribute kernel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute ospfv3 metric	vrf name <text> protocols bgp address-family ipv6-unicast redistribute ospfv3 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute ospfv3 route-map	vrf name <text> protocols bgp address-family ipv6-unicast redistribute ospfv3 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute ripng metric	vrf name <text> protocols bgp address-family ipv6-unicast redistribute ripng metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute ripng route-map	vrf name <text> protocols bgp address-family ipv6-unicast redistribute ripng route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute static metric	vrf name <text> protocols bgp address-family ipv6-unicast redistribute static metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute static route-map	vrf name <text> protocols bgp address-family ipv6-unicast redistribute static route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast redistribute table	vrf name <text> protocols bgp address-family ipv6-unicast redistribute table <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast route-map vpn export	vrf name <text> protocols bgp address-family ipv6-unicast route-map vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast route-map vpn import	vrf name <text> protocols bgp address-family ipv6-unicast route-map vpn import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast route-target vpn both	vrf name <text> protocols bgp address-family ipv6-unicast route-target vpn both <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast route-target vpn export	vrf name <text> protocols bgp address-family ipv6-unicast route-target vpn export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast route-target vpn import	vrf name <text> protocols bgp address-family ipv6-unicast route-target vpn import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-unicast sid vpn export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-vpn network <network> label	vrf name <text> protocols bgp address-family ipv6-vpn network <text> label <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family ipv6-vpn network <network> rd	vrf name <text> protocols bgp address-family ipv6-vpn network <text> rd <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn advertise-all-vni	vrf name <text> protocols bgp address-family l2vpn-evpn advertise-all-vni

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn advertise-default-gw	vrf name <text> protocols bgp address-family l2vpn-evpn advertise-default-gw
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn advertise-pip	vrf name <text> protocols bgp address-family l2vpn-evpn advertise-pip <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn advertise-svi-ip	vrf name <text> protocols bgp address-family l2vpn-evpn advertise-svi-ip
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn advertise ipv4 unicast route-map	vrf name <text> protocols bgp address-family l2vpn-evpn advertise ipv4 unicast route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn advertise ipv6 unicast route-map	vrf name <text> protocols bgp address-family l2vpn-evpn advertise ipv6 unicast route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn default-originate ipv4	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn default-originate ipv6	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn disable-ead-evi-rx	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn disable-ead-evi-tx	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn ead-es-frag evi-limit	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn ead-es-route-target export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn flooding disable	vrf name <text> protocols bgp address-family l2vpn-evpn flooding disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn flooding head-end-replication	vrf name <text> protocols bgp address-family l2vpn-evpn flooding head-end-replication
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn mac-vrf soo	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn rd	vrf name <text> protocols bgp address-family l2vpn-evpn rd <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn route-target both	vrf name <text> protocols bgp address-family l2vpn-evpn route-target both <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn route-target export	vrf name <text> protocols bgp address-family l2vpn-evpn route-target export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn route-target import	vrf name <text> protocols bgp address-family l2vpn-evpn route-target import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn rt-auto-derive	vrf name <text> protocols bgp address-family l2vpn-evpn rt-auto-derive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn vni <vni> advertise-default-gw	vrf name <text> protocols bgp address-family l2vpn-evpn vni <text> advertise-default-gw

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn vni <vni> advertise-svi-ip	vrf name <text> protocols bgp address-family l2vpn-evpn vni <text> advertise-svi-ip
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn vni <vni> rd	vrf name <text> protocols bgp address-family l2vpn-evpn vni <text> rd <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn vni <vni> route-target both	vrf name <text> protocols bgp address-family l2vpn-evpn vni <text> route-target both <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn vni <vni> route-target export	vrf name <text> protocols bgp address-family l2vpn-evpn vni <text> route-target export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp address-family l2vpn-evpn vni <vni> route-target import	vrf name <text> protocols bgp address-family l2vpn-evpn vni <text> route-target import <value>
×	<i>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-unlabel vpn allocation-mode per-nexthop</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-unlabel vpn export &lt;0-1048575/auto&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-unrd vpn export &lt;asn:nn/address:nn&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<code>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-un route-map vpn &lt;import/export&gt; [route-map &lt;name&gt;]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-un route-target vpn &lt;import/export/both&gt; [RTLIST]</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	<code>set vrf name &lt;name&gt; protocols bgp address-family &lt;ipv4-unicast/ipv6-un &lt;import/export&gt; vpn</code>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp mirror-buffer-limit	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> address	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> max-retry	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> min-retry	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> mirror	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> monitor ipv4-unicast post-policy	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> monitor ipv4-unicast pre-policy	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> monitor ipv6-unicast post-policy	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> monitor ipv6-unicast pre-policy	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp bmp target <target> port	Nothing found in VyOS
✓	<i>set vrf name &lt;name&gt; protocols bgp interface &lt;interface&gt; mpls forwarding</i>	vrf.xml.in: vrf name <name> protocols bgp interface <interface> mpls forwarding	vrf name <text> protocols bgp interface <text> mpls forwarding
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp listen limit	vrf name <text> protocols bgp listen limit <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp listen range <range> peer-group	vrf name <text> protocols bgp listen range <text> peer-group <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec prefix-list import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-flowspec soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv4-flowspec soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast allowas-in number <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast capability orf prefix-list receive	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast capability orf prefix-list receive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast capability orf prefix-list send	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast capability orf prefix-list send
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast conditionally-advertise advertise-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast default-originate route-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast distribute-list import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast remove-private-as

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-labeled-unicast weight	vrf name <text> protocols bgp neighbor <text> address-family ipv4-labeled-unicast weight <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast capability orf prefix-list receive	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast capability orf prefix-list receive

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast capability orf prefix-list send	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast capability orf prefix-list send
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast default-originate route-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast disable-send-community standard

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast prefix-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast soft-reconfiguration inbound

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-multicast weight	vrf name <text> protocols bgp neighbor <text> address-family ipv4-multicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast attribute-unchanged med

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast capability orf prefix-list receive	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast capability orf prefix-list receive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast capability orf prefix-list send	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast capability orf prefix-list send
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast default-originate route-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast default-originate route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast maximum-prefix-out <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast route-server-client

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-unicast weight	vrf name <text> protocols bgp neighbor <text> address-family ipv4-unicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn attribute-unchanged med

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn distribute-list import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn route-map export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv4-vpn weight	vrf name <text> protocols bgp neighbor <text> address-family ipv4-vpn weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec prefix-list export <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec prefix-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-flowspec soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv6-flowspec soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast addpath-tx-per-as

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast capability orf prefix-list receive	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast capability orf prefix-list receive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast capability orf prefix-list send	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast capability orf prefix-list send

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast default-originate route-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast distribute-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast nexthop-local unchanged	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast nexthop-local unchanged
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast prefix-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast soft-reconfiguration inbound

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-labeled-unicast weight	vrf name <text> protocols bgp neighbor <text> address-family ipv6-labeled-unicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast attribute-unchanged med

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast default-originate route-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast disable-send-community standard

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast nexthop-local unchanged	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast nexthop-local unchanged
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast nexthop-self force

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast route-server-client

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-multicast weight	vrf name <text> protocols bgp neighbor <text> address-family ipv6-multicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast attribute-unchanged as-path

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast capability orf prefix-list receive	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast capability orf prefix-list receive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast capability orf prefix-list send	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast capability orf prefix-list send
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast conditionally-advertise non-exist-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast default-originate route-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast maximum-prefix <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast nexthop-local unchanged	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast nexthop-local unchanged
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast route-map import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-unicast weight	vrf name <text> protocols bgp neighbor <text> address-family ipv6-unicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn addpath-tx-all	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn addpath-tx-per-as	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn as-override	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn as-override

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn conditionally-advertise advertise-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn conditionally-advertise exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn conditionally-advertise non-exist-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn disable-send-community extended	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn disable-send-community standard	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn disable-send-community standard

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn distribute-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn distribute-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn filter-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn filter-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn maximum-prefix	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn maximum-prefix-out	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn nexthop-local unchanged	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn nexthop-local unchanged
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn prefix-list export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn prefix-list export <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn prefix-list import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn route-map export	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn route-map import	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn route-server-client	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn unsuppress-map	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn unsuppress-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family ipv6-vpn weight	vrf name <text> protocols bgp neighbor <text> address-family ipv6-vpn weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn allowas-in number	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn attribute-unchanged as-path	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn attribute-unchanged med	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn attribute-unchanged next-hop	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn nexthop-self force	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn route-map export	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn route-map import	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn route-map import <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn route-reflector-client	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn route-server-client	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> address-family l2vpn-evpn soft-reconfiguration inbound	vrf name <text> protocols bgp neighbor <text> address-family l2vpn-evpn soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> advertisement-interval	vrf name <text> protocols bgp neighbor <text> advertisement-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> bfd check-control-plane-failure	vrf name <text> protocols bgp neighbor <text> bfd check-control-plane-failure
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> bfd profile	vrf name <text> protocols bgp neighbor <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> capability dynamic	vrf name <text> protocols bgp neighbor <text> capability dynamic
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> capability extended-nexthop	vrf name <text> protocols bgp neighbor <text> capability extended-nexthop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> capability software-version	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> description	vrf name <text> protocols bgp neighbor <text> description <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> disable-capability-negotiation	vrf name <text> protocols bgp neighbor <text> disable-capability-negotiation
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> disable-connected-check	vrf name <text> protocols bgp neighbor <text> disable-connected-check
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> ebgp-multihop	vrf name <text> protocols bgp neighbor <text> ebgp-multihop <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> enforce-first-as	vrf name <text> protocols bgp neighbor <text> enforce-first-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> graceful-restart	vrf name <text> protocols bgp neighbor <text> graceful-restart <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> interface peer-group	vrf name <text> protocols bgp neighbor <text> interface peer-group <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> interface remote-as	vrf name <text> protocols bgp neighbor <text> interface remote-as <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> interface source-interface	vrf name <text> protocols bgp neighbor <text> interface source-interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> interface v6only peer-group	vrf name <text> protocols bgp neighbor <text> interface v6only peer-group <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> interface v6only remote-as	vrf name <text> protocols bgp neighbor <text> interface v6only remote-as <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> local-as <local-as> no-prepend replace-as	vrf name <text> protocols bgp neighbor <text> local-as <text> no-prepend replace-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> local-role <local-role> strict	vrf name <text> protocols bgp neighbor <text> local-role <text> strict
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> override-capability	vrf name <text> protocols bgp neighbor <text> override-capability
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> passive	vrf name <text> protocols bgp neighbor <text> passive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> password	vrf name <text> protocols bgp neighbor <text> password <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> path-attribute discard	vrf name <text> protocols bgp neighbor <text> path-attribute discard <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> path-attribute treat-as-withdraw	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> peer-group	vrf name <text> protocols bgp neighbor <text> peer-group <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> port	vrf name <text> protocols bgp neighbor <text> port <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> remote-as	vrf name <text> protocols bgp neighbor <text> remote-as <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> shutdown	vrf name <text> protocols bgp neighbor <text> shutdown

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> solo	vrf name <text> protocols bgp neighbor <text> solo
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> strict-capability-match	vrf name <text> protocols bgp neighbor <text> strict-capability-match
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> timers connect	vrf name <text> protocols bgp neighbor <text> timers connect <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> timers holdtime	vrf name <text> protocols bgp neighbor <text> timers holdtime <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> timers keepalive	vrf name <text> protocols bgp neighbor <text> timers keepalive <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> ttl-security hops	vrf name <text> protocols bgp neighbor <text> ttl-security hops <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp neighbor <neighbor> update-source	vrf name <text> protocols bgp neighbor <text> update-source <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters allow-martian-nexthop	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters always-compare-med	vrf name <text> protocols bgp parameters always-compare-med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters best-path as-path confed	vrf name <text> protocols bgp parameters best-path as-path confed
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters best-path as-path ignore	vrf name <text> protocols bgp parameters best-path as-path ignore

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters bestpath as-path multipath-relax	vrf name <text> protocols bgp parameters bestpath as-path multipath-relax
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters bestpath bandwidth	vrf name <text> protocols bgp parameters bestpath bandwidth <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters bestpath compare-routerid	vrf name <text> protocols bgp parameters bestpath compare-routerid
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters bestpath med	vrf name <text> protocols bgp parameters bestpath med <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters bestpath peer-type multipath-relax	vrf name <text> protocols bgp parameters bestpath peer-type multipath-relax
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters cluster-id	vrf name <text> protocols bgp parameters cluster-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters conditional-advertisement timer	vrf name <text> protocols bgp parameters conditional-advertisement timer <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters confederation identifier	vrf name <text> protocols bgp parameters confederation identifier <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters confederation peers	vrf name <text> protocols bgp parameters confederation peers <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters dampening half-life	vrf name <text> protocols bgp parameters dampening half-life <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters dampening max-suppress-time	vrf name <text> protocols bgp parameters dampening max-suppress-time <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters dampening re-use	vrf name <text> protocols bgp parameters dampening re-use <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters dampening start-suppress-time	vrf name <text> protocols bgp parameters dampening start-suppress-time <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters default local-pref	vrf name <text> protocols bgp parameters default local-pref <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters deterministic-med	vrf name <text> protocols bgp parameters deterministic-med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters disable-ebgp-connected-route-check	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters distance global external	vrf name <text> protocols bgp parameters distance global external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters distance global internal	vrf name <text> protocols bgp parameters distance global internal <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters distance global local	vrf name <text> protocols bgp parameters distance global local <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters distance prefix <prefix> distance	vrf name <text> protocols bgp parameters distance prefix <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters ebgp-requires-policy	vrf name <text> protocols bgp parameters ebgp-requires-policy
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters fast-convergence	vrf name <text> protocols bgp parameters fast-convergence

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters graceful-restart stalepath-time	vrf name <text> protocols bgp parameters graceful-restart stalepath-time <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters graceful-shutdown	vrf name <text> protocols bgp parameters graceful-shutdown
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters labeled-unicast	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters log-neighbor-changes	vrf name <text> protocols bgp parameters log-neighbor-changes
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters minimum-holdtime	vrf name <text> protocols bgp parameters minimum-holdtime <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters network-import-check	vrf name <text> protocols bgp parameters network-import-check
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters no-client-to-client-reflection	vrf name <text> protocols bgp parameters no-client-to-client-reflection
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters no-fast-external-failover	vrf name <text> protocols bgp parameters no-fast-external-failover
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters no-hard-administrative-reset	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters no-suppress-duplicates	vrf name <text> protocols bgp parameters no-suppress-duplicates
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters reject-as-sets	vrf name <text> protocols bgp parameters reject-as-sets

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters route-reflector-allow-outbound-policy	vrf name <text> protocols bgp parameters route-reflector-allow-outbound-policy
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters router-id	vrf name <text> protocols bgp parameters router-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters shutdown	vrf name <text> protocols bgp parameters shutdown
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters suppress-fib-pending	vrf name <text> protocols bgp parameters suppress-fib-pending
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters tcp-keepalive idle	vrf name <text> protocols bgp parameters tcp-keepalive idle <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters tcp-keepalive interval	vrf name <text> protocols bgp parameters tcp-keepalive interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp parameters tcp-keepalive probes	vrf name <text> protocols bgp parameters tcp-keepalive probes <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast addpath-tx-all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast addpath-tx-per-as	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast allowas-in number	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast as-override	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast attribute-unchanged as-path	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast attribute-unchanged med	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast attribute-unchanged next-hop	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast capability orf prefix-list receive	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast capability orf prefix-list send	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast conditionally-advertise advertise-map	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast conditionally-advertise exist-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast conditionally-advertise non-exist-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast default-originate route-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast disable-send-community extended	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast disable-send-community standard	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast distribute-list export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast distribute-list import	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast filter-list export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast filter-list import	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast maximum-prefix	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast maximum-prefix-out	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast nexthop-self force	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast prefix-list export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast prefix-list import	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-map export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-map import	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-reflector-client	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast route-server-client	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast soft-reconfiguration inbound	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast unsuppress-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-labeled-unicast weight	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast addpath-tx-all	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast addpath-tx-per-as	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast allowas-in number	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast as-override	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast attribute-unchanged as-path	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast attribute-unchanged med	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast attribute-unchanged next-hop	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast attribute-unchanged next-hop

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast capability orf prefix-list receive	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast capability orf prefix-list receive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast capability orf prefix-list send	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast capability orf prefix-list send
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast conditionally-advertise advertise-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast conditionally-advertise exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast default-originate route-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast disable-send-community extended	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast disable-send-community extended

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast disable-send-community standard	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast distribute-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast distribute-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast filter-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast filter-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast maximum-prefix	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast maximum-prefix-out	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast nexthop-self force	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast nexthop-self force

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast prefix-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast prefix-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast route-map export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast route-map import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast route-reflector-client	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast route-server-client	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast route-server-client

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast soft-reconfiguration inbound	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast unsuppress-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-unicast weight	vrf name <text> protocols bgp peer-group <text> address-family ipv4-unicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn addpath-tx-all	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn addpath-tx-per-as	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn allowas-in number	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn as-override	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn attribute-unchanged as-path	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn attribute-unchanged as-path

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn attribute-unchanged med	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn attribute-unchanged next-hop	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn conditionally-advertise advertise-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn conditionally-advertise exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn conditionally-advertise non-exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn disable-send-community extended	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn disable-send-community standard	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn distribute-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn distribute-list export <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn distribute-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn filter-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn filter-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn maximum-prefix	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn maximum-prefix-out	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn nexthop-self force	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn prefix-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn prefix-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn prefix-list import <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn route-map export	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn route-map import	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn route-reflector-client	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn route-server-client	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn soft-reconfiguration inbound	vrf name <text> protocols bgp peer-group <text> address-family ipv4- vpn soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn unsuppress-map	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn unsuppress-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv4-vpn weight	vrf name <text> protocols bgp peer-group <text> address-family ipv4-vpn weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast addpath-tx-all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast addpath-tx-per-as	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast allowas-in number	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast as-override	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast attribute-unchanged as-path	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast attribute-unchanged med	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast attribute-unchanged next-hop	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast capability orf prefix-list receive	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast capability orf prefix-list send	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast conditionally-advertise advertise-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast conditionally-advertise exist-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast conditionally-advertise non-exist-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast default-originate route-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast disable-send-community extended	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast disable-send-community standard	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast distribute-list export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast distribute-list import	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast filter-list export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast filter-list import	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast maximum-prefix	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast maximum-prefix-out	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast nexthop-local unchanged	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast nexthop-self force	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast prefix-list export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast prefix-list import	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-map export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-map import	Nothing found in VyOS

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-reflector-client	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast route-server-client	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast soft-reconfiguration inbound	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast unsuppress-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-labeled-unicast weight	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast addpath-tx-all	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast addpath-tx-per-as	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast allowas-in number	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast allowas-in number <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast as-override	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast attribute-unchanged as-path	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast attribute-unchanged med	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast attribute-unchanged next-hop	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast capability orf prefix-list receive	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast capability orf prefix-list receive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast capability orf prefix-list send	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast capability orf prefix-list send
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast conditionally-advertise advertise-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast conditionally-advertise advertise-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast conditionally-advertise exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast conditionally-advertise non-exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast default-originate route-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast default-originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast disable-send-community extended	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast disable-send-community standard	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast distribute-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast distribute-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast distribute-list import <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast filter-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast filter-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast filter-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast maximum-prefix	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast maximum-prefix-out	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast nexthop-local unchanged	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast nexthop-local unchanged
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast nexthop-self force	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast prefix-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast prefix-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast prefix-list import <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast remove-private-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast route-map export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast route-map import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast route-reflector-client	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast route-server-client	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast soft-reconfiguration inbound	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast unsuppress-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast unsuppress-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-unicast weight	vrf name <text> protocols bgp peer-group <text> address-family ipv6-unicast weight <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn addpath-tx-all	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn addpath-tx-all
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn addpath-tx-per-as	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn addpath-tx-per-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn allowas-in number	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn as-override	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn as-override
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn attribute-unchanged as-path	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn attribute-unchanged med	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn attribute-unchanged next-hop	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn attribute-unchanged next-hop

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn conditionally-advertise advertise-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn conditionally-advertise advertise-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn conditionally-advertise exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn conditionally-advertise exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn conditionally-advertise non-exist-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn conditionally-advertise non-exist-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn disable-send-community extended	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn disable-send-community extended
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn disable-send-community standard	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn disable-send-community standard
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn distribute-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn distribute-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn distribute-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn distribute-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn filter-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn filter-list export <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn filter-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn filter-list import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn maximum-prefix	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn maximum-prefix <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn maximum-prefix-out	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn maximum-prefix-out <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn nexthop-local unchanged	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn nexthop-local unchanged
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn nexthop-self force	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn prefix-list export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn prefix-list export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn prefix-list import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn prefix-list import <value>
×	not yet documented	Nothing found in XML Definitions	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn remove-private-as

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn remove-private-as all	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn route-map export	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn route-map import	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn route-reflector-client	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn route-reflector-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn route-server-client	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn soft-reconfiguration inbound	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn unsuppress-map	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn unsuppress-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family ipv6-vpn weight	vrf name <text> protocols bgp peer-group <text> address-family ipv6-vpn weight <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn allowas-in number	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn allowas-in number <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn attribute-unchanged as-path	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn attribute-unchanged as-path
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn attribute-unchanged med	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn attribute-unchanged med
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn attribute-unchanged next-hop	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn attribute-unchanged next-hop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn nexthop-self force	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn nexthop-self force
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-map export	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn route-map export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-map import	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn route-map import <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-reflector-client	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn route-reflector-client

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn route-server-client	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn route-server-client
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> address-family l2vpn-evpn soft-reconfiguration inbound	vrf name <text> protocols bgp peer-group <text> address-family l2vpn-evpn soft-reconfiguration inbound
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> bfd check-control-plane-failure	vrf name <text> protocols bgp peer-group <text> bfd check-control-plane-failure
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> bfd profile	vrf name <text> protocols bgp peer-group <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> capability dynamic	vrf name <text> protocols bgp peer-group <text> capability dynamic
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> capability extended-nexthop	vrf name <text> protocols bgp peer-group <text> capability extended-nexthop
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> capability software-version	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> description	vrf name <text> protocols bgp peer-group <text> description <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> disable-capability-negotiation	vrf name <text> protocols bgp peer-group <text> disable-capability-negotiation

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> disable-connected-check	vrf name <text> protocols bgp peer-group <text> disable-connected-check
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> ebgp-multihop	vrf name <text> protocols bgp peer-group <text> ebgp-multihop <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> graceful-restart	vrf name <text> protocols bgp peer-group <text> graceful-restart <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> local-as <local-as> no-prepend replace-as	vrf name <text> protocols bgp peer-group <text> local-as <text> no-prepend replace-as
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> local-role <local-role> strict	vrf name <text> protocols bgp peer-group <text> local-role <text> strict
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> override-capability	vrf name <text> protocols bgp peer-group <text> override-capability
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> passive	vrf name <text> protocols bgp peer-group <text> passive
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> password	vrf name <text> protocols bgp peer-group <text> password <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> path-attribute discard	vrf name <text> protocols bgp peer-group <text> path-attribute discard <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> path-attribute treat-as-withdraw	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> port	vrf name <text> protocols bgp peer-group <text> port <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> remote-as	vrf name <text> protocols bgp peer-group <text> remote-as <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> shutdown	vrf name <text> protocols bgp peer-group <text> shutdown
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> ttl-security hops	vrf name <text> protocols bgp peer-group <text> ttl-security hops <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp peer-group <peer-group> update-source	vrf name <text> protocols bgp peer-group <text> update-source <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp sid vpn per-vrf export	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp srv6 locator	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp system-as	vrf name <text> protocols bgp system-as <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp timers holdtime	vrf name <text> protocols bgp timers holdtime <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols bgp timers keepalive	vrf name <text> protocols bgp timers keepalive <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp local-as	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp maximum-paths	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp metric weights	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp network	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp passive-interface	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp redistribute	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp router-id	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols eigrp variance	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis advertise-high-metrics	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis advertise-passive-only	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis area-password md5	vrf name <text> protocols isis area-password md5 <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis area-password plaintext-password	vrf name <text> protocols isis area-password plaintext-password <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv4 level-1 always	vrf name <text> protocols isis default-information originate ipv4 level-1 always
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv4 level-1 metric	vrf name <text> protocols isis default-information originate ipv4 level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv4 level-1 route-map	vrf name <text> protocols isis default-information originate ipv4 level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv4 level-2 always	vrf name <text> protocols isis default-information originate ipv4 level-2 always

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv4 level-2 metric	vrf name <text> protocols isis default-information originate ipv4 level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv4 level-2 route-map	vrf name <text> protocols isis default-information originate ipv4 level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv6 level-1 always	vrf name <text> protocols isis default-information originate ipv6 level-1 always
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv6 level-1 metric	vrf name <text> protocols isis default-information originate ipv6 level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv6 level-1 route-map	vrf name <text> protocols isis default-information originate ipv6 level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv6 level-2 always	vrf name <text> protocols isis default-information originate ipv6 level-2 always
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv6 level-2 metric	vrf name <text> protocols isis default-information originate ipv6 level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis default-information originate ipv6 level-2 route-map	vrf name <text> protocols isis default-information originate ipv6 level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis domain-password md5	vrf name <text> protocols isis domain-password md5 <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis domain-password plaintext-password	vrf name <text> protocols isis domain-password plaintext-password <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis dynamic-hostname	vrf name <text> protocols isis dynamic-hostname
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local load-sharing disable level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local load-sharing disable level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local priority-limit critical level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local priority-limit critical level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local priority-limit high level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local priority-limit high level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local priority-limit medium level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local priority-limit medium level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local tiebreaker downstream index <index> level-1	Nothing found in VyOS

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local tiebreaker downstream index <index> level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local tiebreaker lowest-backup-metric index <index> level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local tiebreaker lowest-backup-metric index <index> level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local tiebreaker node-protecting index <index> level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa local tiebreaker node-protecting index <index> level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa remote prefix-list <prefix-list> level-1	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis fast-reroute lfa remote prefix-list <prefix-list> level-2	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> bfd profile	vrf name <text> protocols isis interface <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> circuit-type	vrf name <text> protocols isis interface <text> circuit-type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> hello-interval	vrf name <text> protocols isis interface <text> hello-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> hello-multiplier	vrf name <text> protocols isis interface <text> hello-multiplier <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> hello-padding	vrf name <text> protocols isis interface <text> hello-padding
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> ldp-sync disable	vrf name <text> protocols isis interface <text> ldp-sync disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> ldp-sync holddown	vrf name <text> protocols isis interface <text> ldp-sync holddown <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> metric	vrf name <text> protocols isis interface <text> metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> network point-to-point	vrf name <text> protocols isis interface <text> network point-to-point
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> no-three-way-handshake	vrf name <text> protocols isis interface <text> no-three-way-handshake
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> passive	vrf name <text> protocols isis interface <text> passive
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> password md5	vrf name <text> protocols isis interface <text> password md5 <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> password plaintext-password	vrf name <text> protocols isis interface <text> password plaintext-password <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> priority	vrf name <text> protocols isis interface <text> priority <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis interface <interface> psnp-interval	vrf name <text> protocols isis interface <text> psnp-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis ldp-sync hold-down	vrf name <text> protocols isis ldp-sync hold-down <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis level	vrf name <text> protocols isis level <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis log-adjacency-changes	vrf name <text> protocols isis log-adjacency-changes
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis lsp-gen-interval	vrf name <text> protocols isis lsp-gen-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis lsp-mtu	vrf name <text> protocols isis lsp-mtu <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis lsp-refresh-interval	vrf name <text> protocols isis lsp-refresh-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis max-lsp-lifetime	vrf name <text> protocols isis max-lsp-lifetime <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis metric-style	vrf name <text> protocols isis metric-style <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis net	vrf name <text> protocols isis net <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis purge-originator	vrf name <text> protocols isis purge-originator
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 babel level-1 metric	vrf name <text> protocols isis redistribute ipv4 babel level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 babel level-1 route-map	vrf name <text> protocols isis redistribute ipv4 babel level-1 route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 babel level-2 metric	vrf name <text> protocols isis redistribute ipv4 babel level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 babel level-2 route-map	vrf name <text> protocols isis redistribute ipv4 babel level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 bgp level-1 metric	vrf name <text> protocols isis redistribute ipv4 bgp level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 bgp level-1 route-map	vrf name <text> protocols isis redistribute ipv4 bgp level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 bgp level-2 metric	vrf name <text> protocols isis redistribute ipv4 bgp level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 bgp level-2 route-map	vrf name <text> protocols isis redistribute ipv4 bgp level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 connected level-1 metric	vrf name <text> protocols isis redistribute ipv4 connected level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 connected level-1 route-map	vrf name <text> protocols isis redistribute ipv4 connected level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 connected level-2 metric	vrf name <text> protocols isis redistribute ipv4 connected level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 connected level-2 route-map	vrf name <text> protocols isis redistribute ipv4 connected level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 kernel level-1 metric	vrf name <text> protocols isis redistribute ipv4 kernel level-1 metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 kernel level-1 route-map	vrf name <text> protocols isis redistribute ipv4 kernel level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 kernel level-2 metric	vrf name <text> protocols isis redistribute ipv4 kernel level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 kernel level-2 route-map	vrf name <text> protocols isis redistribute ipv4 kernel level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 ospf level-1 metric	vrf name <text> protocols isis redistribute ipv4 ospf level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 ospf level-1 route-map	vrf name <text> protocols isis redistribute ipv4 ospf level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 ospf level-2 metric	vrf name <text> protocols isis redistribute ipv4 ospf level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 ospf level-2 route-map	vrf name <text> protocols isis redistribute ipv4 ospf level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 rip level-1 metric	vrf name <text> protocols isis redistribute ipv4 rip level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 rip level-1 route-map	vrf name <text> protocols isis redistribute ipv4 rip level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 rip level-2 metric	vrf name <text> protocols isis redistribute ipv4 rip level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 rip level-2 route-map	vrf name <text> protocols isis redistribute ipv4 rip level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 static level-1 metric	vrf name <text> protocols isis redistribute ipv4 static level-1 metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 static level-1 route-map	vrf name <text> protocols isis redistribute ipv4 static level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 static level-2 metric	vrf name <text> protocols isis redistribute ipv4 static level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv4 static level-2 route-map	vrf name <text> protocols isis redistribute ipv4 static level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 babel level-1 metric	vrf name <text> protocols isis redistribute ipv6 babel level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 babel level-1 route-map	vrf name <text> protocols isis redistribute ipv6 babel level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 babel level-2 metric	vrf name <text> protocols isis redistribute ipv6 babel level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 babel level-2 route-map	vrf name <text> protocols isis redistribute ipv6 babel level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 bgp level-1 metric	vrf name <text> protocols isis redistribute ipv6 bgp level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 bgp level-1 route-map	vrf name <text> protocols isis redistribute ipv6 bgp level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 bgp level-2 metric	vrf name <text> protocols isis redistribute ipv6 bgp level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 bgp level-2 route-map	vrf name <text> protocols isis redistribute ipv6 bgp level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 connected level-1 metric	vrf name <text> protocols isis redistribute ipv6 connected level-1 metric <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 connected level-1 route-map	vrf name <text> protocols isis redistribute ipv6 connected level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 connected level-2 metric	vrf name <text> protocols isis redistribute ipv6 connected level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 connected level-2 route-map	vrf name <text> protocols isis redistribute ipv6 connected level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 kernel level-1 metric	vrf name <text> protocols isis redistribute ipv6 kernel level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 kernel level-1 route-map	vrf name <text> protocols isis redistribute ipv6 kernel level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 kernel level-2 metric	vrf name <text> protocols isis redistribute ipv6 kernel level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 kernel level-2 route-map	vrf name <text> protocols isis redistribute ipv6 kernel level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ospf6 level-1 metric	vrf name <text> protocols isis redistribute ipv6 ospf6 level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ospf6 level-1 route-map	vrf name <text> protocols isis redistribute ipv6 ospf6 level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ospf6 level-2 metric	vrf name <text> protocols isis redistribute ipv6 ospf6 level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ospf6 level-2 route-map	vrf name <text> protocols isis redistribute ipv6 ospf6 level-2 route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ripng level-1 metric	vrf name <text> protocols isis redistribute ipv6 ripng level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ripng level-1 route-map	vrf name <text> protocols isis redistribute ipv6 ripng level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ripng level-2 metric	vrf name <text> protocols isis redistribute ipv6 ripng level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 ripng level-2 route-map	vrf name <text> protocols isis redistribute ipv6 ripng level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 static level-1 metric	vrf name <text> protocols isis redistribute ipv6 static level-1 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 static level-1 route-map	vrf name <text> protocols isis redistribute ipv6 static level-1 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 static level-2 metric	vrf name <text> protocols isis redistribute ipv6 static level-2 metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis redistribute ipv6 static level-2 route-map	vrf name <text> protocols isis redistribute ipv6 static level-2 route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing global-block high-label-value	vrf name <text> protocols isis segment-routing global-block high-label-value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing global-block low-label-value	vrf name <text> protocols isis segment-routing global-block low-label-value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing local-block high-label-value	vrf name <text> protocols isis segment-routing local-block high-label-value <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing local-block low-label-value	vrf name <text> protocols isis segment-routing local-block low-label-value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing maximum-label-depth	vrf name <text> protocols isis segment-routing maximum-label-depth <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing prefix <prefix> absolute explicit-null	vrf name <text> protocols isis segment-routing prefix <text> absolute explicit-null
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing prefix <prefix> absolute no-php-flag	vrf name <text> protocols isis segment-routing prefix <text> absolute no-php-flag
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing prefix <prefix> absolute value	vrf name <text> protocols isis segment-routing prefix <text> absolute value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing prefix <prefix> index explicit-null	vrf name <text> protocols isis segment-routing prefix <text> index explicit-null
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing prefix <prefix> index no-php-flag	vrf name <text> protocols isis segment-routing prefix <text> index no-php-flag
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis segment-routing prefix <prefix> index value	vrf name <text> protocols isis segment-routing prefix <text> index value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis set-attached-bit	vrf name <text> protocols isis set-attached-bit
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis set-overload-bit	vrf name <text> protocols isis set-overload-bit
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis spf-delay-ietf holddown	vrf name <text> protocols isis spf-delay-ietf holddown <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis spf-delay-ietf init-delay	vrf name <text> protocols isis spf-delay-ietf init-delay <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis spf-delay-ietf long-delay	vrf name <text> protocols isis spf-delay-ietf long-delay <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis spf-delay-ietf short-delay	vrf name <text> protocols isis spf-delay-ietf short-delay <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis spf-delay-ietf time-to-learn	vrf name <text> protocols isis spf-delay-ietf time-to-learn <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis spf-interval	vrf name <text> protocols isis spf-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis traffic-engineering address	vrf name <text> protocols isis traffic-engineering address <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols isis traffic-engineering enable	vrf name <text> protocols isis traffic-engineering enable
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf access-list <access-list> export	vrf name <text> protocols ospf access-list <text> export <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf aggregation timer	vrf name <text> protocols ospf aggregation timer <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> area-type normal	vrf name <text> protocols ospf area <text> area-type normal
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> area-type nssa default-cost	vrf name <text> protocols ospf area <text> area-type nssa default-cost <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> area-type nssa no-summary	vrf name <text> protocols ospf area <text> area-type nssa no-summary

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> area-type nssa translate	vrf name <text> protocols ospf area <text> area-type nssa translate <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> area-type stub default-cost	vrf name <text> protocols ospf area <text> area-type stub default-cost <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> area-type stub no-summary	vrf name <text> protocols ospf area <text> area-type stub no-summary
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> authentication	vrf name <text> protocols ospf area <text> authentication <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> export-list	vrf name <text> protocols ospf area <text> export-list <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> import-list	vrf name <text> protocols ospf area <text> import-list <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> network	vrf name <text> protocols ospf area <text> network <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> range <range> cost	vrf name <text> protocols ospf area <text> range <text> cost <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> range <range> not-advertise	vrf name <text> protocols ospf area <text> range <text> not-advertise
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> range <range> substitute	vrf name <text> protocols ospf area <text> range <text> substitute <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> shortcut	vrf name <text> protocols ospf area <text> shortcut <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> virtual-link <virtual-link> authentication md5 key-id <key-id> md5-key	vrf name <text> protocols ospf area <text> virtual-link <text> authentication md5 key-id <text> md5-key <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> virtual-link <virtual-link> authentication plaintext-password	vrf name <text> protocols ospf area <text> virtual-link <text> authentication plaintext-password <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> virtual-link <virtual-link> dead-interval	vrf name <text> protocols ospf area <text> virtual-link <text> dead-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> virtual-link <virtual-link> hello-interval	vrf name <text> protocols ospf area <text> virtual-link <text> hello-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> virtual-link <virtual-link> retransmit-interval	vrf name <text> protocols ospf area <text> virtual-link <text> retransmit-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf area <area> virtual-link <virtual-link> transmit-delay	vrf name <text> protocols ospf area <text> virtual-link <text> transmit-delay <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf auto-cost reference-bandwidth	vrf name <text> protocols ospf auto-cost reference-bandwidth <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf capability opaque	vrf name <text> protocols ospf capability opaque
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf default-information originate always	vrf name <text> protocols ospf default-information originate always

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf default-information originate metric	vrf name <text> protocols ospf default-information originate metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf default-information originate metric-type	vrf name <text> protocols ospf default-information originate metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf default-information originate route-map	vrf name <text> protocols ospf default-information originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf default-metric	vrf name <text> protocols ospf default-metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf distance global	vrf name <text> protocols ospf distance global <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf distance ospf external	vrf name <text> protocols ospf distance ospf external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf distance ospf inter-area	vrf name <text> protocols ospf distance ospf inter-area <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf distance ospf intra-area	vrf name <text> protocols ospf distance ospf intra-area <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf graceful-restart grace-period	vrf name <text> protocols ospf graceful-restart grace-period <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf graceful-restart helper enable router-id	vrf name <text> protocols ospf graceful-restart helper enable router-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf graceful-restart helper no-strict-lsa-checking	vrf name <text> protocols ospf graceful-restart helper no-strict-lsa-checking

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf graceful-restart helper planned-only	vrf name <text> protocols ospf graceful-restart helper planned-only
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf graceful-restart helper supported-grace-time	vrf name <text> protocols ospf graceful-restart helper supported-grace-time <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> area	vrf name <text> protocols ospf interface <text> area <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> authentication md5 key-id <key-id> md5-key	vrf name <text> protocols ospf interface <text> authentication md5 key-id <text> md5-key <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> authentication plaintext-password	vrf name <text> protocols ospf interface <text> authentication plaintext-password <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> bandwidth	vrf name <text> protocols ospf interface <text> bandwidth <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> bfd profile	vrf name <text> protocols ospf interface <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> cost	vrf name <text> protocols ospf interface <text> cost <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> dead-interval	vrf name <text> protocols ospf interface <text> dead-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> hello-interval	vrf name <text> protocols ospf interface <text> hello-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> hello-multiplier	vrf name <text> protocols ospf interface <text> hello-multiplier <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> ldp-sync disable	vrf name <text> protocols ospf interface <text> ldp-sync disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> ldp-sync holddown	vrf name <text> protocols ospf interface <text> ldp-sync holddown <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> mtu-ignore	vrf name <text> protocols ospf interface <text> mtu-ignore
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> network	vrf name <text> protocols ospf interface <text> network <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> passive disable	vrf name <text> protocols ospf interface <text> passive disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> priority	vrf name <text> protocols ospf interface <text> priority <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> retransmit-interval	vrf name <text> protocols ospf interface <text> retransmit-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf interface <interface> transmit-delay	vrf name <text> protocols ospf interface <text> transmit-delay <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf ldp-sync holddown	vrf name <text> protocols ospf ldp-sync holddown <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf log-adjacency-changes detail	vrf name <text> protocols ospf log-adjacency-changes detail
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf max-metric router-lsa administrative	vrf name <text> protocols ospf max-metric router-lsa administrative
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf max-metric router-lsa on-shutdown	vrf name <text> protocols ospf max-metric router-lsa on-shutdown <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf max-metric router-lsa on-startup	vrf name <text> protocols ospf max-metric router-lsa on-startup <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf maximum-paths	vrf name <text> protocols ospf maximum-paths <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf mpls-te enable	vrf name <text> protocols ospf mpls-te enable
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf mpls-te router-address	vrf name <text> protocols ospf mpls-te router-address <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf neighbor <neighbor> poll-interval	vrf name <text> protocols ospf neighbor <text> poll-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf neighbor <neighbor> priority	vrf name <text> protocols ospf neighbor <text> priority <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf parameters abr-type	vrf name <text> protocols ospf parameters abr-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf parameters opaque-lsa	vrf name <text> protocols ospf parameters opaque-lsa
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf parameters rfc1583-compatibility	vrf name <text> protocols ospf parameters rfc1583-compatibility
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf parameters router-id	vrf name <text> protocols ospf parameters router-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf passive-interface	vrf name <text> protocols ospf passive-interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute babel metric	vrf name <text> protocols ospf redistribute babel metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute babel metric-type	vrf name <text> protocols ospf redistribute babel metric-type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute babel route-map	vrf name <text> protocols ospf redistribute babel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute bgp metric	vrf name <text> protocols ospf redistribute bgp metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute bgp metric-type	vrf name <text> protocols ospf redistribute bgp metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute bgp route-map	vrf name <text> protocols ospf redistribute bgp route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute connected metric	vrf name <text> protocols ospf redistribute connected metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute connected metric-type	vrf name <text> protocols ospf redistribute connected metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute connected route-map	vrf name <text> protocols ospf redistribute connected route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute isis metric	vrf name <text> protocols ospf redistribute isis metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute isis metric-type	vrf name <text> protocols ospf redistribute isis metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute isis route-map	vrf name <text> protocols ospf redistribute isis route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute kernel metric	vrf name <text> protocols ospf redistribute kernel metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute kernel metric-type	vrf name <text> protocols ospf redistribute kernel metric-type <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute kernel route-map	vrf name <text> protocols ospf redistribute kernel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute rip metric	vrf name <text> protocols ospf redistribute rip metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute rip metric-type	vrf name <text> protocols ospf redistribute rip metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute rip route-map	vrf name <text> protocols ospf redistribute rip route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute static metric	vrf name <text> protocols ospf redistribute static metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute static metric-type	vrf name <text> protocols ospf redistribute static metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute static route-map	vrf name <text> protocols ospf redistribute static route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute table <table> metric	vrf name <text> protocols ospf redistribute table <text> metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute table <table> metric-type	vrf name <text> protocols ospf redistribute table <text> metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf redistribute table <table> route-map	vrf name <text> protocols ospf redistribute table <text> route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf refresh timers	vrf name <text> protocols ospf refresh timers <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing global-block high-label-value	vrf name <text> protocols ospf segment-routing global-block high-label-value <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing global-block low-label-value	vrf name <text> protocols ospf segment-routing global-block low-label-value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing local-block high-label-value	vrf name <text> protocols ospf segment-routing local-block high-label-value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing local-block low-label-value	vrf name <text> protocols ospf segment-routing local-block low-label-value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing maximum-label-depth	vrf name <text> protocols ospf segment-routing maximum-label-depth <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing prefix <prefix> index explicit-null	vrf name <text> protocols ospf segment-routing prefix <text> index explicit-null
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing prefix <prefix> index no-php-flag	vrf name <text> protocols ospf segment-routing prefix <text> index no-php-flag
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf segment-routing prefix <prefix> index value	vrf name <text> protocols ospf segment-routing prefix <text> index value <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf summary-address <summary-address> no-advertise	vrf name <text> protocols ospf summary-address <text> no-advertise
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf summary-address <summary-address> tag	vrf name <text> protocols ospf summary-address <text> tag <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf timers throttle spf delay	vrf name <text> protocols ospf timers throttle spf delay <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf timers throttle spf initial-holdtime	vrf name <text> protocols ospf timers throttle spf initial-holdtime <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospf timers throttle spf max-holdtime	vrf name <text> protocols ospf timers throttle spf max-holdtime <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> area-type nssa default-information-originate	vrf name <text> protocols ospfv3 area <text> area-type nssa default-information-originate
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> area-type nssa no-summary	vrf name <text> protocols ospfv3 area <text> area-type nssa no-summary
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> area-type stub no-summary	vrf name <text> protocols ospfv3 area <text> area-type stub no-summary
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> export-list	vrf name <text> protocols ospfv3 area <text> export-list <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> import-list	vrf name <text> protocols ospfv3 area <text> import-list <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> range <range> advertise	vrf name <text> protocols ospfv3 area <text> range <text> advertise
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 area <area> range <range> not-advertise	vrf name <text> protocols ospfv3 area <text> range <text> not-advertise
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 auto-cost reference-bandwidth	vrf name <text> protocols ospfv3 auto-cost reference-bandwidth <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 default-information originate always	vrf name <text> protocols ospfv3 default-information originate always

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 default-information originate metric	vrf name <text> protocols ospfv3 default-information originate metric <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 default-information originate metric-type	vrf name <text> protocols ospfv3 default-information originate metric-type <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 default-information originate route-map	vrf name <text> protocols ospfv3 default-information originate route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 distance global	vrf name <text> protocols ospfv3 distance global <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 distance ospfv3 external	vrf name <text> protocols ospfv3 distance ospfv3 external <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 distance ospfv3 inter-area	vrf name <text> protocols ospfv3 distance ospfv3 inter-area <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 distance ospfv3 intra-area	vrf name <text> protocols ospfv3 distance ospfv3 intra-area <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 graceful-restart grace-period	vrf name <text> protocols ospfv3 graceful-restart grace-period <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 graceful-restart helper enable router-id	vrf name <text> protocols ospfv3 graceful-restart helper enable router-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 graceful-restart helper lsa-check-disable	vrf name <text> protocols ospfv3 graceful-restart helper lsa-check-disable

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 graceful-restart helper planned-only	vrf name <text> protocols ospfv3 graceful-restart helper planned-only
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 graceful-restart helper supported-grace-time	vrf name <text> protocols ospfv3 graceful-restart helper supported-grace-time <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> area	vrf name <text> protocols ospfv3 interface <text> area <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> bfd profile	vrf name <text> protocols ospfv3 interface <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> cost	vrf name <text> protocols ospfv3 interface <text> cost <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> dead-interval	vrf name <text> protocols ospfv3 interface <text> dead-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> hello-interval	vrf name <text> protocols ospfv3 interface <text> hello-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> ifmtu	vrf name <text> protocols ospfv3 interface <text> ifmtu <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> instance-id	vrf name <text> protocols ospfv3 interface <text> instance-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> mtu-ignore	vrf name <text> protocols ospfv3 interface <text> mtu-ignore
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> network	vrf name <text> protocols ospfv3 interface <text> network <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> passive	vrf name <text> protocols ospfv3 interface <text> passive
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> priority	vrf name <text> protocols ospfv3 interface <text> priority <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> retransmit-interval	vrf name <text> protocols ospfv3 interface <text> retransmit-interval <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 interface <interface> transmit-delay	vrf name <text> protocols ospfv3 interface <text> transmit-delay <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 log-adjacency-changes detail	vrf name <text> protocols ospfv3 log-adjacency-changes detail
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 parameters router-id	vrf name <text> protocols ospfv3 parameters router-id <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute babel metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute babel metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute babel route-map	vrf name <text> protocols ospfv3 redistribute babel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute bgp metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute bgp metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute bgp route-map	vrf name <text> protocols ospfv3 redistribute bgp route-map <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute connected metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute connected metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute connected route-map	vrf name <text> protocols ospfv3 redistribute connected route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute isis metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute isis metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute isis route-map	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute kernel metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute kernel metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute kernel route-map	vrf name <text> protocols ospfv3 redistribute kernel route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute ripng metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute ripng metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute ripng route-map	vrf name <text> protocols ospfv3 redistribute ripng route-map <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute static metric	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute static metric-type	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols ospfv3 redistribute static route-map	vrf name <text> protocols ospfv3 redistribute static route-map <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> blackhole distance	vrf name <text> protocols static route6 <text> blackhole distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> blackhole tag	vrf name <text> protocols static route6 <text> blackhole tag <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> description	vrf name <text> protocols static route6 <text> description <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> interface <interface> disable	vrf name <text> protocols static route6 <text> interface <text> disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> interface <interface> distance	vrf name <text> protocols static route6 <text> interface <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> interface <interface> segments	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> interface <interface> vrf	vrf name <text> protocols static route6 <text> interface <text> vrf <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> bfd multi-hop source <source> profile	vrf name <text> protocols static route6 <text> next-hop <text> bfd multi-hop source <text> profile <value>

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Table 1 – continued from previous page

Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> bfd profile	vrf name <text> protocols static route6 <text> next-hop <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> disable	vrf name <text> protocols static route6 <text> next-hop <text> disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> distance	vrf name <text> protocols static route6 <text> next-hop <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> interface	vrf name <text> protocols static route6 <text> next-hop <text> interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> segments	Nothing found in VyOS
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> next-hop <next-hop> vrf	vrf name <text> protocols static route6 <text> next-hop <text> vrf <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> reject distance	vrf name <text> protocols static route6 <text> reject distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route6 <route6> reject tag	vrf name <text> protocols static route6 <text> reject tag <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> blackhole distance	vrf name <text> protocols static route <text> blackhole distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> blackhole tag	vrf name <text> protocols static route <text> blackhole tag <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> description	vrf name <text> protocols static route <text> description <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> dhcp-interface	vrf name <text> protocols static route <text> dhcp-interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> interface <interface> disable	vrf name <text> protocols static route <text> interface <text> disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> interface <interface> distance	vrf name <text> protocols static route <text> interface <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> interface <interface> vrf	vrf name <text> protocols static route <text> interface <text> vrf <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> next-hop <next-hop> bfd multi-hop source <source> profile	vrf name <text> protocols static route <text> next-hop <text> bfd multi-hop source <text> profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> next-hop <next-hop> bfd profile	vrf name <text> protocols static route <text> next-hop <text> bfd profile <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> next-hop <next-hop> disable	vrf name <text> protocols static route <text> next-hop <text> disable
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> next-hop <next-hop> distance	vrf name <text> protocols static route <text> next-hop <text> distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> next-hop <next-hop> interface	vrf name <text> protocols static route <text> next-hop <text> interface <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> next-hop <next-hop> vrf	vrf name <text> protocols static route <text> next-hop <text> vrf <value>

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Status 2290/7705	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> reject distance	vrf name <text> protocols static route <text> reject distance <value>
×	not yet documented	vrf.xml.in: vrf name <name> protocols static route <route> reject tag	vrf name <text> protocols static route <text> reject tag <value>
✓	<i>set vrf name &lt;name&gt; table &lt;id&gt;</i>	vrf.xml.in: vrf name <name> table	vrf name <text> table <value>
×	not yet documented	vrf.xml.in: vrf name <name> vni	vrf name <text> vni <value>

## 21.2 Operational Commands

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>add container image &lt;containername&gt;</i>	Nothing found in XML Definitions	add container image <text>
×	<i>add raid &lt;RAID-1-device&gt; member &lt;disk-partition&gt;</i>	Nothing found in XML Definitions	add raid <text> member <text>
×	<i>add system image &lt;url   path&gt;   [latest] [vrf name] [username user [password pass]]</i>	Nothing found in XML Definitions	add system image <text>
×	not yet documented	Nothing found in XML Definitions	add system image <text> username <text> password <text>
×	not yet documented	Nothing found in XML Definitions	add system image <text> vrf <text>
×	not yet documented	Nothing found in XML Definitions	add system image <text> vrf <text> username <text> password <text>
×	not yet documented	terminal.xml.in: set builtin <builtin>	set builtin <text>
×	not yet documented	Nothing found in XML Definitions	clear console
×	not yet documented	clear-dhcp-server-lease.xml.in: clear dhcp-server lease <lease>	clear dhcp-server lease <text>
×	not yet documented	Nothing found in XML Definitions	clear dns dynamic cache

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	flow-accounting-op.xml.in: clear flow-accounting counters	clear flow-accounting counters
×	not yet documented	counters.xml.in: clear interfaces bonding <bonding> counters	clear interfaces bonding <text> counters
×	not yet documented	counters.xml.in: clear interfaces bridge <bridge> counters	clear interfaces bridge <text> counters
×	not yet documented	Nothing found in XML Definitions	clear interfaces connection <text>
×	not yet documented	counters.xml.in: clear interfaces counters	clear interfaces counters
×	not yet documented	counters.xml.in: clear interfaces dummy <dummy> counters	clear interfaces dummy <text> counters
×	not yet documented	counters.xml.in: clear interfaces ethernet <ethernet> counters	clear interfaces ethernet <text> counters
×	not yet documented	counters.xml.in: clear interfaces geneve <geneve> counters	clear interfaces geneve <text> counters
×	not yet documented	counters.xml.in: clear interfaces input <input> counters	clear interfaces input <text> counters
×	not yet documented	counters.xml.in: clear interfaces l2tpv3 <l2tpv3> counters	clear interfaces l2tpv3 <text> counters
×	not yet documented	counters.xml.in: clear interfaces loopback <loopback> counters	clear interfaces loopback <text> counters
×	not yet documented	counters.xml.in: clear interfaces macsec <macsec> counters	clear interfaces macsec <text> counters
×	not yet documented	counters.xml.in: clear interfaces openvpn <openvpn> counters	clear interfaces openvpn <text> counters
×	not yet documented	counters.xml.in: clear interfaces pppoe <pppoe> counters	clear interfaces pppoe <text> counters
×	not yet documented	counters.xml.in: clear interfaces pseudo-ethernet <pseudo-ethernet> counters	clear interfaces pseudo-ethernet <text> counters
×	not yet documented	counters.xml.in: clear interfaces sstp <sstp> counters	clear interfaces sstp <text> counters

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	counters.xml.in: clear interfaces tunnel <tunnel> counters	clear interfaces tunnel <text> counters
×	not yet documented	counters.xml.in: clear interfaces virtual- ethernet <virtual- ethernet> counters	clear interfaces virtual- ethernet <text> counters
×	not yet documented	counters.xml.in: clear interfaces vti <vti> counters	clear interfaces vti <text> counters
×	not yet documented	counters.xml.in: clear interfaces vxlan <vxlan> counters	clear interfaces vxlan <text> counters
×	not yet documented	counters.xml.in: clear interfaces wireguard <wireguard> counters	clear interfaces wireguard <text> counters
×	not yet documented	counters.xml.in: clear interfaces wireless <wireless> counters	clear interfaces wireless <text> counters
×	not yet documented	counters.xml.in: clear interfaces wwan <wwan> counters	clear interfaces wwan <text> counters
×	not yet documented	clear-ip.xml.in: clear ip prefix-list <prefix- list>	clear ip prefix-list <text> <text>
×	not yet documented	clear-ip.xml.in: clear ip prefix-list <prefix- list> node.tag	Nothing found in VyOS
×	not yet documented	clear-ipv6.xml.in: clear ipv6 prefix-list <prefix-list>	clear ipv6 prefix-list <text> <text>
×	not yet documented	clear-ipv6.xml.in: clear ipv6 prefix-list <prefix-list> node.tag	Nothing found in VyOS
×	not yet documented	clear-log.xml.in: clear log	clear log
×	not yet documented	clear-session.xml.in: clear session <session>	clear session <text>
×	not yet documented	Nothing found in XML Definitions	clone system config <text>
×	not yet documented	Nothing found in XML Definitions	clone system config <text> from <text>
×	not yet documented	configure.xml.in: configure	configure
✓	<i>connect console</i> <i>&lt;device&gt;</i>	connect.xml.in: connect console <con- sole>	connect console <text>
×	not yet documented	Nothing found in XML Definitions	connect container <text>

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>connect interface</i> <interface>	connect.xml.in: connect interface <inter- face>	connect interface <text>
×	not yet documented	terminal.xml.in: set console keymap	set console keymap
×	not yet documented	Nothing found in XML Definitions	copy file <text> to <text>
×	not yet documented	date.xml.in: set date <date>	set date <text>
×	<i>delete container image [image id/all]</i>	Nothing found in XML Definitions	delete container image <text>
×	not yet documented	Nothing found in XML Definitions	delete file <text>
×	<i>delete log file</i> <text>	Nothing found in XML Definitions	delete log file <text>
×	not yet documented	raid.xml.in: delete raid <raid> by-id member <member>	Nothing found in VyOS
✓	<i>delete raid</i> <RAID-1-device> member <disk-partition>	raid.xml.in: delete raid <raid> member <member>	delete raid <text> member <text>
×	<i>delete system image</i> [image-name]	Nothing found in XML Definitions	delete system image <text>
✓	<i>disconnect interface</i> <interface>	disconnect.xml.in: disconnect interface <in- terface>	disconnect interface <text>
×	not yet documented	force-arp.xml.in: force arp duplicate inter- face <interface> address <address>	force arp duplicate inter- face <text> address <text>
×	not yet documented	force-arp.xml.in: force arp reply interface <interface> address <ad- dress>	force arp reply interface <text> address <text>
×	not yet documented	force-arp.xml.in: force arp reply interface <interface> address <ad- dress> count <count>	force arp reply interface <text> address <text> count <text>
×	not yet documented	force-arp.xml.in: force arp request interface <interface> address <ad- dress>	force arp request interface <text> address <text>
×	not yet documented	force-arp.xml.in: force arp request interface <interface> address <ad- dress> count <count>	force arp request inter- face <text> address <text> count <text>
×	not yet documented	Nothing found in XML Definitions	force cluster active

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	force cluster standby
×	not yet documented	force-commit-archive.xml.in: force commit-archive	Nothing found in VyOS
✓	<i>force ipv6-nd interface</i> <i>&lt;interface&gt; address</i> <i>&lt;ipv6-address&gt;</i>	force-ipv6-nd.xml.in: force ipv6-nd interface <interface> address <address>	force ipv6-nd interface <text> address <text>
✓	<i>force ipv6-rd interface</i> <i>&lt;interface&gt; [address</i> <i>&lt;ipv6-address&gt;]</i>	force-ipv6-rd.xml.in: force ipv6-rd interface <interface>	force ipv6-rd interface <text>
×	not yet documented	force-ipv6-rd.xml.in: force ipv6-rd interface <interface> address <address>	force ipv6-rd interface <text> address <text>
×	not yet documented	force-mtu-host.xml.in: force mtu host <host>	force mtu host <text>
×	not yet documented	force-mtu-host.xml.in: force mtu host <host> in- terface <interface>	force mtu host <text> in- terface <text>
×	not yet documented	force-netns.xml.in: force netns <netns>	force netns <text>
×	not yet documented	ntp.xml.in: force ntp synchronization	Nothing found in VyOS
×	not yet documented	ntp.xml.in: force ntp synchronization vrf <vrf>	Nothing found in VyOS
×	not yet documented	force-wamp.xml.in: force owping <owping>	force owping <text>
×	not yet documented	force-root-partition-auto- resize.xml.in: force root-partition-auto- resize	force root-partition-auto- resize
×	not yet documented	force-wamp.xml.in: force twping <twping>	force twping <text>
✓	<i>force vrf &lt;name&gt;</i>	force-vrf.xml.in: force vrf <vrf>	force vrf <text>
×	<i>format disk</i> <i>&lt;disk-device1&gt; like</i> <i>&lt;disk-device2&gt;</i>	Nothing found in XML Definitions	format disk <text> like <text>
×	not yet documented	Nothing found in XML Definitions	generate container image <text> path <text>
×	not yet documented	generate_firewall_rule- resequence.xml.in: generate firewall rule- resequence	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	generate_firewall_rule-resequence.xml.in: generate firewall rule-resequence start <start>	Nothing found in VyOS
×	not yet documented	generate_firewall_rule-resequence.xml.in: generate firewall rule-resequence start <start> step <step>	Nothing found in VyOS
×	not yet documented	generate-interfaces-debug-archive.xml.in: generate interfaces debug-archive	generate interfaces debug-archive
×	not yet documented	generate-ipsec-debug-archive.xml.in: generate ipsec debug-archive	generate ipsec debug-archive
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile ios-remote-access <ios-remote-access> remote <remote>	generate ipsec profile ios-remote-access <text> remote <text>
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile ios-remote-access <ios-remote-access> remote <remote> name <name>	generate ipsec profile ios-remote-access <text> remote <text> name <text>
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile ios-remote-access <ios-remote-access> remote <remote> name <name> profile <profile>	generate ipsec profile ios-remote-access <text> remote <text> name <text> profile <text>
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile ios-remote-access <ios-remote-access> remote <remote> profile <profile>	generate ipsec profile ios-remote-access <text> remote <text> profile <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile ios-remote-access <ios-remote-access> remote <remote> profile <profile> name <name>	generate ipsec profile ios-remote-access <text> remote <text> profile <text> name <text>
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile windows-remote-access <windows-remote-access> remote <remote>	generate ipsec profile windows-remote-access <text> remote <text>
×	not yet documented	generate-ipsec-profile.xml.in: generate ipsec profile windows-remote-access <windows-remote-access> remote <remote> name <name>	generate ipsec profile windows-remote-access <text> remote <text> name <text>
×	not yet documented	generate-macsec-key.xml.in: generate macsec mka cak gcm-aes-128	generate macsec mka cak gcm-aes-128
×	not yet documented	generate-macsec-key.xml.in: generate macsec mka cak gcm-aes-256	generate macsec mka cak gcm-aes-256
×	not yet documented	generate-macsec-key.xml.in: generate macsec mka ckn	generate macsec mka ckn
×	not yet documented	generate-openconnect-user-key.xml.in: generate openconnect username <username> otp-key hotp-time	generate openconnect username <text> otp-key hotp-time
×	not yet documented	generate-openconnect-user-key.xml.in: generate openconnect username <username> otp-key hotp-time digits <digits>	generate openconnect username <text> otp-key hotp-time digits <text>
×	not yet documented	generate-openconnect-user-key.xml.in: generate openconnect username <username> otp-key hotp-time digits <digits> interval <interval>	generate openconnect username <text> otp-key hotp-time digits <text> interval <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	generate-openconnect-user-key.xml.in: generate openconnect username <username> otp-key hotp-time interval <interval>	generate openconnect username <text> otp-key hotp-time interval <text>
×	not yet documented	generate-openconnect-user-key.xml.in: generate openconnect username <username> otp-key hotp-time interval <interval> digits <digits>	generate openconnect username <text> otp-key hotp-time interval <text> digits <text>
×	not yet documented	generate-openvpn-config-client.xml.in: generate openvpn client-config interface <interface> ca <ca> certificate <certificate>	generate openvpn client-config interface <text> ca <text> certificate <text>
×	not yet documented	generate-openvpn-config-client.xml.in: generate openvpn client-config interface <interface> ca <ca> certificate <certificate> key <key>	generate openvpn client-config interface <text> ca <text> certificate <text> key <text>
×	<i>generate pki ca</i>	Nothing found in XML Definitions	generate pki ca
×	not yet documented	Nothing found in XML Definitions	generate pki ca file <text>
×	<i>generate pki ca install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki ca install <text>
×	<i>generate pki ca sign &lt;ca-name&gt;</i>	Nothing found in XML Definitions	generate pki ca sign <text>
×	not yet documented	Nothing found in XML Definitions	generate pki ca sign <text> file <text>
×	<i>generate pki ca sign &lt;ca-name&gt; install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki ca sign <text> install <text>
×	<i>generate pki certificate</i>	Nothing found in XML Definitions	generate pki certificate
×	not yet documented	Nothing found in XML Definitions	generate pki certificate file <text>
×	<i>generate pki certificate install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki certificate install <text>
×	<i>generate pki certificate self-signed</i>	Nothing found in XML Definitions	generate pki certificate self-signed
×	not yet documented	Nothing found in XML Definitions	generate pki certificate self-signed file <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>generate pki certificate self-signed install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki certificate self-signed install <text>
×	<i>generate pki certificate sign &lt;ca-name&gt;</i>	Nothing found in XML Definitions	generate pki certificate sign <text>
×	not yet documented	Nothing found in XML Definitions	generate pki certificate sign <text> file <text>
×	<i>generate pki certificate sign &lt;ca-name&gt; install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki certificate sign <text> install <text>
×	not yet documented	Nothing found in XML Definitions	generate pki crl <text>
×	not yet documented	Nothing found in XML Definitions	generate pki crl <text> file <text>
×	not yet documented	Nothing found in XML Definitions	generate pki crl <text> install
×	<i>generate pki dh</i>	Nothing found in XML Definitions	generate pki dh
×	not yet documented	Nothing found in XML Definitions	generate pki dh file <text>
×	<i>generate pki dh install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki dh install <text>
×	not yet documented	Nothing found in XML Definitions	generate pki key-pair
×	not yet documented	Nothing found in XML Definitions	generate pki key-pair file <text>
×	not yet documented	Nothing found in XML Definitions	generate pki key-pair install <text>
×	<i>generate pki openvpn shared-secret</i>	Nothing found in XML Definitions	generate pki openvpn shared-secret
×	not yet documented	Nothing found in XML Definitions	generate pki openvpn shared-secret file <text>
×	<i>generate pki openvpn shared-secret install &lt;name&gt;</i>	Nothing found in XML Definitions	generate pki openvpn shared-secret install <text>
×	not yet documented	Nothing found in XML Definitions	generate pki ssh-key
×	not yet documented	Nothing found in XML Definitions	generate pki ssh-key file <text>
×	not yet documented	Nothing found in XML Definitions	generate pki ssh-key install <text>
×	<i>generate pki wireguard key-pair</i>	Nothing found in XML Definitions	generate pki wireguard key-pair
×	<i>generate pki wireguard key-pair install &lt;interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS

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×	<i>generate pki wireguard key-pair install interface &lt;interface&gt;</i>	Nothing found in XML Definitions	generate pki wireguard key-pair install interface <text>
×	<i>generate pki wireguard preshared-key</i>	Nothing found in XML Definitions	generate pki wireguard preshared-key
×	<i>generate pki wireguard preshared-key install &lt;peer&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>generate pki wireguard preshared-key install interface &lt;interface&gt; peer &lt;peer&gt;</i>	Nothing found in XML Definitions	generate pki wireguard preshared-key install interface <text> peer <text>
✓	<i>generate public-key-command user &lt;username&gt; path &lt;location&gt;</i>	generate-public-key-command.xml.in: generate public-key-command user <user> path <path>	generate public-key-command user <text> path <text>
×	not yet documented	generate-ssh-server-key.xml.in: generate ssh client-key <client-key>	generate ssh client-key <text>
×	<i>generate ssh client-key /path/to/private_key</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>generate ssh server-key</i>	generate-ssh-server-key.xml.in: generate ssh server-key	generate ssh server-key
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time	generate system login username <text> otp-key hotp-time
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time rate-limit <rate-limit>	generate system login username <text> otp-key hotp-time rate-limit <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time rate-limit <rate-limit> rate-time <rate-time>	generate system login username <text> otp-key hotp-time rate-limit <text> rate-time <text>
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time rate-limit <rate-limit> rate-time <rate-time> window-size <window-size>	generate system login username <text> otp-key hotp-time rate-limit <text> rate-time <text> window-size <text>
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time window-size <window-size>	generate system login username <text> otp-key hotp-time window-size <text>
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time window-size <window-size> rate-limit <rate-limit>	generate system login username <text> otp-key hotp-time window-size <text> rate-limit <text>
×	not yet documented	generate-system-login-user.xml.in: generate system login username <username> otp-key hotp-time window-size <window-size> rate-limit <rate-limit> rate-time <rate-time>	generate system login username <text> otp-key hotp-time window-size <text> rate-limit <text> rate-time <text>
×	not yet documented	generate_tech-support_archive.xml.in: generate tech-support archive <archive>	generate tech-support archive <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	generate-wireguard.xml.in: generate wireguard client-config <client-config> interface <interface> server <server>	generate wireguard client-config <text> interface <text> server <text>
✓	<i>generate wireguard client-config &lt;name&gt; interface &lt;interface&gt; server &lt;ip/fqdn&gt; address &lt;client-ip&gt;</i>	generate-wireguard.xml.in: generate wireguard client-config <client-config> interface <interface> server <server> address <address>	generate wireguard client-config <text> interface <text> server <text> address <text>
×	not yet documented	generate-wireguard.xml.in: generate wireguard client-config <client-config> interface <interface> server <server> address <address> address <address>	generate wireguard client-config <text> interface <text> server <text> address <text> address <text>
×	<i>import pki ca &lt;name&gt; file &lt;Path to CA certificate file&gt;</i>	Nothing found in XML Definitions	import pki ca <text> file <text>
×	<i>import pki ca &lt;name&gt; key-file &lt;Path to private key file&gt;</i>	Nothing found in XML Definitions	import pki ca <text> key-file <text>
×	<i>import pki certificate &lt;name&gt; file &lt;path to certificate&gt;</i>	Nothing found in XML Definitions	import pki certificate <text> file <text>
×	<i>import pki certificate &lt;name&gt; key-file &lt;path to private key&gt;</i>	Nothing found in XML Definitions	import pki certificate <text> key-file <text>
×	not yet documented	Nothing found in XML Definitions	import pki crl <text> file <text>
×	not yet documented	Nothing found in XML Definitions	import pki dh <text> file <text>
×	not yet documented	Nothing found in XML Definitions	import pki key-pair <text> private-file <text>
×	not yet documented	Nothing found in XML Definitions	import pki key-pair <text> public-file <text>
×	<i>import pki openvpn shared-secret &lt;name&gt; file &lt;path to OpenVPN secret key&gt;</i>	Nothing found in XML Definitions	import pki openvpn shared-secret <text> file <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	install image
×	not yet documented	monitor-bandwidth-test.xml.in: monitor bandwidth-test accept	monitor bandwidth-test accept
×	not yet documented	monitor-bandwidth-test.xml.in: monitor bandwidth-test accept tcp	monitor bandwidth-test accept tcp
×	not yet documented	monitor-bandwidth-test.xml.in: monitor bandwidth-test accept udp	monitor bandwidth-test accept udp
×	not yet documented	monitor-bandwidth-test.xml.in: monitor bandwidth-test initiate tcp <tcp>	monitor bandwidth-test initiate tcp <text>
×	not yet documented	monitor-bandwidth-test.xml.in: monitor bandwidth-test initiate udp <udp>	monitor bandwidth-test initiate udp <text>
×	not yet documented	monitor-bandwidth.xml.in: monitor bandwidth interface <interface>	monitor bandwidth interface <text>
×	not yet documented	monitor-bridge.xml.in: monitor bridge	monitor bridge
×	not yet documented	monitor-bridge.xml.in: monitor bridge fdb	monitor bridge fdb
×	not yet documented	monitor-bridge.xml.in: monitor bridge link	monitor bridge link
×	not yet documented	monitor-bridge.xml.in: monitor bridge mdb	monitor bridge mdb
×	not yet documented	monitor-command.xml.in: monitor command <command>	Nothing found in VyOS
×	not yet documented	monitor-command.xml.in: monitor command diff <diff>	Nothing found in VyOS
×	not yet documented	monitor-log.xml.in: monitor log	monitor log
×	not yet documented	monitor-log.xml.in: monitor log certbot	Nothing found in VyOS
×	not yet documented	monitor-log.xml.in: monitor log color	monitor log color
×	not yet documented	monitor-log.xml.in: monitor log contrack-sync	monitor log contrack-sync

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-log.xml.in: monitor log console-server	monitor log console-server
×	not yet documented	Nothing found in XML Definitions	monitor log container <text>
×	not yet documented	monitor-log.xml.in: monitor log dhcp client	monitor log dhcp client
×	not yet documented	monitor-log.xml.in: monitor log dhcp client interface <interface>	monitor log dhcp client interface <text>
×	not yet documented	monitor-log.xml.in: monitor log dhcp server	monitor log dhcp server
×	not yet documented	monitor-log.xml.in: monitor log dhcpv6 client	monitor log dhcpv6 client
×	not yet documented	monitor-log.xml.in: monitor log dhcpv6 client interface <interface>	monitor log dhcpv6 client interface <text>
×	not yet documented	monitor-log.xml.in: monitor log dhcpv6 server	monitor log dhcpv6 server
×	not yet documented	Nothing found in XML Definitions	monitor log dns dynamic
×	not yet documented	Nothing found in XML Definitions	monitor log dns forwarding
×	not yet documented	monitor-log.xml.in: monitor log flow-accounting	monitor log flow-accounting
×	not yet documented	monitor-log.xml.in: monitor log ids ddos-protection	monitor log ids ddos-protection
×	not yet documented	monitor-log.xml.in: monitor log ipoe-server	monitor log ipoe-server
×	not yet documented	monitor-log.xml.in: monitor log ipsec	monitor log ipsec
×	not yet documented	monitor-log.xml.in: monitor log kernel	monitor log kernel
×	not yet documented	monitor-log.xml.in: monitor log l2tp	monitor log l2tp
×	not yet documented	monitor-log.xml.in: monitor log macsec	monitor log macsec
×	not yet documented	monitor-log.xml.in: monitor log macsec interface <interface>	monitor log macsec interface <text>
×	<i>monitor log mdns repeater</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	monitor-log.xml.in: monitor log ndp-proxy	Nothing found in VyOS
×	not yet documented	monitor-log.xml.in: monitor log nhrp	monitor log nhrp

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×	not yet documented	monitor-log.xml.in: monitor log ntp	monitor log ntp
×	not yet documented	monitor-log.xml.in: monitor log openconnect	monitor log openconnect
×	not yet documented	monitor-log.xml.in: monitor log openvpn	monitor log openvpn
×	not yet documented	monitor-log.xml.in: monitor log openvpn inter- face <interface>	monitor log openvpn inter- face <text>
×	not yet documented	monitor-log.xml.in: monitor log pppoe	monitor log pppoe
×	not yet documented	monitor-log.xml.in: monitor log pppoe-server	monitor log pppoe-server
×	not yet documented	monitor-log.xml.in: monitor log pppoe inter- face <interface>	monitor log pppoe inter- face <text>
×	not yet documented	monitor-log.xml.in: monitor log pptp	monitor log pptp
×	not yet documented	monitor-log.xml.in: monitor log protocol bfd	monitor log protocol bfd
×	not yet documented	monitor-log.xml.in: monitor log protocol bgp	monitor log protocol bgp
×	not yet documented	monitor-log.xml.in: monitor log protocol isis	monitor log protocol isis
×	not yet documented	monitor-log.xml.in: monitor log protocol mpls	monitor log protocol mpls
×	not yet documented	monitor-log.xml.in: monitor log protocol mul- ticast	monitor log protocol mul- ticast
×	not yet documented	monitor-log.xml.in: monitor log protocol nhrp	monitor log protocol nhrp
×	not yet documented	monitor-log.xml.in: monitor log protocol ospf	monitor log protocol ospf
×	not yet documented	monitor-log.xml.in: monitor log protocol ospfv3	monitor log protocol ospfv3
×	not yet documented	monitor-log.xml.in: monitor log protocol rip	monitor log protocol rip
×	not yet documented	monitor-log.xml.in: monitor log protocol ripng	monitor log protocol ripng
×	not yet documented	monitor-log.xml.in: monitor log protocol static	monitor log protocol static
×	not yet documented	monitor-log.xml.in: monitor log router-advert	monitor log router-advert
×	not yet documented	monitor-log.xml.in: monitor log snmp	monitor log snmp
✓	<i>monitor log ssh</i>	monitor-log.xml.in: monitor log ssh	monitor log ssh

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>monitor log ssh dynamic-protection</i>	monitor-log.xml.in: monitor log ssh dynamic-protection	Nothing found in VyOS
×	not yet documented	monitor-log.xml.in: monitor log sstp	monitor log sstp
×	not yet documented	monitor-log.xml.in: monitor log sstp	monitor log sstp
×	not yet documented	monitor-log.xml.in: monitor log sstp interface <interface>	monitor log sstp interface <text>
×	not yet documented	monitor-log.xml.in: monitor log vpn	monitor log vpn
×	not yet documented	Nothing found in XML Definitions	monitor log vpp
×	not yet documented	monitor-log.xml.in: monitor log vrrp	monitor log vrrp
×	not yet documented	Nothing found in XML Definitions	monitor log webproxy
×	not yet documented	Nothing found in XML Definitions	monitor log webproxy access-log
×	not yet documented	Nothing found in XML Definitions	monitor log webproxy cache-log
×	not yet documented	monitor-ndp.xml.in: monitor ndp	monitor ndp
×	not yet documented	monitor-ndp.xml.in: monitor ndp interface <interface>	monitor ndp interface <text>
×	not yet documented	monitor-ndp.xml.in: monitor ndp interface <interface> type <type>	monitor ndp interface <text> type <text>
×	not yet documented	monitor-ndp.xml.in: monitor ndp type <type>	monitor ndp type <text>
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable all	monitor protocol bgp disable all
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable allow-martians	monitor protocol bgp disable allow-martians
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable as4	monitor protocol bgp disable as4
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable bestpath <bestpath>	monitor protocol bgp disable bestpath <text>
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable flowspec	monitor protocol bgp disable flowspec

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable keepalives	monitor protocol bgp disable keepalives
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable labelpool	monitor protocol bgp disable labelpool
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable neighbor-events	monitor protocol bgp disable neighbor-events
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable nht	monitor protocol bgp disable nht
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable pbr	monitor protocol bgp disable pbr
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable rib	monitor protocol bgp disable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable update-groups	monitor protocol bgp disable update-groups
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable updates	monitor protocol bgp disable updates
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable vnc	monitor protocol bgp disable vnc
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable vnc import-bi-attach	monitor protocol bgp disable vnc import-bi-attach
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable vnc import-del-remote	monitor protocol bgp disable vnc import-del-remote
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable vnc rfapi-query	monitor protocol bgp disable vnc rfapi-query
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp disable vnc verbose	monitor protocol bgp disable vnc verbose
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable allow-martians	monitor protocol bgp enable allow-martians
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable as4	monitor protocol bgp enable as4
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable bestpath <text>	monitor protocol bgp enable bestpath <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable flowspec	monitor protocol bgp enable flowspec
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable keepalives	monitor protocol bgp enable keepalives
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable labelpool	monitor protocol bgp enable labelpool
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable neighbor-events	monitor protocol bgp enable neighbor-events
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable nht	monitor protocol bgp enable nht
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable pbr	monitor protocol bgp enable pbr
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable rib	monitor protocol bgp enable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable update-groups	monitor protocol bgp enable update-groups
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable updates	monitor protocol bgp enable updates
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable vnc	monitor protocol bgp enable vnc
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable vnc import-bi-attach	monitor protocol bgp enable vnc import-bi-attach
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable vnc import-del-remote	monitor protocol bgp enable vnc import-del-remote
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable vnc rfapi-query	monitor protocol bgp enable vnc rfapi-query
×	not yet documented	monitor-protocol.xml.in: monitor protocol bgp enable vnc verbose	monitor protocol bgp enable vnc verbose
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable event	monitor protocol ospf disable event
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable ism	monitor protocol ospf disable ism

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable ism events	monitor protocol ospf disable ism events
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable ism status	monitor protocol ospf disable ism status
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable ism timers	monitor protocol ospf disable ism timers
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable lsa	monitor protocol ospf disable lsa
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable lsa flooding	monitor protocol ospf disable lsa flooding
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable lsa generate	monitor protocol ospf disable lsa generate
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable lsa install	monitor protocol ospf disable lsa install
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable lsa refresh	monitor protocol ospf disable lsa refresh
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable nsm	monitor protocol ospf disable nsm
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable nsm events	monitor protocol ospf disable nsm events
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable nsm status	monitor protocol ospf disable nsm status
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable nsm timers	monitor protocol ospf disable nsm timers
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable nssa	monitor protocol ospf disable nssa
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet	monitor protocol ospf disable packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet all	monitor protocol ospf disable packet all
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet all detail	monitor protocol ospf disable packet all detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet all recv	monitor protocol ospf disable packet all recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet all recv detail	monitor protocol ospf disable packet all recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet all send	monitor protocol ospf disable packet all send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet all send detail	monitor protocol ospf disable packet all send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet dd	monitor protocol ospf disable packet dd
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet dd detail	monitor protocol ospf disable packet dd detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet dd recv	monitor protocol ospf disable packet dd recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet dd recv detail	monitor protocol ospf disable packet dd recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet dd send	monitor protocol ospf disable packet dd send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet dd send detail	monitor protocol ospf disable packet dd send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet hello	monitor protocol ospf disable packet hello
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet hello detail	monitor protocol ospf disable packet hello detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet hello recv	monitor protocol ospf disable packet hello recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet hello recv detail	monitor protocol ospf disable packet hello recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet hello send	monitor protocol ospf disable packet hello send

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet hello send detail	monitor protocol ospf disable packet hello send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-ack	monitor protocol ospf disable packet ls-ack
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-ack detail	monitor protocol ospf disable packet ls-ack detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-ack recv	monitor protocol ospf disable packet ls-ack recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-ack recv detail	monitor protocol ospf disable packet ls-ack recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-ack send	monitor protocol ospf disable packet ls-ack send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-ack send detail	monitor protocol ospf disable packet ls-ack send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-request	monitor protocol ospf disable packet ls-request
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-request detail	monitor protocol ospf disable packet ls-request detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-request recv	monitor protocol ospf disable packet ls-request recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-request recv detail	monitor protocol ospf disable packet ls-request recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-request send	monitor protocol ospf disable packet ls-request send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-request send detail	monitor protocol ospf disable packet ls-request send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-update	monitor protocol ospf disable packet ls-update

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-update detail	monitor protocol ospf disable packet ls-update detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-update recv	monitor protocol ospf disable packet ls-update recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-update recv detail	monitor protocol ospf disable packet ls-update recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-update send	monitor protocol ospf disable packet ls-update send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable packet ls-update send detail	monitor protocol ospf disable packet ls-update send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable rib	monitor protocol ospf disable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable rib interface	monitor protocol ospf disable rib interface
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf disable rib redistribute	monitor protocol ospf disable rib redistribute
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable event	monitor protocol ospf enable event
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable ism	monitor protocol ospf enable ism
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable ism events	monitor protocol ospf enable ism events
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable ism status	monitor protocol ospf enable ism status
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable ism timers	monitor protocol ospf enable ism timers
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable lsa	monitor protocol ospf enable lsa
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable lsa flooding	monitor protocol ospf enable lsa flooding

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable lsa generate	monitor protocol ospf enable lsa generate
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable lsa install	monitor protocol ospf enable lsa install
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable lsa refresh	monitor protocol ospf enable lsa refresh
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable nsm	monitor protocol ospf enable nsm
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable nsm events	monitor protocol ospf enable nsm events
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable nsm status	monitor protocol ospf enable nsm status
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable nsm timers	monitor protocol ospf enable nsm timers
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable nssa	monitor protocol ospf enable nssa
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet	monitor protocol ospf enable packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet all	monitor protocol ospf enable packet all
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet all detail	monitor protocol ospf enable packet all detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet all recv	monitor protocol ospf enable packet all recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet all recv detail	monitor protocol ospf enable packet all recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet all send	monitor protocol ospf enable packet all send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet all send detail	monitor protocol ospf enable packet all send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet dd	monitor protocol ospf enable packet dd

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet dd detail	monitor protocol ospf enable packet dd detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet dd recv	monitor protocol ospf enable packet dd recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet dd recv detail	monitor protocol ospf enable packet dd recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet dd send	monitor protocol ospf enable packet dd send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet dd send detail	monitor protocol ospf enable packet dd send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet hello	monitor protocol ospf enable packet hello
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet hello detail	monitor protocol ospf enable packet hello detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet hello recv	monitor protocol ospf enable packet hello recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet hello recv detail	monitor protocol ospf enable packet hello recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet hello send	monitor protocol ospf enable packet hello send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet hello send detail	monitor protocol ospf enable packet hello send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-ack	monitor protocol ospf enable packet ls-ack
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-ack detail	monitor protocol ospf enable packet ls-ack detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-ack recv	monitor protocol ospf enable packet ls-ack recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-ack recv detail	monitor protocol ospf enable packet ls-ack recv detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-ack send	monitor protocol ospf enable packet ls-ack send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-ack send detail	monitor protocol ospf enable packet ls-ack send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-request	monitor protocol ospf enable packet ls-request
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-request detail	monitor protocol ospf enable packet ls-request detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-request recv	monitor protocol ospf enable packet ls-request recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-request recv detail	monitor protocol ospf enable packet ls-request recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-request send	monitor protocol ospf enable packet ls-request send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-request send detail	monitor protocol ospf enable packet ls-request send detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-update	monitor protocol ospf enable packet ls-update
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-update detail	monitor protocol ospf enable packet ls-update detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-update recv	monitor protocol ospf enable packet ls-update recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-update recv detail	monitor protocol ospf enable packet ls-update recv detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-update send	monitor protocol ospf enable packet ls-update send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable packet ls-update send detail	monitor protocol ospf enable packet ls-update send detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable rib	monitor protocol ospf enable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable rib interface	monitor protocol ospf enable rib interface
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospf enable rib redistribute	monitor protocol ospf enable rib redistribute
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable abr	monitor protocol ospfv3 disable abr
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable asbr	monitor protocol ospfv3 disable asbr
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable border-routers	monitor protocol ospfv3 disable border-routers
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable border-routers area-id	monitor protocol ospfv3 disable border-routers area-id
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable border-routers router-id	monitor protocol ospfv3 disable border-routers router-id
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable flooding	monitor protocol ospfv3 disable flooding
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable interface	monitor protocol ospfv3 disable interface
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa	monitor protocol ospfv3 disable lsa
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa as-external	monitor protocol ospfv3 disable lsa as-external
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa inter-prefix	monitor protocol ospfv3 disable lsa inter-prefix
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa inter-router	monitor protocol ospfv3 disable lsa inter-router
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa intra-prefix	monitor protocol ospfv3 disable lsa intra-prefix

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa link	monitor protocol ospfv3 disable lsa link
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa network	monitor protocol ospfv3 disable lsa network
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa router	monitor protocol ospfv3 disable lsa router
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable lsa unknown	monitor protocol ospfv3 disable lsa unknown
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message	monitor protocol ospfv3 disable message
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message all	monitor protocol ospfv3 disable message all
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message dbdesc	monitor protocol ospfv3 disable message dbdesc
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message hello	monitor protocol ospfv3 disable message hello
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message lsack	monitor protocol ospfv3 disable message lsack
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message lsreq	monitor protocol ospfv3 disable message lsreq
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message lsupdate	monitor protocol ospfv3 disable message lsupdate
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable message unknown	monitor protocol ospfv3 disable message unknown
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable neighbor	monitor protocol ospfv3 disable neighbor
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable neighbor event	monitor protocol ospfv3 disable neighbor event
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable neighbor state	monitor protocol ospfv3 disable neighbor state
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable rib	monitor protocol ospfv3 disable rib

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable rib recv	monitor protocol ospfv3 disable rib recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable rib send	monitor protocol ospfv3 disable rib send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable route	monitor protocol ospfv3 disable route
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable route inter-area	monitor protocol ospfv3 disable route inter-area
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable route intra-area	monitor protocol ospfv3 disable route intra-area
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable route memory	monitor protocol ospfv3 disable route memory
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable route table	monitor protocol ospfv3 disable route table
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable spf	monitor protocol ospfv3 disable spf
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable spf database	monitor protocol ospfv3 disable spf database
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable spf process	monitor protocol ospfv3 disable spf process
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 disable spf time	monitor protocol ospfv3 disable spf time
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable abr	monitor protocol ospfv3 enable abr
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable asbr	monitor protocol ospfv3 enable asbr
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable border-routers	monitor protocol ospfv3 enable border-routers
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable border-routers area-id	monitor protocol ospfv3 enable border-routers area-id

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable border-routers router-id	monitor protocol ospfv3 enable border-routers router-id
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable flooding	monitor protocol ospfv3 enable flooding
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable interface	monitor protocol ospfv3 enable interface
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa	monitor protocol ospfv3 enable lsa
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa as-external	monitor protocol ospfv3 enable lsa as-external
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa inter-prefix	monitor protocol ospfv3 enable lsa inter-prefix
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa inter-router	monitor protocol ospfv3 enable lsa inter-router
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa intra-prefix	monitor protocol ospfv3 enable lsa intra-prefix
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa link	monitor protocol ospfv3 enable lsa link
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa network	monitor protocol ospfv3 enable lsa network
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa router	monitor protocol ospfv3 enable lsa router
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable lsa unknown	monitor protocol ospfv3 enable lsa unknown
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message	monitor protocol ospfv3 enable message
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message all	monitor protocol ospfv3 enable message all
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message dbdesc	monitor protocol ospfv3 enable message dbdesc
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message hello	monitor protocol ospfv3 enable message hello

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message lsack	monitor protocol ospfv3 enable message lsack
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message lsreq	monitor protocol ospfv3 enable message lsreq
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message lsupdate	monitor protocol ospfv3 enable message lsupdate
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable message unknown	monitor protocol ospfv3 enable message unknown
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable neighbor	monitor protocol ospfv3 enable neighbor
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable neighbor event	monitor protocol ospfv3 enable neighbor event
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable neighbor state	monitor protocol ospfv3 enable neighbor state
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable rib	monitor protocol ospfv3 enable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable rib recv	monitor protocol ospfv3 enable rib recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable rib send	monitor protocol ospfv3 enable rib send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable route	monitor protocol ospfv3 enable route
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable route inter-area	monitor protocol ospfv3 enable route inter-area
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable route intra-area	monitor protocol ospfv3 enable route intra-area
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable route memory	monitor protocol ospfv3 enable route memory
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable route table	monitor protocol ospfv3 enable route table
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable spf	monitor protocol ospfv3 enable spf

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable spf database	monitor protocol ospfv3 enable spf database
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable spf process	monitor protocol ospfv3 enable spf process
×	not yet documented	monitor-protocol.xml.in: monitor protocol ospfv3 enable spf time	monitor protocol ospfv3 enable spf time
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able events	monitor protocol rib dis- able events
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able kernel	monitor protocol rib dis- able kernel
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able mpls	monitor protocol rib dis- able mpls
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able nexthop	monitor protocol rib dis- able nexthop
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able packet	monitor protocol rib dis- able packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able packet detail	monitor protocol rib dis- able packet detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able packet recv	monitor protocol rib dis- able packet recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able packet send	monitor protocol rib dis- able packet send
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able rib	monitor protocol rib dis- able rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib dis- able rib detailed	monitor protocol rib dis- able rib detailed
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib en- able events	monitor protocol rib en- able events
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib en- able kernel	monitor protocol rib en- able kernel
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib en- able mpls	monitor protocol rib en- able mpls

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable nexthop	monitor protocol rib enable nexthop
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable packet	monitor protocol rib enable packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable packet detail	monitor protocol rib enable packet detail
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable packet recv	monitor protocol rib enable packet recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable packet send	monitor protocol rib enable packet send
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable rib	monitor protocol rib enable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol rib enable rib detailed	monitor protocol rib enable rib detailed
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip disable all	monitor protocol rip disable all
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip disable events	monitor protocol rip disable events
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip disable packet	monitor protocol rip disable packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip disable packet recv	monitor protocol rip disable packet recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip disable packet send	monitor protocol rip disable packet send
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip disable rib	monitor protocol rip disable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip enable events	monitor protocol rip enable events
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip enable packet	monitor protocol rip enable packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip enable packet recv	monitor protocol rip enable packet recv

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip en- able packet send	monitor protocol rip en- able packet send
×	not yet documented	monitor-protocol.xml.in: monitor protocol rip en- able rib	monitor protocol rip en- able rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng disable all	monitor protocol ripng disable all
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng disable events	monitor protocol ripng disable events
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng disable packet	monitor protocol ripng disable packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng disable packet recv	monitor protocol ripng disable packet recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng disable packet send	monitor protocol ripng disable packet send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng disable rib	monitor protocol ripng disable rib
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng en- able events	monitor protocol ripng en- able events
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng en- able packet	monitor protocol ripng en- able packet
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng en- able packet recv	monitor protocol ripng en- able packet recv
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng en- able packet send	monitor protocol ripng en- able packet send
×	not yet documented	monitor-protocol.xml.in: monitor protocol ripng en- able rib	monitor protocol ripng en- able rib
×	<i>monitor traceroute</i> <i>&lt;destination&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface>	monitor traffic interface <text>
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> filter <filter>	monitor traffic interface <text> filter <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> save <save>	monitor traffic interface <text> save <text>
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> save <save> filter <filter>	monitor traffic interface <text> save <text> filter <text>
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> verbose	monitor traffic interface <text> verbose
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> verbose filter <filter>	monitor traffic interface <text> verbose filter <text>
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> verbose save <save>	monitor traffic interface <text> verbose save <text> <save>
×	not yet documented	traffic-dump.xml.in: monitor traffic interface <interface> verbose save <save> filter <filter>	monitor traffic interface <text> verbose save <text> filter <text>
×	not yet documented	mtr.xml.in: mtr <mtr>	Nothing found in VyOS
×	not yet documented	mtr.xml.in: mtr <mtr> node.tag	Nothing found in VyOS
✓	<i>ping &lt;destination&gt;</i>	ping.xml.in: ping <ping>	ping <text> <text>
×	not yet documented	ping.xml.in: ping <ping> node.tag	Nothing found in VyOS
×	<i>ping &lt;host&gt; vrf &lt;name&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	poweroff.xml.in: poweroff	poweroff
×	not yet documented	poweroff.xml.in: poweroff at <at>	poweroff at <text>
×	not yet documented	poweroff.xml.in: poweroff at <at> date <date>	poweroff at <text> date <text>
×	not yet documented	poweroff.xml.in: poweroff cancel	poweroff cancel
×	not yet documented	poweroff.xml.in: poweroff in <in>	poweroff in <text>
×	not yet documented	poweroff.xml.in: poweroff now	poweroff now
×	not yet documented	pppoe-server.xml.in: set pppoe-server maintenance-mode cancel	set pppoe-server maintenance-mode cancel

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	pppoe-server.xml.in: set pppoe-server maintenance-mode enable	set pppoe-server maintenance-mode enable
×	not yet documented	reboot.xml.in: reboot	reboot
×	not yet documented	reboot.xml.in: reboot at <at>	reboot at <text>
×	not yet documented	reboot.xml.in: reboot at <at> date <date>	reboot at <text> date <text>
×	not yet documented	reboot.xml.in: reboot cancel	reboot cancel
×	not yet documented	reboot.xml.in: reboot in <in>	reboot in <text>
×	not yet documented	reboot.xml.in: reboot now	reboot now
×	not yet documented	Nothing found in XML Definitions	release dhcp interface <text>
×	not yet documented	Nothing found in XML Definitions	release dhcpv6 interface <text>
×	not yet documented	Nothing found in XML Definitions	rename system image <text> <text>
×	<i>renew certbot</i>	pki.xml.in: renew certbot	Nothing found in VyOS
×	not yet documented	dhcp.xml.in: renew dhcp interface <in- terface>	renew dhcp interface <text>
×	not yet documented	dhcp.xml.in: renew dhcpv6 interface <interface>	renew dhcpv6 interface <text>
✓	<i>reset &lt;ip/ipv6&gt; bgp &lt;address&gt; [soft [in/out]]</i>	reset-bgp.xml.in: reset bgp <bgp>	reset bgp <text>
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295>	reset bgp 1-4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> in	reset bgp 1-4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> in prefix-filter	reset bgp 1-4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> message-stats	reset bgp 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> out	reset bgp 1-4294967295 <text> out

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> soft	reset bgp 1-4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> soft in	reset bgp 1-4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp 1-4294967295 <1-4294967295> soft out	reset bgp 1-4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp all	reset bgp all
×	not yet documented	reset-bgp.xml.in: reset bgp external	reset bgp external
×	not yet documented	reset-bgp.xml.in: reset bgp external in	reset bgp external in
×	not yet documented	reset-bgp.xml.in: reset bgp external in prefix-filter	reset bgp external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp external message-stats	reset bgp external message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp external out	reset bgp external out
×	not yet documented	reset-bgp.xml.in: reset bgp external soft	reset bgp external soft
×	not yet documented	reset-bgp.xml.in: reset bgp external soft in	reset bgp external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp external soft out	reset bgp external soft out
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> in	reset bgp <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> in prefix- filter	reset bgp <text> in prefix- filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4>	reset bgp ipv4 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295>	reset bgp ipv4 1- 4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> in	reset bgp ipv4 1- 4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> in prefix- filter	reset bgp ipv4 1- 4294967295 <text> in prefix-filter

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> message- stats	reset bgp ipv4 1- 4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> out	reset bgp ipv4 1- 4294967295 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> soft	reset bgp ipv4 1- 4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> soft in	reset bgp ipv4 1- 4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 1- 4294967295 <1- 4294967295> soft out	reset bgp ipv4 1- 4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 all	reset bgp ipv4 all
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external	reset bgp ipv4 external
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external in	reset bgp ipv4 external in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external in prefix-filter	reset bgp ipv4 external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external message-stats	reset bgp ipv4 external message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external out	reset bgp ipv4 external out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external soft	reset bgp ipv4 external soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external soft in	reset bgp ipv4 external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 external soft out	reset bgp ipv4 external soft out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> in	reset bgp ipv4 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> in prefix-filter	reset bgp ipv4 <text> in prefix-filter

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> message-stats	reset bgp ipv4 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> out	reset bgp ipv4 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group>	reset bgp ipv4 peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group> in	reset bgp ipv4 peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer- group <peer-group> in prefix-filter	reset bgp ipv4 peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group> message- stats	reset bgp ipv4 peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group> out	reset bgp ipv4 peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group> soft	reset bgp ipv4 peer-group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group> soft in	reset bgp ipv4 peer-group <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 peer-group <peer-group> soft out	reset bgp ipv4 peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> soft	reset bgp ipv4 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> soft in	reset bgp ipv4 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv4 <ipv4> soft out	reset bgp ipv4 <text> soft out
✓	<i>reset bgp ipv6 &lt;address&gt;</i>	reset-bgp.xml.in: reset bgp ipv6 <ipv6>	reset bgp ipv6 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1- 4294967295 <1- 4294967295>	reset bgp ipv6 1- 4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1- 4294967295 <1- 4294967295> in	reset bgp ipv6 1- 4294967295 <text> in

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1-4294967295 <1-4294967295> in prefix-filter	reset bgp ipv6 1-4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1-4294967295 <1-4294967295> message-stats	reset bgp ipv6 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1-4294967295 <1-4294967295> out	reset bgp ipv6 1-4294967295 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1-4294967295 <1-4294967295> soft	reset bgp ipv6 1-4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1-4294967295 <1-4294967295> soft in	reset bgp ipv6 1-4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 1-4294967295 <1-4294967295> soft out	reset bgp ipv6 1-4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 all	reset bgp ipv6 all
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external	reset bgp ipv6 external
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external in	reset bgp ipv6 external in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external in prefix-filter	reset bgp ipv6 external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external message-stats	reset bgp ipv6 external message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external out	reset bgp ipv6 external out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external soft	reset bgp ipv6 external soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external soft in	reset bgp ipv6 external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 external soft out	reset bgp ipv6 external soft out

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> in	reset bgp ipv6 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> in prefix-filter	reset bgp ipv6 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> message-stats	reset bgp ipv6 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> out	reset bgp ipv6 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group>	reset bgp ipv6 peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group> in	reset bgp ipv6 peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer- group <peer-group> in prefix-filter	reset bgp ipv6 peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group> message- stats	reset bgp ipv6 peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group> out	reset bgp ipv6 peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group> soft	reset bgp ipv6 peer-group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group> soft in	reset bgp ipv6 peer-group <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 peer-group <peer-group> soft out	reset bgp ipv6 peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> soft	reset bgp ipv6 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> soft in	reset bgp ipv6 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp ipv6 <ipv6> soft out	reset bgp ipv6 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn>	reset bgp l2vpn evpn <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295>	reset bgp l2vpn evpn 1- 4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> in	reset bgp l2vpn evpn 1- 4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> in prefix- filter	reset bgp l2vpn evpn 1-4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> message- stats	reset bgp l2vpn evpn 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> out	reset bgp l2vpn evpn 1- 4294967295 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> soft	reset bgp l2vpn evpn 1- 4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> soft in	reset bgp l2vpn evpn 1- 4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn 1-4294967295 <1- 4294967295> soft out	reset bgp l2vpn evpn 1- 4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn all	reset bgp l2vpn evpn all
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn exter- nal	reset bgp l2vpn evpn exter- nal
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn exter- nal in	reset bgp l2vpn evpn exter- nal in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn exter- nal in prefix-filter	reset bgp l2vpn evpn exter- nal in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn exter- nal message-stats	reset bgp l2vpn evpn exter- nal message-stats

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn external out	reset bgp l2vpn evpn external out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn external soft	reset bgp l2vpn evpn external soft
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn external soft in	reset bgp l2vpn evpn external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn external soft out	reset bgp l2vpn evpn external soft out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> in	reset bgp l2vpn evpn <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> in prefix-filter	reset bgp l2vpn evpn <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> message-stats	reset bgp l2vpn evpn <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> out	reset bgp l2vpn evpn <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group>	reset bgp l2vpn evpn peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> in	reset bgp l2vpn evpn peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> in prefix-filter	reset bgp l2vpn evpn peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> message-stats	reset bgp l2vpn evpn peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> out	reset bgp l2vpn evpn peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> soft	reset bgp l2vpn evpn peer-group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> soft in	reset bgp l2vpn evpn peer-group <text> soft in

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn peer-group <peer-group> soft out	reset bgp l2vpn evpn peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> soft	reset bgp l2vpn evpn <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> soft in	reset bgp l2vpn evpn <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp l2vpn evpn <evpn> soft out	reset bgp l2vpn evpn <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> message-stats	reset bgp <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> out	reset bgp <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group>	reset bgp peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> in	reset bgp peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> in prefix-filter	reset bgp peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> message-stats	reset bgp peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> out	reset bgp peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> soft	reset bgp peer-group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> soft in	reset bgp peer-group <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp peer-group <peer-group> soft out	reset bgp peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp prefix <prefix>	reset bgp prefix <text>
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> soft	reset bgp <text> soft

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> soft in	reset bgp <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp <bgp> soft out	reset bgp <text> soft out
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295>	reset bgp vrf <text> 1- 4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> in	reset bgp vrf <text> 1- 4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> in prefix- filter	reset bgp vrf <text> 1- 4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> message- stats	reset bgp vrf <text> 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> out	reset bgp vrf <text> 1- 4294967295 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> soft	reset bgp vrf <text> 1- 4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> soft in	reset bgp vrf <text> 1- 4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> 1-4294967295 <1- 4294967295> soft out	reset bgp vrf <text> 1- 4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> all	reset bgp vrf <text> all
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> exter- nal	reset bgp vrf <text> exter- nal
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> exter- nal in	reset bgp vrf <text> exter- nal in

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> external in prefix-filter	reset bgp vrf <text> external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> external message-stats	reset bgp vrf <text> external message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> external out	reset bgp vrf <text> external out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> external soft	reset bgp vrf <text> external soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> external soft in	reset bgp vrf <text> external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> external soft out	reset bgp vrf <text> external soft out
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> in
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4>	reset bgp vrf <text> ipv4 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295>	reset bgp vrf <text> ipv4 1-4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> in	reset bgp vrf <text> ipv4 1-4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> in prefix-filter	reset bgp vrf <text> ipv4 1-4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> message-stats	reset bgp vrf <text> ipv4 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> out	reset bgp vrf <text> ipv4 1-4294967295 <text> out

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> soft	reset bgp vrf <text> ipv4 1-4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> soft in	reset bgp vrf <text> ipv4 1-4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 1-4294967295 <1-4294967295> soft out	reset bgp vrf <text> ipv4 1-4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 all	reset bgp vrf <text> ipv4 all
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external	reset bgp vrf <text> ipv4 external
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external in	reset bgp vrf <text> ipv4 external in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external in prefix-filter	reset bgp vrf <text> ipv4 external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external message-stats	reset bgp vrf <text> ipv4 external message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external out	reset bgp vrf <text> ipv4 external out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external soft	reset bgp vrf <text> ipv4 external soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external soft in	reset bgp vrf <text> ipv4 external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 external soft out	reset bgp vrf <text> ipv4 external soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> in	reset bgp vrf <text> ipv4 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> in prefix-filter	reset bgp vrf <text> ipv4 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> message-stats	reset bgp vrf <text> ipv4 <text> message-stats

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> out	reset bgp vrf <text> ipv4 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group>	reset bgp vrf <text> ipv4 peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> in	reset bgp vrf <text> ipv4 peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> in prefix-filter	reset bgp vrf <text> ipv4 peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> message-stats	reset bgp vrf <text> ipv4 peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> out	reset bgp vrf <text> ipv4 peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> soft	reset bgp vrf <text> ipv4 peer-group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> soft in	reset bgp vrf <text> ipv4 peer-group <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 peer-group <peer-group> soft out	reset bgp vrf <text> ipv4 peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> soft	reset bgp vrf <text> ipv4 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> soft in	reset bgp vrf <text> ipv4 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv4 <ipv4> soft out	reset bgp vrf <text> ipv4 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6>	reset bgp vrf <text> ipv6 <text>

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295>	reset bgp vrf <text> ipv6 1-4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295> in	reset bgp vrf <text> ipv6 1-4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295> in prefix-filter	reset bgp vrf <text> ipv6 1-4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1- 4294967295> message- stats	reset bgp vrf <text> ipv6 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295> out	reset bgp vrf <text> ipv6 1-4294967295 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295> soft	reset bgp vrf <text> ipv6 1-4294967295 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295> soft in	reset bgp vrf <text> ipv6 1-4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 1-4294967295 <1-4294967295> soft out	reset bgp vrf <text> ipv6 1-4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 all	reset bgp vrf <text> ipv6 all
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external	reset bgp vrf <text> ipv6 external
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external in	reset bgp vrf <text> ipv6 external in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external in prefix-filter	reset bgp vrf <text> ipv6 external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external message-stats	reset bgp vrf <text> ipv6 external message-stats

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external out	reset bgp vrf <text> ipv6 external out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external soft	reset bgp vrf <text> ipv6 external soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external soft in	reset bgp vrf <text> ipv6 external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 external soft out	reset bgp vrf <text> ipv6 external soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> in	reset bgp vrf <text> ipv6 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> in prefix-filter	reset bgp vrf <text> ipv6 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> message-stats	reset bgp vrf <text> ipv6 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> out	reset bgp vrf <text> ipv6 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group>	reset bgp vrf <text> ipv6 peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> in	reset bgp vrf <text> ipv6 peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> in prefix-filter	reset bgp vrf <text> ipv6 peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> message-stats	reset bgp vrf <text> ipv6 peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> out	reset bgp vrf <text> ipv6 peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> soft	reset bgp vrf <text> ipv6 peer-group <text> soft

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> soft in	reset bgp vrf <text> ipv6 peer-group <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 peer-group <peer-group> soft out	reset bgp vrf <text> ipv6 peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> soft	reset bgp vrf <text> ipv6 <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> soft in	reset bgp vrf <text> ipv6 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> ipv6 <ipv6> soft out	reset bgp vrf <text> ipv6 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn>	reset bgp vrf <text> l2vpn evpn <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1- 4294967295>	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1- 4294967295> in	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1- 4294967295> in prefix- filter	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1- 4294967295> message- stats	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1- 4294967295> out	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1- 4294967295> soft	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> soft

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1-4294967295> soft in	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn 1-4294967295 <1-4294967295> soft out	reset bgp vrf <text> l2vpn evpn 1-4294967295 <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn all	reset bgp vrf <text> l2vpn evpn all
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external	reset bgp vrf <text> l2vpn evpn external
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external in	reset bgp vrf <text> l2vpn evpn external in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external in prefix-filter	reset bgp vrf <text> l2vpn evpn external in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external message-stats	reset bgp vrf <text> l2vpn evpn external message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external out	reset bgp vrf <text> l2vpn evpn external out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external soft	reset bgp vrf <text> l2vpn evpn external soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external soft in	reset bgp vrf <text> l2vpn evpn external soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn external soft out	reset bgp vrf <text> l2vpn evpn external soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> in	reset bgp vrf <text> l2vpn evpn <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> in prefix-filter	reset bgp vrf <text> l2vpn evpn <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> message-stats	reset bgp vrf <text> l2vpn evpn <text> message-stats

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> out	reset bgp vrf <text> l2vpn evpn <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group>	reset bgp vrf <text> l2vpn evpn peer-group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> in	reset bgp vrf <text> l2vpn evpn peer-group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> in prefix-filter	reset bgp vrf <text> l2vpn evpn peer-group <text> in prefix-filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> message-stats	reset bgp vrf <text> l2vpn evpn peer-group <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> out	reset bgp vrf <text> l2vpn evpn peer-group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> soft	reset bgp vrf <text> l2vpn evpn peer-group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> soft in	reset bgp vrf <text> l2vpn evpn peer-group <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn peer-group <peer-group> soft out	reset bgp vrf <text> l2vpn evpn peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> soft	reset bgp vrf <text> l2vpn evpn <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> soft in	reset bgp vrf <text> l2vpn evpn <text> soft in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> l2vpn evpn <evpn> soft out	reset bgp vrf <text> l2vpn evpn <text> soft out
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> message-stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag	Nothing found in VyOS

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag in	Nothing found in VyOS
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag in prefix-filter	Nothing found in VyOS
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag message-stats	Nothing found in VyOS
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag out	Nothing found in VyOS
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag soft	Nothing found in VyOS
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag soft in	Nothing found in VyOS
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> node.tag soft out	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer- group <peer-group>	reset bgp vrf <text> peer- group <text>
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer- group <peer-group> in	reset bgp vrf <text> peer- group <text> in
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer- group <peer-group> in prefix-filter	reset bgp vrf <text> peer- group <text> in prefix- filter
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer-group <peer-group> message-stats	reset bgp vrf <text> peer- group <text> message- stats
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer- group <peer-group> out	reset bgp vrf <text> peer- group <text> out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer- group <peer-group> soft	reset bgp vrf <text> peer- group <text> soft
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer- group <peer-group> soft in	reset bgp vrf <text> peer- group <text> soft in

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> peer-group <peer-group> soft out	reset bgp vrf <text> peer-group <text> soft out
×	not yet documented	reset-bgp.xml.in: reset bgp vrf <vrf> prefix <prefix>	reset bgp vrf <text> prefix <text>
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> soft
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> soft in
×	not yet documented	Nothing found in XML Definitions	reset bgp vrf <text> <text> soft out
×	not yet documented	reset-conntrack.xml.in: reset conntrack	reset conntrack
×	not yet documented	Nothing found in XML Definitions	reset conntrack-sync external-cache
×	not yet documented	Nothing found in XML Definitions	reset conntrack-sync internal-cache
×	not yet documented	dns-dynamic.xml.in: reset dns dynamic	Nothing found in VyOS
×	<i>reset dns forwarding &lt;all   domain&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	dns-forwarding.xml.in: reset dns forwarding all	reset dns forwarding all
×	not yet documented	dns-forwarding.xml.in: reset dns forwarding domain <domain>	reset dns forwarding domain <text>
×	not yet documented	ipv4-route.xml.in: reset ip arp address <address>	reset ip arp address <text>
×	not yet documented	ipv4-route.xml.in: reset ip arp interface <interface>	reset ip arp interface <text>
×	not yet documented	ipv4-route.xml.in: reset ip arp table	reset ip arp table
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp>	reset ip bgp <text>
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295>	reset ip bgp 1-4294967295 <text>
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> in	reset ip bgp 1-4294967295 <text> in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> in prefix-filter	reset ip bgp 1-4294967295 <text> in prefix-filter

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> message-stats	reset ip bgp 1-4294967295 <text> message-stats
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> out	reset ip bgp 1-4294967295 <text> out
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> soft	reset ip bgp 1-4294967295 <text> soft
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> soft in	reset ip bgp 1-4294967295 <text> soft in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp 1-4294967295 <1-4294967295> soft out	reset ip bgp 1-4294967295 <text> soft out
✓	<i>reset ip bgp all</i>	reset-ip-bgp.xml.in: reset ip bgp all	reset ip bgp all
✓	<i>reset ip bgp dampening</i>	reset-ip-bgp.xml.in: reset ip bgp dampening <dampening>	reset ip bgp dampening <text> <text>
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp dampening <dampening> node.tag	Nothing found in VyOS
✓	<i>reset ip bgp external</i>	reset-ip-bgp.xml.in: reset ip bgp external	reset ip bgp external
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external in	reset ip bgp external in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external in prefix-filter	reset ip bgp external in prefix-filter
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external message-stats	reset ip bgp external message-stats
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external out	reset ip bgp external out
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external soft	reset ip bgp external soft
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external soft in	reset ip bgp external soft in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp external soft out	reset ip bgp external soft out
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> in	reset ip bgp <text> in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> in prefix-filter	reset ip bgp <text> in prefix-filter

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> message-stats	reset ip bgp <text> message-stats
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> out	reset ip bgp <text> out
✓	<i>reset ip bgp peer-group &lt;name&gt; [soft [in/out]]</i>	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group>	reset ip bgp peer-group <text>
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> in	reset ip bgp peer-group <text> in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> in prefix- filter	reset ip bgp peer-group <text> in prefix-filter
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> message- stats	reset ip bgp peer-group <text> message-stats
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> out	reset ip bgp peer-group <text> out
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> soft	reset ip bgp peer-group <text> soft
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> soft in	reset ip bgp peer-group <text> soft in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp peer-group <peer-group> soft out	reset ip bgp peer-group <text> soft out
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> soft	reset ip bgp <text> soft
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> soft in	reset ip bgp <text> soft in
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp <bgp> soft out	reset ip bgp <text> soft out
×	not yet documented	Nothing found in XML Definitions	reset ip bgp vrf <text> <text>
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp vrf <vrf> all	reset ip bgp vrf <text> all
×	not yet documented	reset-ip-bgp.xml.in: reset ip bgp vrf <vrf> node.tag	Nothing found in VyOS
×	not yet documented	reset-ip-igmp.xml.in: reset ip igmp interfaces	reset ip igmp interfaces
×	not yet documented	reset-ip-multicast.xml.in: reset ip multicast route	reset ip multicast route

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	reset ipoe-server session interface <text>
×	not yet documented	Nothing found in XML Definitions	reset ipoe-server session sid <text>
×	not yet documented	Nothing found in XML Definitions	reset ipoe-server session username <text>
×	not yet documented	ipv4-route.xml.in: reset ip route cache <cache>	reset ip route cache <text>
×	<i>reset ipv6 neighbors &lt;address / interface&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	ipv6-route.xml.in: reset ipv6 neighbors address <address>	reset ipv6 neighbors address <text>
×	not yet documented	ipv6-route.xml.in: reset ipv6 neighbors interface <interface>	reset ipv6 neighbors interface <text>
✓	<i>reset ipv6 route cache</i>	ipv6-route.xml.in: reset ipv6 route cache <cache>	reset ipv6 route cache <text>
✓	<i>reset mpls ldp neighbor &lt;IPv4 or IPv6 address&gt;</i>	reset-mpls.xml.in: reset mpls ldp neighbor <neighbor>	reset mpls ldp neighbor <text>
×	not yet documented	Nothing found in XML Definitions	reset nhrp flush
×	not yet documented	Nothing found in XML Definitions	reset nhrp flush tunnel <text>
×	not yet documented	Nothing found in XML Definitions	reset nhrp purge
×	not yet documented	Nothing found in XML Definitions	reset nhrp purge tunnel <text>
×	<i>reset openvpn client &lt;text&gt;</i>	Nothing found in XML Definitions	reset openvpn client <text>
×	<i>reset openvpn interface &lt;interface&gt;</i>	Nothing found in XML Definitions	reset openvpn interface <text>
×	not yet documented	Nothing found in XML Definitions	reset pppoe-server all
×	not yet documented	Nothing found in XML Definitions	reset pppoe-server interface <text>
×	not yet documented	Nothing found in XML Definitions	reset pppoe-server username <text>
×	not yet documented	rpki.xml.in: reset rpki	reset rpki
×	not yet documented	Nothing found in XML Definitions	reset terminal
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec profile <text> tunnel <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec profile <text> tunnel <text> remote-host <text>
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec remote-access all
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec remote-access user <text>
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec site-to-site all
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec site-to-site peer <text>
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec site-to-site peer <text> tunnel <text>
×	not yet documented	Nothing found in XML Definitions	reset vpn ipsec site-to-site peer <text> vti
×	not yet documented	reset-vpn.xml.in: reset vpn l2tp all	reset vpn l2tp all
×	not yet documented	reset-vpn.xml.in: reset vpn l2tp interface <interface>	reset vpn l2tp interface <text>
×	not yet documented	reset-vpn.xml.in: reset vpn l2tp user <user>	reset vpn l2tp user <text>
×	not yet documented	reset-vpn.xml.in: reset vpn pptp all	reset vpn pptp all
×	not yet documented	reset-vpn.xml.in: reset vpn pptp interface <interface>	reset vpn pptp interface <text>
×	not yet documented	reset-vpn.xml.in: reset vpn pptp user <user>	reset vpn pptp user <text>
×	not yet documented	reset-vpn.xml.in: reset vpn sstp all	reset vpn sstp all
×	not yet documented	reset-vpn.xml.in: reset vpn sstp interface <interface>	reset vpn sstp interface <text>
×	not yet documented	reset-vpn.xml.in: reset vpn sstp user <user>	reset vpn sstp user <text>
×	not yet documented	restart-frr.xml.in: restart all	restart all
×	not yet documented	restart-frr.xml.in: restart babel	restart babel
×	not yet documented	restart-frr.xml.in: restart bfd	restart bfd
×	not yet documented	restart-frr.xml.in: restart bgp	restart bgp
×	not yet documented	Nothing found in XML Definitions	restart cluster
×	not yet documented	Nothing found in XML Definitions	restart conntrack-sync

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>restart container</i> <containername>	Nothing found in XML Definitions	restart container <text>
×	<i>restart dhcp relay-agent</i>	Nothing found in XML Definitions	restart dhcp relay-agent
×	<i>restart dhcp server</i>	Nothing found in XML Definitions	restart dhcp server
×	<i>restart dhcpv6 relay-agent</i>	Nothing found in XML Definitions	restart dhcpv6 relay-agent
×	<i>restart dhcpv6 server</i>	Nothing found in XML Definitions	restart dhcpv6 server
×	not yet documented	Nothing found in XML Definitions	restart dns dynamic
×	<i>restart dns forwarding</i>	Nothing found in XML Definitions	restart dns forwarding
×	not yet documented	Nothing found in XML Definitions	restart flow-accounting
✓	<i>restart igmp-proxy</i>	igmp-proxy.xml.in: restart igmp-proxy	restart igmp-proxy
×	not yet documented	ipoe-server.xml.in: restart ipoe-server	restart ipoe-server
×	not yet documented	Nothing found in XML Definitions	restart ipsec
×	not yet documented	restart-frr.xml.in: restart isis	restart isis
×	not yet documented	restart-frr.xml.in: restart ldp	restart ldp
×	<i>restart mdns repeater</i>	mdns-reflector.xml.in: restart mdns repeater	Nothing found in VyOS
×	not yet documented	openconnect.xml.in: restart openconnect-server	restart openconnect-server
×	not yet documented	restart-frr.xml.in: restart ospf	restart ospf
×	not yet documented	restart-frr.xml.in: restart ospfv3	restart ospfv3
×	not yet documented	Nothing found in XML Definitions	restart pppoe-server
×	not yet documented	restart-frr.xml.in: restart rip	restart rip
×	not yet documented	restart-frr.xml.in: restart ripng	restart ripng
×	not yet documented	restart-router-advert.xml.in: restart router-advert	Nothing found in VyOS
×	not yet documented	restart-snm.xml.in: restart snmp	restart snmp
✓	<i>restart ssh</i>	restart-ssh.xml.in: restart ssh	restart ssh
×	not yet documented	restart-frr.xml.in: restart static	restart static

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	vrrp.xml.in: restart vrrp	restart vrrp
×	not yet documented	Nothing found in XML Definitions	restart wan-load-balance
×	not yet documented	Nothing found in XML Definitions	restart webproxy
×	not yet documented	restart-frr.xml.in: restart zebra	restart zebra
×	<i>run generate macsec mka cak</i> <i>&lt;gcm-aes-128/gcm-aes-</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>run generate macsec mka ckn</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-arp.xml.in: show arp	show arp
×	not yet documented	show-arp.xml.in: show arp interface <text> show arp interface <inter- face>	show arp interface <text>
×	not yet documented	show-babel.xml.in: show babel interface	show babel interface
×	not yet documented	show-babel.xml.in: show babel neighbor <neighbor>	show babel neighbor <text>
×	not yet documented	show-babel.xml.in: show babel route	show babel route
×	not yet documented	show-bfd.xml.in: show bfd peer <peer>	show bfd peer <text>
×	not yet documented	show-bfd.xml.in: show bfd peer <peer> counters	show bfd peer <text> counters
✓	<i>show bfd peers</i>	show-bfd.xml.in: show bfd peers	show bfd peers
×	not yet documented	show-bfd.xml.in: show bfd peers brief	show bfd peers brief
×	not yet documented	show-bfd.xml.in: show bfd peers counters	show bfd peers counters
✓	<i>show bfd static routes</i>	show-bfd.xml.in: show bfd static routes	show bfd static routes
✓	<i>show bgp &lt;ipv4/ipv6&gt;</i> <i>&lt;address/prefix&gt;</i>	show-bgp.xml.in: show bgp	show bgp
×	not yet documented	show-bgp.xml.in: show bgp cidr-only	show bgp cidr-only
×	not yet documented	show-bgp.xml.in: show bgp cidr-only wide	show bgp cidr-only wide
✓	<i>show bgp &lt;ipv4/ipv6&gt;</i> <i>community &lt;value&gt;</i>	show-bgp.xml.in: show bgp community	show bgp community <text>
✓	<i>show bgp &lt;ipv4/ipv6&gt;</i> <i>community-list</i> <i>&lt;name&gt;</i>	show-bgp.xml.in: show bgp community-list <community-list>	show bgp community-list <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp community-list list <community-list> exact-match	show bgp community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp community accept-own	show bgp community accept-own
×	not yet documented	show-bgp.xml.in: show bgp community accept-own-nexthop	show bgp community accept-own-nexthop
×	not yet documented	show-bgp.xml.in: show bgp community blackhole	show bgp community blackhole
×	not yet documented	show-bgp.xml.in: show bgp community exact-match	show bgp community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp community graceful-shutdown	show bgp community graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp community llgr- stale	show bgp community llgr- stale
×	not yet documented	show-bgp.xml.in: show bgp community local-AS	show bgp community local-AS
×	not yet documented	show-bgp.xml.in: show bgp community no- advertise	show bgp community no- advertise
×	not yet documented	show-bgp.xml.in: show bgp community no- export	show bgp community no- export
×	not yet documented	show-bgp.xml.in: show bgp community no- llgr	show bgp community no- llgr
×	not yet documented	show-bgp.xml.in: show bgp community no- peer	show bgp community no- peer
×	not yet documented	show-bgp.xml.in: show bgp community route-filter-translated-v4	show bgp community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp community route-filter-translated-v6	show bgp community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp community route-filter-v4	show bgp community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp community route-filter-v6	show bgp community route-filter-v6

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show bgp &lt;ipv4/ipv6&gt; dampening dampened-paths</i>	show-bgp.xml.in: show bgp dampening dampened-paths	show bgp dampening dampened-paths
✓	<i>show bgp &lt;ipv4/ipv6&gt; dampening flap-statistics</i>	show-bgp.xml.in: show bgp dampening flap-statistics	show bgp dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp dampening parameters	show bgp dampening parameters
×	<i>show bgp &lt;ipv4/ipv6&gt; filter-list &lt;name&gt;</i>	show-bgp.xml.in: show bgp filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp ipv4	show bgp ipv4 <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 <ipv4> bestpath	show bgp ipv4 <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community	show bgp ipv4 community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community-list <community-list>	show bgp ipv4 community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community-list <community-list> exact-match	show bgp ipv4 community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community accept-own	show bgp ipv4 community accept-own
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community accept-own-nexthop	show bgp ipv4 community accept-own-nexthop
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community blackhole	show bgp ipv4 community blackhole
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community exact-match	show bgp ipv4 community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community graceful-shutdown	show bgp ipv4 community graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community llgr-stale	show bgp ipv4 community llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community local-AS	show bgp ipv4 community local-AS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community no-advertise	show bgp ipv4 community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community no-export	show bgp ipv4 community no-export
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community no-llgr	show bgp ipv4 community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community no-peer	show bgp ipv4 community no-peer
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community route-filter-translated-v4	show bgp ipv4 community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community route-filter-translated-v6	show bgp ipv4 community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community route-filter-v4	show bgp ipv4 community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv4 community route-filter-v6	show bgp ipv4 community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv4 dampening dampened-paths	show bgp ipv4 dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp ipv4 dampening flap-statistics	show bgp ipv4 dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 dampening parameters	show bgp ipv4 dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp ipv4 filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec	show bgp ipv4 flowspec <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec <flowspec> bestpath	show bgp ipv4 flowspec <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community	show bgp ipv4 flowspec community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community- list <community-list>	show bgp ipv4 flowspec community-list <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community- list <community-list> exact-match	show bgp ipv4 flowspec community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community accept-own	show bgp ipv4 flowspec community accept-own
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community accept-own- nexthop	show bgp ipv4 flowspec community accept-own- nexthop
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community blackhole	show bgp ipv4 flowspec community blackhole
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community exact-match	show bgp ipv4 flowspec community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community graceful- shutdown	show bgp ipv4 flowspec community graceful- shutdown
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community llgr-stale	show bgp ipv4 flowspec community llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community local-AS	show bgp ipv4 flowspec community local-AS
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community no-advertise	show bgp ipv4 flowspec community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community no-export	show bgp ipv4 flowspec community no-export
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community no-llgr	show bgp ipv4 flowspec community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community no-peer	show bgp ipv4 flowspec community no-peer
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community route-filter- translated-v4	show bgp ipv4 flowspec community route-filter- translated-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community route-filter- translated-v6	show bgp ipv4 flowspec community route-filter- translated-v6

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community route-filter-v4	show bgp ipv4 flowspec community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec community route-filter-v6	show bgp ipv4 flowspec community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec dampening dampened- paths	show bgp ipv4 flowspec dampening dampened- paths
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec dampening flap-statistics	show bgp ipv4 flowspec dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec dampening parameters	show bgp ipv4 flowspec dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec detail	show bgp ipv4 flowspec detail
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec large-community	show bgp ipv4 flowspec large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec large-community-list <large-community-list>	show bgp ipv4 flowspec large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec large-community-list <large-community-list> exact-match	show bgp ipv4 flowspec large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec large-community <large- community> exact-match	show bgp ipv4 flowspec large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec <flowspec> longer- prefixes	show bgp ipv4 flowspec <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec <flowspec> multipath	show bgp ipv4 flowspec <text> multipath
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors>	show bgp ipv4 flowspec neighbors <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> advertised-routes	show bgp ipv4 flowspec neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> dampened-routes	show bgp ipv4 flowspec neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> filtered-routes	show bgp ipv4 flowspec neighbors <text> filtered- routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> flap-statistics	show bgp ipv4 flowspec neighbors <text> flap- statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> prefix-counts	show bgp ipv4 flowspec neighbors <text> prefix- counts
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> received-routes	show bgp ipv4 flowspec neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> re- ceived prefix-filter	show bgp ipv4 flowspec neighbors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec neighbors <neighbors> routes	show bgp ipv4 flowspec neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec prefix-list <prefix-list>	show bgp ipv4 flowspec prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec regex <regex>	show bgp ipv4 flowspec regex <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec route-map <route-map>	show bgp ipv4 flowspec route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec statistics	show bgp ipv4 flowspec statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec summary	show bgp ipv4 flowspec summary

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec summary established	show bgp ipv4 flowspec summary established
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec summary failed	show bgp ipv4 flowspec summary failed
×	not yet documented	show-bgp.xml.in: show bgp ipv4 flowspec wide	show bgp ipv4 flowspec wide
×	not yet documented	show-bgp.xml.in: show bgp ipv4 large- community	show bgp ipv4 large- community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 large- community-list <large- community-list>	show bgp ipv4 large- community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 large- community-list <large- community-list> exact- match	show bgp ipv4 large- community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 large- community <large- community> exact-match	show bgp ipv4 large- community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 <ipv4> longer-prefixes	show bgp ipv4 <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 <ipv4> multipath	show bgp ipv4 <text> mul- tipath
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors>	show bgp ipv4 neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> advertised- routes	show bgp ipv4 neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> dampened- routes	show bgp ipv4 neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> filtered- routes	show bgp ipv4 neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> flap-statistics	show bgp ipv4 neighbors <text> flap-statistics

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> prefix-counts	show bgp ipv4 neighbors <text> prefix-counts
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> received-routes	show bgp ipv4 neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> received-prefix-filter	show bgp ipv4 neighbors <text> received-prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp ipv4 neighbors <neighbors> routes	show bgp ipv4 neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 prefix-list <prefix-list>	show bgp ipv4 prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 regexp <regexp>	show bgp ipv4 regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 route-map <route-map>	show bgp ipv4 route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 statistics	show bgp ipv4 statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 summary	show bgp ipv4 summary
×	not yet documented	show-bgp.xml.in: show bgp ipv4 summary established	show bgp ipv4 summary established
×	not yet documented	show-bgp.xml.in: show bgp ipv4 summary failed	show bgp ipv4 summary failed
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn	show bgp ipv4 vpn <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn <vpn> bestpath	show bgp ipv4 vpn <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community	show bgp ipv4 vpn com- community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community-list <community-list>	show bgp ipv4 vpn community-list <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community-list <community-list> exact-match	show bgp ipv4 vpn community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community accept-own	show bgp ipv4 vpn com- community accept-own
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community accept-own- nexthop	show bgp ipv4 vpn community accept-own- nexthop
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community blackhole	show bgp ipv4 vpn com- community blackhole
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community exact-match	show bgp ipv4 vpn community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community graceful-shutdown	show bgp ipv4 vpn com- community graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community llgr-stale	show bgp ipv4 vpn com- community llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community local-AS	show bgp ipv4 vpn com- community local-AS
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community no-advertise	show bgp ipv4 vpn com- community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community no-export	show bgp ipv4 vpn com- community no-export
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community no-llgr	show bgp ipv4 vpn com- community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn com- community no-peer	show bgp ipv4 vpn com- community no-peer
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community route-filter- translated-v4	show bgp ipv4 vpn community route-filter- translated-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community route-filter- translated-v6	show bgp ipv4 vpn community route-filter- translated-v6

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community route-filter-v4	show bgp ipv4 vpn community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn community route-filter-v6	show bgp ipv4 vpn community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn dampening dampened-paths	show bgp ipv4 vpn dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn dampening flap-statistics	show bgp ipv4 vpn dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn dampening parameters	show bgp ipv4 vpn dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn large-community	show bgp ipv4 vpn large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn large-community-list <large-community-list>	show bgp ipv4 vpn large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn large-community-list <large-community-list> exact-match	show bgp ipv4 vpn large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn large-community <large-community> exact-match	show bgp ipv4 vpn large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn <vpn> longer-prefixes	show bgp ipv4 vpn <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn <vpn> multipath	show bgp ipv4 vpn <text> multipath
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors>	show bgp ipv4 vpn neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> advertised-routes	show bgp ipv4 vpn neighbors <text> advertised-routes

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> dampened-routes	show bgp ipv4 vpn neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> filtered-routes	show bgp ipv4 vpn neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> flap-statistics	show bgp ipv4 vpn neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> prefix-counts	show bgp ipv4 vpn neighbors <text> prefix-counts
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> received-routes	show bgp ipv4 vpn neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> received prefix-filter	show bgp ipv4 vpn neighbors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn neighbors <neighbors> routes	show bgp ipv4 vpn neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn prefix-list <prefix-list>	show bgp ipv4 vpn prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn regexp <regexp>	show bgp ipv4 vpn regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn route-map <route-map>	show bgp ipv4 vpn route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn statistics	show bgp ipv4 vpn statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn summary	show bgp ipv4 vpn summary
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn summary established	show bgp ipv4 vpn summary established
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn summary failed	show bgp ipv4 vpn summary failed

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv4 vpn wide	show bgp ipv4 vpn wide
×	not yet documented	show-bgp.xml.in: show bgp ipv4 wide	show bgp ipv4 wide
×	not yet documented	show-bgp.xml.in: show bgp ipv6	show bgp ipv6 <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 <ipv6> bestpath	show bgp ipv6 <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community	show bgp ipv6 community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community-list <community-list>	show bgp ipv6 community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community-list <community-list> exact- match	show bgp ipv6 community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community accept-own	show bgp ipv6 community accept-own
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community accept-own-nexthop	show bgp ipv6 community accept-own-nexthop
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community blackhole	show bgp ipv6 community blackhole
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community exact-match	show bgp ipv6 community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community graceful-shutdown	show bgp ipv6 community graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community llgr-stale	show bgp ipv6 community llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community local-AS	show bgp ipv6 community local-AS
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community no-advertise	show bgp ipv6 community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community no-export	show bgp ipv6 community no-export

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community no-llgr	show bgp ipv6 community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community no-peer	show bgp ipv6 community no-peer
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community route-filter-translated-v4	show bgp ipv6 community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community route-filter-translated-v6	show bgp ipv6 community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community route-filter-v4	show bgp ipv6 community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv6 community route-filter-v6	show bgp ipv6 community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv6 dampening dampened-paths	show bgp ipv6 dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp ipv6 dampening flap-statistics	show bgp ipv6 dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv6 dampening parameters	show bgp ipv6 dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp ipv6 filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp ipv6 large-community	show bgp ipv6 large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 large-community-list <large-community-list>	show bgp ipv6 large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 large-community-list <large-community-list> exact-match	show bgp ipv6 large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 large-community <large-community> exact-match	show bgp ipv6 large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 <ipv6> longer-prefixes	show bgp ipv6 <text> longer-prefixes

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv6 <ipv6> multipath	show bgp ipv6 <text> mul- tipath
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors>	show bgp ipv6 neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> advertised- routes	show bgp ipv6 neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> dampened- routes	show bgp ipv6 neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> filtered- routes	show bgp ipv6 neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> flap-statistics	show bgp ipv6 neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> prefix-counts	show bgp ipv6 neighbors <text> prefix-counts
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> received- routes	show bgp ipv6 neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> received prefix-filter	show bgp ipv6 neigh- bors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp ipv6 neighbors <neighbors> routes	show bgp ipv6 neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 prefix-list <prefix-list>	show bgp ipv6 prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 regexp <regexp>	show bgp ipv6 regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 route-map <route-map>	show bgp ipv6 route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 statistics	show bgp ipv6 statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv6 summary	show bgp ipv6 summary

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv6 summary established	show bgp ipv6 summary established
×	not yet documented	show-bgp.xml.in: show bgp ipv6 summary failed	show bgp ipv6 summary failed
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn	show bgp ipv6 vpn <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn <vpn> bestpath	show bgp ipv6 vpn <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity	show bgp ipv6 vpn com- munity <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community-list <community-list>	show bgp ipv6 vpn community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community-list <community-list> exact- match	show bgp ipv6 vpn community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity accept-own	show bgp ipv6 vpn com- munity accept-own
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community accept-own- nexthop	show bgp ipv6 vpn community accept-own- nexthop
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity blackhole	show bgp ipv6 vpn com- munity blackhole
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity exact-match	show bgp ipv6 vpn community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity graceful-shutdown	show bgp ipv6 vpn com- munity graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity llgr-stale	show bgp ipv6 vpn com- munity llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity local-AS	show bgp ipv6 vpn com- munity local-AS
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn com- munity no-advertise	show bgp ipv6 vpn com- munity no-advertise

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community no-export	show bgp ipv6 vpn community no-export
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community no-llgr	show bgp ipv6 vpn community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community no-peer	show bgp ipv6 vpn community no-peer
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community route-filter-translated-v4	show bgp ipv6 vpn community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community route-filter-translated-v6	show bgp ipv6 vpn community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community route-filter-v4	show bgp ipv6 vpn community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn community route-filter-v6	show bgp ipv6 vpn community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn dampening dampened-paths	show bgp ipv6 vpn dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn dampening flap-statistics	show bgp ipv6 vpn dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn dampening parameters	show bgp ipv6 vpn dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn large-community	show bgp ipv6 vpn large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn large-community-list <large-community-list>	show bgp ipv6 vpn large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn large-community-list <large-community-list> exact-match	show bgp ipv6 vpn large-community-list <text> exact-match

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn large-community <large-community> exact-match	show bgp ipv6 vpn large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn <vpn> longer-prefixes	show bgp ipv6 vpn <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn <vpn> multipath	show bgp ipv6 vpn <text> multipath
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors>	show bgp ipv6 vpn neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> advertised-routes	show bgp ipv6 vpn neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> dampened-routes	show bgp ipv6 vpn neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> filtered-routes	show bgp ipv6 vpn neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> flap-statistics	show bgp ipv6 vpn neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> prefix-counts	show bgp ipv6 vpn neighbors <text> prefix-counts
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> received-routes	show bgp ipv6 vpn neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> received-prefix-filter	show bgp ipv6 vpn neighbors <text> received-prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn neighbors <neighbors> routes	show bgp ipv6 vpn neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn prefix-list <prefix-list>	show bgp ipv6 vpn prefix-list <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn regexp <regexp>	show bgp ipv6 vpn regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn route- map <route-map>	show bgp ipv6 vpn route- map <text>
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn statis- tics	show bgp ipv6 vpn statis- tics
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn sum- mary	show bgp ipv6 vpn sum- mary
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn sum- mary established	show bgp ipv6 vpn sum- mary established
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn sum- mary failed	show bgp ipv6 vpn sum- mary failed
×	not yet documented	show-bgp.xml.in: show bgp ipv6 vpn wide	show bgp ipv6 vpn wide
×	not yet documented	show-bgp.xml.in: show bgp ipv6 wide	show bgp ipv6 wide
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn	show bgp l2vpn evpn <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn all overlay	show bgp l2vpn evpn all overlay
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn all tags	show bgp l2vpn evpn all tags
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn com- munity <community>	show bgp l2vpn evpn com- munity <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn community <community> exact-match	show bgp l2vpn evpn community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn es	show bgp l2vpn evpn es
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn es- evi	show bgp l2vpn evpn es- evi
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn es- evi detail	show bgp l2vpn evpn es- evi detail
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn es- evi vni <vni>	show bgp l2vpn evpn es- evi vni <text>

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn es-vrf	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn es detail	show bgp l2vpn evpn es detail
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn import-rt	show bgp l2vpn evpn import-rt
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn large-community <large-community>	show bgp l2vpn evpn large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn large-community-list <large-community-list>	show bgp l2vpn evpn large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn large-community-list <large-community-list> exact-match	show bgp l2vpn evpn large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn large-community <large-community> exact-match	show bgp l2vpn evpn large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn neighbors <neighbors>	show bgp l2vpn evpn neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn neighbors <neighbors> advertised-routes	show bgp l2vpn evpn neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn neighbors <neighbors> routes	show bgp l2vpn evpn neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn next-hops	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn rd <rd>	show bgp l2vpn evpn rd <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn rd <rd> overlay	show bgp l2vpn evpn rd <text> overlay
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn rd <rd> tags	show bgp l2vpn evpn rd <text> tags

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route	show bgp l2vpn evpn route
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route detail	show bgp l2vpn evpn route detail
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type 1	show bgp l2vpn evpn route type 1
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type 2	show bgp l2vpn evpn route type 2
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type 3	show bgp l2vpn evpn route type 3
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type 4	show bgp l2vpn evpn route type 4
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type 5	show bgp l2vpn evpn route type 5
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type ead	show bgp l2vpn evpn route type ead
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type es	show bgp l2vpn evpn route type es
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type macip	show bgp l2vpn evpn route type macip
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type multicast	show bgp l2vpn evpn route type multicast
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route type prefix	show bgp l2vpn evpn route type prefix
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn route vni <vni>	show bgp l2vpn evpn route vni <text>
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn statistics	show bgp l2vpn evpn statistics
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn sum- mary	show bgp l2vpn evpn sum- mary
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn sum- mary established	show bgp l2vpn evpn sum- mary established

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn summary failed	show bgp l2vpn evpn summary failed
×	not yet documented	show-bgp.xml.in: show bgp l2vpn evpn vni	show bgp l2vpn evpn vni <text>
×	not yet documented	show-bgp.xml.in: show bgp large-community	show bgp large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp large-community-list <large-community-list>	show bgp large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp large-community-list <large-community-list> exact-match	show bgp large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp large-community <large-community> exact-match	show bgp large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp mac hash	show bgp mac hash
×	not yet documented	show-bgp.xml.in: show bgp martian next-hop	show bgp martian next-hop
×	not yet documented	show-bgp.xml.in: show bgp memory	show bgp memory
×	not yet documented	show-bgp.xml.in: show bgp neighbors <neighbors>	show bgp neighbors <text>
✓	<i>show bgp &lt;ipv4/ipv6&gt; neighbors &lt;address&gt; advertised-routes</i>	show-bgp.xml.in: show bgp neighbors <neighbors> advertised-routes	show bgp neighbors <text> advertised-routes
✓	<i>show bgp &lt;ipv4/ipv6&gt; neighbors &lt;address&gt; dampened-routes</i>	show-bgp.xml.in: show bgp neighbors <neighbors> dampened-routes	show bgp neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp neighbors <neighbors> filtered-routes	show bgp neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp neighbors <neighbors> flap-statistics	show bgp neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp neighbors <neighbors> prefix-counts	show bgp neighbors <text> prefix-counts

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show bgp &lt;ipv4/ipv6&gt; neighbors &lt;address&gt; received-routes</i>	show-bgp.xml.in: show bgp neighbors <neighbors> received-routes	show bgp neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp neighbors <neighbors> received prefix-filter	show bgp neighbors <text> received prefix-filter
✓	<i>show bgp &lt;ipv4/ipv6&gt; neighbors &lt;address&gt; routes</i>	show-bgp.xml.in: show bgp neighbors <neighbors> routes	show bgp neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp nexthop <nexthop>	show bgp nexthop <text>
×	not yet documented	show-bgp.xml.in: show bgp nexthop <nexthop> detail	show bgp nexthop <text> detail
×	not yet documented	show-bgp.xml.in: show bgp prefix-list <prefix-list>	show bgp prefix-list <text>
✓	<i>show bgp &lt;ipv4/ipv6&gt; regexp &lt;text&gt;</i>	show-bgp.xml.in: show bgp regexp <regexp>	show bgp regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp route-map <route-map>	show bgp route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp segment-routing srv6	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp statistics	show bgp statistics
×	not yet documented	show-bgp.xml.in: show bgp statistics-all	show bgp statistics-all
✓	<i>show bgp &lt;ipv4/ipv6&gt; summary</i>	show-bgp.xml.in: show bgp summary	show bgp summary
×	not yet documented	show-bgp.xml.in: show bgp summary established	show bgp summary established
×	not yet documented	show-bgp.xml.in: show bgp summary failed	show bgp summary failed
×	not yet documented	show-bgp.xml.in: show bgp vni <vni>	show bgp vni <text>
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> type 1	show bgp vni <text> type 1
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> type 2	show bgp vni <text> type 2
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> type 3	show bgp vni <text> type 3

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> type ead	show bgp vni <text> type ead
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> type macip	show bgp vni <text> type macip
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> type multicast	show bgp vni <text> type multicast
×	not yet documented	show-bgp.xml.in: show bgp vni <vni> vtep <vtep>	show bgp vni <text> vtep <text>
×	<i>show bgp &lt;ipv4/ipv6&gt; vpn</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>show bgp &lt;ipv4/ipv6&gt; vpn summary</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf>	show bgp vrf <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community	show bgp vrf <text> community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community-list <community-list>	show bgp vrf <text> community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community-list <community-list> exact-match	show bgp vrf <text> community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community accept-own	show bgp vrf <text> community accept-own
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community accept-own-nextthop	show bgp vrf <text> community accept-own-nextthop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community blackhole	show bgp vrf <text> community blackhole
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community exact-match	show bgp vrf <text> community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community graceful-shutdown	show bgp vrf <text> community graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community llgr-stale	show bgp vrf <text> community llgr-stale

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community local-AS	show bgp vrf <text> community local-AS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community no-advertise	show bgp vrf <text> community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community no-export	show bgp vrf <text> community no-export
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community no-llgr	show bgp vrf <text> community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community no-peer	show bgp vrf <text> community no-peer
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community route-filter-translated-v4	show bgp vrf <text> community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community route-filter-translated-v6	show bgp vrf <text> community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community route-filter-v4	show bgp vrf <text> community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> community route-filter-v6	show bgp vrf <text> community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> dampening dampened-paths	show bgp vrf <text> dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> dampening flap-statistics	show bgp vrf <text> dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> dampening parameters	show bgp vrf <text> dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4	show bgp vrf <text> ipv4 <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 <ipv4> bestpath	show bgp vrf <text> ipv4 <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community	show bgp vrf <text> ipv4 community <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community-list <community-list>	show bgp vrf <text> ipv4 community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community-list <community-list> exact- match	show bgp vrf <text> ipv4 community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community accept-own	show bgp vrf <text> ipv4 community accept-own
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community accept-own- nexthop	show bgp vrf <text> ipv4 community accept-own- nexthop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community blackhole	show bgp vrf <text> ipv4 community blackhole
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community exact-match	show bgp vrf <text> ipv4 community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community graceful- shutdown	show bgp vrf <text> ipv4 community graceful- shutdown
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community llgr-stale	show bgp vrf <text> ipv4 community llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community local-AS	show bgp vrf <text> ipv4 community local-AS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community no-advertise	show bgp vrf <text> ipv4 community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community no-export	show bgp vrf <text> ipv4 community no-export
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community no-llgr	show bgp vrf <text> ipv4 community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community no-peer	show bgp vrf <text> ipv4 community no-peer
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community route-filter- translated-v4	show bgp vrf <text> ipv4 community route-filter- translated-v4

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community route-filter- translated-v6	show bgp vrf <text> ipv4 community route-filter- translated-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community route-filter-v4	show bgp vrf <text> ipv4 community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 community route-filter-v6	show bgp vrf <text> ipv4 community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 dampening dampened- paths	show bgp vrf <text> ipv4 dampening dampened- paths
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 dampening flap-statistics	show bgp vrf <text> ipv4 dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 dampening parameters	show bgp vrf <text> ipv4 dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec	show bgp vrf <text> ipv4 flowspec <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec <flowspec> best- path	show bgp vrf <text> ipv4 flowspec <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community	show bgp vrf <text> ipv4 ipv4 flowspec community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community-list <community-list>	show bgp vrf <text> ipv4 flowspec community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community-list exact-match	show bgp vrf <text> ipv4 flowspec community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community accept-own	show bgp vrf <text> ipv4 ipv4 flowspec community accept-own

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community accept-own-nexthop	show bgp vrf <text> ipv4 flowspec community accept-own-nexthop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community blackhole	show bgp vrf <text> ipv4 flowspec community blackhole
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community exact-match	show bgp vrf <text> ipv4 flowspec community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community graceful-shutdown	show bgp vrf <text> ipv4 flowspec community graceful-shutdown
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community llgr- stale	show bgp vrf <text> ipv4 flowspec community llgr- stale
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community local-AS	show bgp vrf <text> ipv4 flowspec community local-AS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community no- advertise	show bgp vrf <text> ipv4 flowspec community no- advertise
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community no- export	show bgp vrf <text> ipv4 flowspec community no- export
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community no- llgr	show bgp vrf <text> ipv4 flowspec community no- llgr
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community no- peer	show bgp vrf <text> ipv4 flowspec community no- peer
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community route-filter-translated-v4	show bgp vrf <text> ipv4 flowspec community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community route-filter-translated-v6	show bgp vrf <text> ipv4 flowspec community route-filter-translated-v6

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community route-filter-v4	show bgp vrf <text> ipv4 flowspec community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec community route-filter-v6	show bgp vrf <text> ipv4 flowspec community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec dampening dampened-paths	show bgp vrf <text> ipv4 flowspec dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec dampening flap- statistics	show bgp vrf <text> ipv4 flowspec dampening flap- statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec dampening pa- rameters	show bgp vrf <text> ipv4 flowspec dampening pa- rameters
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec detail	show bgp vrf <text> ipv4 flowspec detail
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec filter-list <filter- list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec large-community	show bgp vrf <text> ipv4 flowspec large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec large- community-list <large- community-list>	show bgp vrf <text> ipv4 flowspec large- community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec large- community-list <large- community-list> exact- match	show bgp vrf <text> ipv4 flowspec large- community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec large-community <large-community> exact- match	show bgp vrf <text> ipv4 flowspec large-community <text> exact-match

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec <flowspec> longer-prefixes	show bgp vrf <text> ipv4 flowspec <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec <flowspec> mul- tipath	show bgp vrf <text> ipv4 flowspec <text> multipath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors>	show bgp vrf <text> ipv4 flowspec neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> advertised- routes	show bgp vrf <text> ipv4 flowspec neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> dampened- routes	show bgp vrf <text> ipv4 flowspec neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> filtered- routes	show bgp vrf <text> ipv4 flowspec neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> flap-statistics	show bgp vrf <text> ipv4 flowspec neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> prefix-counts	show bgp vrf <text> ipv4 flowspec neighbors <text> prefix-counts
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> received- routes	show bgp vrf <text> ipv4 flowspec neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> received prefix-filter	show bgp vrf <text> ipv4 flowspec neighbors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec neighbors <neighbors> routes	show bgp vrf <text> ipv4 flowspec neighbors <text> routes

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec prefix-list <prefix-list>	show bgp vrf <text> ipv4 flowspec prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec regexp <regexp>	show bgp vrf <text> ipv4 flowspec regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec route-map <route-map>	show bgp vrf <text> ipv4 flowspec route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec statistics	show bgp vrf <text> ipv4 flowspec statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec summary	show bgp vrf <text> ipv4 flowspec summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec summary estab- lished	show bgp vrf <text> ipv4 flowspec summary estab- lished
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec summary failed	show bgp vrf <text> ipv4 flowspec summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 flowspec wide	show bgp vrf <text> ipv4 flowspec wide
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 large-community	show bgp vrf <text> ipv4 large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 large-community-list <large-community-list>	show bgp vrf <text> ipv4 large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 large-community-list <large-community-list> exact-match	show bgp vrf <text> ipv4 large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 large-community <large- community> exact-match	show bgp vrf <text> ipv4 large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 <ipv4> longer-prefixes	show bgp vrf <text> ipv4 <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 <ipv4> multipath	show bgp vrf <text> ipv4 <text> multipath

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors>	show bgp vrf <text> ipv4 neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> advertised-routes	show bgp vrf <text> ipv4 neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> dampened-routes	show bgp vrf <text> ipv4 neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> filtered-routes	show bgp vrf <text> ipv4 neighbors <text> filtered- routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> flap-statistics	show bgp vrf <text> ipv4 neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> prefix-counts	show bgp vrf <text> ipv4 neighbors <text> prefix- counts
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> received-routes	show bgp vrf <text> ipv4 neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> re- ceived prefix-filter	show bgp vrf <text> ipv4 neighbors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 neighbors <neighbors> routes	show bgp vrf <text> ipv4 neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 prefix-list <prefix-list>	show bgp vrf <text> ipv4 prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 regex <regex>	show bgp vrf <text> ipv4 regex <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 route-map <route-map>	show bgp vrf <text> ipv4 route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 statistics	show bgp vrf <text> ipv4 statistics

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 summary	show bgp vrf <text> ipv4 summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 summary established	show bgp vrf <text> ipv4 summary established
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 summary failed	show bgp vrf <text> ipv4 summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn	show bgp vrf <text> ipv4 vpn <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn <vpn> bestpath	show bgp vrf <text> ipv4 vpn <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community	show bgp vrf <text> ipv4 vpn community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community-list <community-list>	show bgp vrf <text> ipv4 vpn community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community- list <community-list> exact-match	show bgp vrf <text> ipv4 vpn community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community accept-own	show bgp vrf <text> ipv4 vpn community accept-own
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community accept-own-nexthop	show bgp vrf <text> ipv4 vpn community accept-own-nexthop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community blackhole	show bgp vrf <text> ipv4 vpn community blackhole
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community exact-match	show bgp vrf <text> ipv4 vpn community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community graceful- shutdown	show bgp vrf <text> ipv4 vpn community graceful- shutdown
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community llgr-stale	show bgp vrf <text> ipv4 vpn community llgr-stale

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community local-AS	show bgp vrf <text> ipv4 vpn community local-AS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community no-advertise	show bgp vrf <text> ipv4 vpn community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community no-export	show bgp vrf <text> ipv4 vpn community no-export
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community no-llgr	show bgp vrf <text> ipv4 vpn community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community no-peer	show bgp vrf <text> ipv4 vpn community no-peer
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community route-filter-translated-v4	show bgp vrf <text> ipv4 vpn community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community route-filter-translated-v6	show bgp vrf <text> ipv4 vpn community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community route-filter-v4	show bgp vrf <text> ipv4 vpn community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn community route-filter-v6	show bgp vrf <text> ipv4 vpn community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn dampening dampened-paths	show bgp vrf <text> ipv4 vpn dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn dampening flap-statistics	show bgp vrf <text> ipv4 vpn dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn dampening parame- ters	show bgp vrf <text> ipv4 vpn dampening parame- ters
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn filter-list <filter-list>	Nothing found in VyOS

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn large-community	show bgp vrf <text> ipv4 vpn large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn large-community-list <large-community-list>	show bgp vrf <text> ipv4 vpn large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn large-community-list <large-community-list> exact-match	show bgp vrf <text> ipv4 vpn large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn large-community <large-community> exact-match	show bgp vrf <text> ipv4 vpn large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn <vpn> longer-prefixes	show bgp vrf <text> ipv4 vpn <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn <vpn> multipath	show bgp vrf <text> ipv4 vpn <text> multipath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neigh- bors>	show bgp vrf <text> ipv4 vpn neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neigh- bors> advertised-routes	show bgp vrf <text> ipv4 vpn neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neigh- bors> dampened-routes	show bgp vrf <text> ipv4 vpn neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neigh- bors> filtered-routes	show bgp vrf <text> ipv4 vpn neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neigh- bors> flap-statistics	show bgp vrf <text> ipv4 vpn neighbors <text> flap- statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neigh- bors> prefix-counts	show bgp vrf <text> ipv4 vpn neighbors <text> prefix-counts

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neighbors> received-routes	show bgp vrf <text> ipv4 vpn neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neighbors> received prefix-filter	show bgp vrf <text> ipv4 vpn neighbors <text> re- ceived prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn neighbors <neighbors> routes	show bgp vrf <text> ipv4 vpn neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn prefix-list <prefix- list>	show bgp vrf <text> ipv4 vpn prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn regexp <regexp>	show bgp vrf <text> ipv4 vpn regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn route-map <route-map>	show bgp vrf <text> ipv4 vpn route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn statistics	show bgp vrf <text> ipv4 vpn statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn summary	show bgp vrf <text> ipv4 vpn summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn summary established	show bgp vrf <text> ipv4 vpn summary established
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn summary failed	show bgp vrf <text> ipv4 vpn summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 vpn wide	show bgp vrf <text> ipv4 vpn wide
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv4 wide	show bgp vrf <text> ipv4 wide
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 <text>	show bgp vrf <text> ipv6 <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 <ipv6> bestpath	show bgp vrf <text> ipv6 <text> bestpath

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community	show bgp vrf <text> ipv6 community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community-list <community-list>	show bgp vrf <text> ipv6 community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community-list <community-list> exact- match	show bgp vrf <text> ipv6 community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community accept-own	show bgp vrf <text> ipv6 community accept-own
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community accept-own- nexthop	show bgp vrf <text> ipv6 community accept-own- nexthop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community blackhole	show bgp vrf <text> ipv6 community blackhole
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community exact-match	show bgp vrf <text> ipv6 community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community graceful- shutdown	show bgp vrf <text> ipv6 community graceful- shutdown
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community llgr-stale	show bgp vrf <text> ipv6 community llgr-stale
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community local-AS	show bgp vrf <text> ipv6 community local-AS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community no-advertise	show bgp vrf <text> ipv6 community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community no-export	show bgp vrf <text> ipv6 community no-export
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community no-llgr	show bgp vrf <text> ipv6 community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community no-peer	show bgp vrf <text> ipv6 community no-peer

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community route-filter- translated-v4	show bgp vrf <text> ipv6 community route-filter- translated-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community route-filter- translated-v6	show bgp vrf <text> ipv6 community route-filter- translated-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community route-filter-v4	show bgp vrf <text> ipv6 community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 community route-filter-v6	show bgp vrf <text> ipv6 community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 dampening dampened- paths	show bgp vrf <text> ipv6 dampening dampened- paths
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 dampening flap-statistics	show bgp vrf <text> ipv6 dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 dampening parameters	show bgp vrf <text> ipv6 dampening parameters
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 large-community	show bgp vrf <text> ipv6 large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 large-community-list <large-community-list>	show bgp vrf <text> ipv6 large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 large-community-list <large-community-list> exact-match	show bgp vrf <text> ipv6 large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 large-community <large- community> exact-match	show bgp vrf <text> ipv6 large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 <ipv6> longer-prefixes	show bgp vrf <text> ipv6 <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 <ipv6> multipath	show bgp vrf <text> ipv6 <text> multipath

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors>	show bgp vrf <text> ipv6 neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> advertised-routes	show bgp vrf <text> ipv6 neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> dampened-routes	show bgp vrf <text> ipv6 neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> filtered-routes	show bgp vrf <text> ipv6 neighbors <text> filtered- routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> flap-statistics	show bgp vrf <text> ipv6 neighbors <text> flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> prefix-counts	show bgp vrf <text> ipv6 neighbors <text> prefix- counts
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> received-routes	show bgp vrf <text> ipv6 neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> re- ceived prefix-filter	show bgp vrf <text> ipv6 neighbors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 neighbors <neighbors> routes	show bgp vrf <text> ipv6 neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 prefix-list <prefix-list>	show bgp vrf <text> ipv6 prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 regex <regex>	show bgp vrf <text> ipv6 regex <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 route-map <route-map>	show bgp vrf <text> ipv6 route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 statistics	show bgp vrf <text> ipv6 statistics

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 summary	show bgp vrf <text> ipv6 summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 summary established	show bgp vrf <text> ipv6 summary established
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 summary failed	show bgp vrf <text> ipv6 summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn	show bgp vrf <text> ipv6 vpn <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn <vpn> bestpath	show bgp vrf <text> ipv6 vpn <text> bestpath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community	show bgp vrf <text> ipv6 vpn community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community-list <community-list>	show bgp vrf <text> ipv6 vpn community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community- list <community-list> exact-match	show bgp vrf <text> ipv6 vpn community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community accept-own	show bgp vrf <text> ipv6 vpn community accept-own
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community accept-own-nexthop	show bgp vrf <text> ipv6 vpn community accept-own-nexthop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community blackhole	show bgp vrf <text> ipv6 vpn community blackhole
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community exact-match	show bgp vrf <text> ipv6 vpn community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community graceful- shutdown	show bgp vrf <text> ipv6 vpn community graceful- shutdown
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community llgr-stale	show bgp vrf <text> ipv6 vpn community llgr-stale

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community local-AS	show bgp vrf <text> ipv6 vpn community local-AS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community no-advertise	show bgp vrf <text> ipv6 vpn community no-advertise
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community no-export	show bgp vrf <text> ipv6 vpn community no-export
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community no-llgr	show bgp vrf <text> ipv6 vpn community no-llgr
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community no-peer	show bgp vrf <text> ipv6 vpn community no-peer
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community route-filter-translated-v4	show bgp vrf <text> ipv6 vpn community route-filter-translated-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community route-filter-translated-v6	show bgp vrf <text> ipv6 vpn community route-filter-translated-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community route-filter-v4	show bgp vrf <text> ipv6 vpn community route-filter-v4
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn community route-filter-v6	show bgp vrf <text> ipv6 vpn community route-filter-v6
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn dampening dampened-paths	show bgp vrf <text> ipv6 vpn dampening dampened-paths
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn dampening flap-statistics	show bgp vrf <text> ipv6 vpn dampening flap-statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn dampening parame- ters	show bgp vrf <text> ipv6 vpn dampening parame- ters
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn filter-list <filter-list>	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn large-community	show bgp vrf <text> ipv6 vpn large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn large-community-list <large-community-list>	show bgp vrf <text> ipv6 vpn large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn large-community-list <large-community-list> exact-match	show bgp vrf <text> ipv6 vpn large-community-list <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn large-community <large-community> exact-match	show bgp vrf <text> ipv6 vpn large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn <vpn> longer-prefixes	show bgp vrf <text> ipv6 vpn <text> longer-prefixes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn <vpn> multipath	show bgp vrf <text> ipv6 vpn <text> multipath
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neigh- bors>	show bgp vrf <text> ipv6 vpn neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neigh- bors> advertised-routes	show bgp vrf <text> ipv6 vpn neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neigh- bors> dampened-routes	show bgp vrf <text> ipv6 vpn neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neigh- bors> filtered-routes	show bgp vrf <text> ipv6 vpn neighbors <text> filtered-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neigh- bors> flap-statistics	show bgp vrf <text> ipv6 vpn neighbors <text> flap- statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neigh- bors> prefix-counts	show bgp vrf <text> ipv6 vpn neighbors <text> prefix-counts

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neighbors> received-routes	show bgp vrf <text> ipv6 vpn neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neighbors> received prefix-filter	show bgp vrf <text> ipv6 vpn neighbors <text> re- ceived prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn neighbors <neighbors> routes	show bgp vrf <text> ipv6 vpn neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn prefix-list <prefix- list>	show bgp vrf <text> ipv6 vpn prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn regexp <regexp>	show bgp vrf <text> ipv6 vpn regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn route-map <route-map>	show bgp vrf <text> ipv6 vpn route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn statistics	show bgp vrf <text> ipv6 vpn statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn summary	show bgp vrf <text> ipv6 vpn summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn summary established	show bgp vrf <text> ipv6 vpn summary established
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn summary failed	show bgp vrf <text> ipv6 vpn summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 vpn wide	show bgp vrf <text> ipv6 vpn wide
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> ipv6 wide	show bgp vrf <text> ipv6 wide
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn	show bgp vrf <text> l2vpn evpn <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn all overlay	show bgp vrf <text> l2vpn evpn all overlay

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn all tags	show bgp vrf <text> l2vpn evpn all tags
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn community <community>	show bgp vrf <text> l2vpn evpn community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn community <community> exact-match	show bgp vrf <text> l2vpn evpn community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn es	show bgp vrf <text> l2vpn evpn es
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn es-evi	show bgp vrf <text> l2vpn evpn es-evi
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn es-evi detail	show bgp vrf <text> l2vpn evpn es-evi detail
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn es-evi vni <vni>	show bgp vrf <text> l2vpn evpn es-evi vni <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn es-vrf	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn es detail	show bgp vrf <text> l2vpn evpn es detail
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn import-rt	show bgp vrf <text> l2vpn evpn import-rt
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn large-community <large-community>	show bgp vrf <text> l2vpn evpn large-community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn large-community-list <large-community-list>	show bgp vrf <text> l2vpn evpn large-community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn large-community-list <large-community-list> exact-match	show bgp vrf <text> l2vpn evpn large-community-list <text> exact-match

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn large-community <large-community> exact-match	show bgp vrf <text> l2vpn evpn large-community <text> exact-match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn neighbors <neigh- bors>	show bgp vrf <text> l2vpn evpn neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn neighbors <neigh- bors> advertised-routes	show bgp vrf <text> l2vpn evpn neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn neighbors <neigh- bors> routes	show bgp vrf <text> l2vpn evpn neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn next-hops	Nothing found in VyOS
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn rd <rd>	show bgp vrf <text> l2vpn evpn rd <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn rd <rd> overlay	show bgp vrf <text> l2vpn evpn rd <text> overlay
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn rd <rd> tags	show bgp vrf <text> l2vpn evpn rd <text> tags
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route	show bgp vrf <text> l2vpn evpn route
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route detail	show bgp vrf <text> l2vpn evpn route detail
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type 1	show bgp vrf <text> l2vpn evpn route type 1
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type 2	show bgp vrf <text> l2vpn evpn route type 2
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type 3	show bgp vrf <text> l2vpn evpn route type 3
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type 4	show bgp vrf <text> l2vpn evpn route type 4

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type 5	show bgp vrf <text> l2vpn evpn route type 5
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type ead	show bgp vrf <text> l2vpn evpn route type ead
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type es	show bgp vrf <text> l2vpn evpn route type es
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type macip	show bgp vrf <text> l2vpn evpn route type macip
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type multicast	show bgp vrf <text> l2vpn evpn route type multicast
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route type prefix	show bgp vrf <text> l2vpn evpn route type prefix
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn route vni <vni>	show bgp vrf <text> l2vpn evpn route vni <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn statistics	show bgp vrf <text> l2vpn evpn statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn summary	show bgp vrf <text> l2vpn evpn summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn summary established	show bgp vrf <text> l2vpn evpn summary established
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn summary failed	show bgp vrf <text> l2vpn evpn summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> l2vpn evpn vni	show bgp vrf <text> l2vpn evpn vni <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> large- community	show bgp vrf <text> large- community <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> large-community-list <large-community-list>	show bgp vrf <text> large- community-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> large-community-list <large-community-list> exact-match	show bgp vrf <text> large- community-list <text> exact-match

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> large-community <large- community> exact-match	show bgp vrf <text> large- community <text> exact- match
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> mar- tian next-hop	show bgp vrf <text> mar- tian next-hop
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neigh- bors <neighbors>	show bgp vrf <text> neighbors <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neighbors <neighbors> advertised-routes	show bgp vrf <text> neighbors <text> advertised-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neighbors <neighbors> dampened-routes	show bgp vrf <text> neighbors <text> dampened-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neigh- bors <neighbors> filtered- routes	show bgp vrf <text> neighbors <text> filtered- routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neighbors <neighbors> flap-statistics	show bgp vrf <text> neighbors <text> flap- statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neigh- bors <neighbors> prefix- counts	show bgp vrf <text> neighbors <text> prefix- counts
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neighbors <neighbors> received-routes	show bgp vrf <text> neighbors <text> received-routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neigh- bors <neighbors> received prefix-filter	show bgp vrf <text> neighbors <text> received prefix-filter
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> neigh- bors <neighbors> routes	show bgp vrf <text> neighbors <text> routes
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> nex- thop <nexthop>	show bgp vrf <text> nex- thop <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> nex- thop <nexthop> detail	show bgp vrf <text> nex- thop <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> prefix-list <prefix-list>	show bgp vrf <text> prefix-list <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> regexp <regexp>	show bgp vrf <text> regexp <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> route-map <route-map>	show bgp vrf <text> route-map <text>
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> statistics	show bgp vrf <text> statistics
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> summary	show bgp vrf <text> summary
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> summary established	show bgp vrf <text> summary established
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> summary failed	show bgp vrf <text> summary failed
×	not yet documented	show-bgp.xml.in: show bgp vrf <vrf> wide	show bgp vrf <text> wide
×	not yet documented	show-bgp.xml.in: show bgp wide	show bgp wide
✓	<i>show bridge</i>	show-bridge.xml.in: show bridge <bridge>	show bridge <text>
×	not yet documented	show-bridge.xml.in: show bridge <bridge> detail	show bridge <text> detail
✓	<i>show bridge &lt;name&gt; fdb</i>	show-bridge.xml.in: show bridge <bridge> fdb	show bridge <text> fdb
✓	<i>show bridge &lt;name&gt; mdb</i>	show-bridge.xml.in: show bridge <bridge> mdb	show bridge <text> mdb
×	not yet documented	show-bridge.xml.in: show bridge <bridge> nexthop-group	show bridge <text> nexthop-group
×	not yet documented	show-bridge.xml.in: show bridge vlan	show bridge vlan
×	not yet documented	show-bridge.xml.in: show bridge vlan tunnel	show bridge vlan tunnel
×	not yet documented	show-bridge.xml.in: show bridge vni	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show cluster status
✓	<i>show configuration</i>	show-configuration.xml.in: show configuration	show configuration

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-configuration.xml.in: show configuration all	show configuration all
✓	<i>show configuration commands</i>	show-configuration.xml.in: show configuration commands	show configuration commands
×	not yet documented	show-configuration.xml.in: show configuration files	show configuration files
✓	<i>show configuration json</i>	show-configuration.xml.in: show configuration json	show configuration json
✓	<i>show configuration json pretty</i>	show-configuration.xml.in: show configuration json pretty	show configuration json pretty
✓	<i>show contrack-sync cache external</i>	contrack-sync.xml.in: show contrack-sync cache external	show contrack-sync cache external
×	not yet documented	contrack-sync.xml.in: show contrack-sync cache external expect	show contrack-sync cache external expect
×	not yet documented	contrack-sync.xml.in: show contrack-sync cache external main	show contrack-sync cache external main
✓	<i>show contrack-sync cache internal</i>	contrack-sync.xml.in: show contrack-sync cache internal	show contrack-sync cache internal
×	not yet documented	contrack-sync.xml.in: show contrack-sync cache internal expect	show contrack-sync cache internal expect
×	not yet documented	contrack-sync.xml.in: show contrack-sync cache internal main	show contrack-sync cache internal main
✓	<i>show contrack-sync statistics</i>	contrack-sync.xml.in: show contrack-sync statistics	show contrack-sync statistics
✓	<i>show contrack-sync status</i>	contrack-sync.xml.in: show contrack-sync status	show contrack-sync status
×	not yet documented	show-contrack.xml.in: show contrack statistics	show contrack statistics
✓	<i>show contrack table ipv4</i>	show-contrack.xml.in: show contrack table ipv4	show contrack table ipv4
×	not yet documented	show-contrack.xml.in: show contrack table ipv6	show contrack table ipv6

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show console-server ports</i>	show-console-server.xml.in: show console-server ports	show console-server ports
✓	<i>show console-server user</i>	show-console-server.xml.in: show console-server user	show console-server user
×	<i>show container</i>	Nothing found in XML Definitions	show container
×	<i>show container image</i>	Nothing found in XML Definitions	show container image
×	<i>show container log &lt;containername&gt;</i>	Nothing found in XML Definitions	show container log <text>
×	<i>show container network</i>	Nothing found in XML Definitions	show container network
×	not yet documented	Nothing found in XML Definitions	show date
×	not yet documented	Nothing found in XML Definitions	show date utc
×	not yet documented	Nothing found in XML Definitions	show date utc maya
×	not yet documented	Nothing found in XML Definitions	show dhcp client leases
×	not yet documented	Nothing found in XML Definitions	show dhcp client leases interface <text>
×	<i>show dhcp server leases</i>	Nothing found in XML Definitions	show dhcp server leases
×	<i>show dhcp server leases origin [local   remote]</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>show dhcp server leases pool &lt;pool&gt;</i>	Nothing found in XML Definitions	show dhcp server leases pool <text>
×	<i>show dhcp server leases sort &lt;key&gt;</i>	Nothing found in XML Definitions	show dhcp server leases sort <text>
×	<i>show dhcp server leases state &lt;state&gt;</i>	Nothing found in XML Definitions	show dhcp server leases state <text>
×	<i>show dhcp server statistics</i>	Nothing found in XML Definitions	show dhcp server statistics
×	<i>show dhcp server statistics pool &lt;pool&gt;</i>	Nothing found in XML Definitions	show dhcp server statistics pool <text>
×	<i>show dhcpv6 server leases</i>	Nothing found in XML Definitions	show dhcpv6 server leases
×	<i>show dhcpv6 server leases pool &lt;pool&gt;</i>	Nothing found in XML Definitions	show dhcpv6 server leases pool <text>
×	<i>show dhcpv6 server leases sort &lt;key&gt;</i>	Nothing found in XML Definitions	show dhcpv6 server leases sort <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>show dhcpv6 server leases state &lt;state&gt;</i>	Nothing found in XML Definitions	show dhcpv6 server leases state <text>
×	not yet documented	disks.xml.in: show disk <disk> format	show disk <text> format
×	not yet documented	Nothing found in XML Definitions	show dns dynamic status
×	not yet documented	Nothing found in XML Definitions	show dns forwarding statistics
×	not yet documented	show-environment.xml.in: show environment sensors	show environment sensors
×	not yet documented	show-evpn.xml.in: show evpn access-vlan	show evpn access-vlan <text> <text>
×	not yet documented	show-evpn.xml.in: show evpn access-vlan de- tail	show evpn access-vlan de- tail
×	not yet documented	show-evpn.xml.in: show evpn access-vlan <access-vlan> node.tag	Nothing found in VyOS
×	not yet documented	show-evpn.xml.in: show evpn arp-cache vni <vni>	show evpn arp-cache vni <text>
×	not yet documented	show-evpn.xml.in: show evpn mac vni <vni>	show evpn mac vni <text>
×	not yet documented	show-evpn.xml.in: show evpn next-hops vni <vni>	show evpn next-hops vni <text>
×	not yet documented	show-evpn.xml.in: show evpn rmac vni <vni>	show evpn rmac vni <text>
×	not yet documented	Nothing found in XML Definitions	show file <text>
✓	<i>show firewall</i>	firewall.xml.in: show firewall	show firewall
×	<i>show firewall bridge</i>	firewall.xml.in: show firewall bridge	Nothing found in VyOS
×	<i>show firewall bridge forward filter</i>	firewall.xml.in: show firewall bridge for- ward filter	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall bridge for- ward filter detail	Nothing found in VyOS
×	<i>show firewall bridge forward filter rule &lt;rule&gt;</i>	firewall.xml.in: show firewall bridge for- ward filter rule <rule>	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall bridge for- ward filter rule <rule> de- tail	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>show firewall bridge name &lt;name&gt;</i>	firewall.xml.in: show firewall bridge name <name>	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall bridge name <name> detail	Nothing found in VyOS
×	<i>show firewall bridge name &lt;name&gt; rule &lt;rule&gt;</i>	firewall.xml.in: show firewall bridge name <name> rule <rule>	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall bridge name <name> rule <rule> detail	Nothing found in VyOS
✓	<i>show firewall group &lt;name&gt;</i>	firewall.xml.in: show firewall group	show firewall group <text>
×	not yet documented	firewall.xml.in: show firewall group detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4	show firewall ipv4
×	<i>show firewall ipv4 [forward   input   output] filter</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>show firewall ipv4 [forward   input   output] filter rule &lt;1-999999&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4 forward filter	show firewall ipv4 forward filter
×	not yet documented	firewall.xml.in: show firewall ipv4 forward filter detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4 forward filter rule <rule>	show firewall ipv4 forward filter rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv4 forward filter rule <rule> detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4 input filter	show firewall ipv4 input filter
×	not yet documented	firewall.xml.in: show firewall ipv4 input filter detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4 input filter rule <rule>	show firewall ipv4 input filter rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv4 input filter rule <rule> detail	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show firewall ipv4 name &lt;name&gt;</i>	firewall.xml.in: show firewall ipv4 name <name>	show firewall ipv4 name <text>
×	not yet documented	firewall.xml.in: show firewall ipv4 name <name> detail	Nothing found in VyOS
✓	<i>show firewall ipv4 name &lt;name&gt; rule &lt;1-999999&gt;</i>	firewall.xml.in: show firewall ipv4 name <name> rule <rule>	show firewall ipv4 name <text> rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv4 name <name> rule <rule> detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4 output filter	show firewall ipv4 output filter
×	not yet documented	firewall.xml.in: show firewall ipv4 output filter detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv4 output filter rule <rule>	show firewall ipv4 output filter rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv4 output filter rule <rule> detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6	show firewall ipv6
×	<i>show firewall ipv6 [forward   input   output] filter</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>show firewall ipv6 [forward   input   output] filter rule &lt;1-999999&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 forward filter	show firewall ipv6 forward filter
×	not yet documented	firewall.xml.in: show firewall ipv6 forward filter detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 forward filter rule <rule>	show firewall ipv6 forward filter rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv6 forward filter rule <rule> detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 input filter	show firewall ipv6 input filter

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	firewall.xml.in: show firewall ipv6 input filter detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 input filter rule <rule>	show firewall ipv6 input filter rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv6 input filter rule <rule> detail	Nothing found in VyOS
×	<i>show firewall ipv6 ipv6-name &lt;name&gt;</i>	Nothing found in XML Definitions	show firewall ipv6 ipv6- name <text>
×	<i>show firewall ipv6 ipv6-name &lt;name&gt; rule &lt;1-999999&gt;</i>	Nothing found in XML Definitions	show firewall ipv6 ipv6- name <text> rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv6 name <name>	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 name <name> detail	Nothing found in VyOS
×	<i>show firewall ipv6 name &lt;name&gt; rule &lt;1-999999&gt;</i>	firewall.xml.in: show firewall ipv6 name <name> rule <rule>	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 name <name> rule <rule> detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 output filter	show firewall ipv6 output filter
×	not yet documented	firewall.xml.in: show firewall ipv6 output filter detail	Nothing found in VyOS
×	not yet documented	firewall.xml.in: show firewall ipv6 output filter rule <rule>	show firewall ipv6 output filter rule <text>
×	not yet documented	firewall.xml.in: show firewall ipv6 output filter rule <rule> detail	Nothing found in VyOS
✓	<i>show firewall statistics</i>	firewall.xml.in: show firewall statistics	show firewall statistics
×	not yet documented	firewall.xml.in: show firewall statistics de- tail	Nothing found in VyOS
✓	<i>show firewall summary</i>	firewall.xml.in: show firewall summary	show firewall summary
×	<i>show firewall zone-policy</i>	firewall.xml.in: show firewall zone-policy	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>show firewall zone-policy zone &lt;zone&gt;</i>	firewall.xml.in: show firewall zone-policy zone <zone>	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show flow-accounting
×	<i>show flow-accounting interface &lt;interface&gt;</i>	Nothing found in XML Definitions	show flow-accounting interface <text>
×	<i>show flow-accounting interface &lt;interface&gt; host &lt;address&gt;</i>	Nothing found in XML Definitions	show flow-accounting interface <text> host <text>
×	not yet documented	Nothing found in XML Definitions	show flow-accounting interface <text> port <text>
×	not yet documented	Nothing found in XML Definitions	show flow-accounting interface <text> top <text>
×	not yet documented	show-hardware.xml.in: show hardware cpu	show hardware cpu
×	not yet documented	show-hardware.xml.in: show hardware cpu detail	show hardware cpu detail
×	not yet documented	show-hardware.xml.in: show hardware cpu summary	show hardware cpu summary
×	not yet documented	show-hardware.xml.in: show hardware dmi	show hardware dmi
×	not yet documented	show-hardware.xml.in: show hardware mem	show hardware mem
×	not yet documented	show-hardware.xml.in: show hardware pci	show hardware pci
×	not yet documented	show-hardware.xml.in: show hardware pci detail	show hardware pci detail
×	not yet documented	show-hardware.xml.in: show hardware storage nvme	show hardware storage nvme
×	not yet documented	show-hardware.xml.in: show hardware storage scsi	show hardware storage scsi
×	not yet documented	show-hardware.xml.in: show hardware storage scsi detail	show hardware storage scsi detail
×	not yet documented	show-hardware.xml.in: show hardware storage smart <smart>	show hardware storage smart <text>
✓	<i>show hardware usb</i>	show-hardware.xml.in: show hardware usb	show hardware usb
×	not yet documented	show-hardware.xml.in: show hardware usb detail	show hardware usb detail
✓	<i>show hardware usb serial</i>	show-hardware.xml.in: show hardware usb serial	show hardware usb serial

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-history.xml.in: show history <history>	show history <text>
×	not yet documented	show-history.xml.in: show history brief	show history brief
×	not yet documented	show-host.xml.in: show host date	show host date
×	not yet documented	show-host.xml.in: show host domain	show host domain
×	not yet documented	show-host.xml.in: show host lookup <lookup>	show host lookup <text>
×	not yet documented	show-host.xml.in: show host name	show host name
×	not yet documented	show-host.xml.in: show host os	show host os
×	not yet documented	show-interfaces.xml.in: show interfaces	show interfaces
✓	<i>show interfaces bonding &lt;interface&gt;</i>	show-interfaces-bonding.xml.in: show interfaces bonding	show interfaces bonding <text>
×	not yet documented	show-interfaces-bonding.xml.in: show interfaces bonding <bonding> brief	show interfaces bonding <text> brief
✓	<i>show interfaces bonding &lt;interface&gt; detail</i>	show-interfaces-bonding.xml.in: show interfaces bonding detail	show interfaces bonding <text> detail
×	not yet documented	show-interfaces-bonding.xml.in: show interfaces bonding slaves	show interfaces bonding slaves
×	not yet documented	show-interfaces-bonding.xml.in: show interfaces bonding <bonding> vif <vif>	show interfaces bonding <text> vif <text>
×	not yet documented	show-interfaces-bonding.xml.in: show interfaces bonding <bonding> vif <vif> brief	show interfaces bonding <text> vif <text> brief
×	not yet documented	show-interfaces-bridge.xml.in: show interfaces bridge	show interfaces bridge <text>
×	not yet documented	show-interfaces-bridge.xml.in: show interfaces bridge <bridge> brief	show interfaces bridge <text> brief

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-interfaces-bridge.xml.in: show interfaces bridge detail	show interfaces bridge detail
×	not yet documented	show-interfaces.xml.in: show interfaces counters	show interfaces counters
×	not yet documented	show-interfaces.xml.in: show interfaces detail	show interfaces detail
✓	<i>show interfaces dummy &lt;interface&gt;</i>	show-interfaces-dummy.xml.in: show interfaces dummy	show interfaces dummy <text>
×	not yet documented	show-interfaces-dummy.xml.in: show interfaces dummy <dummy> brief	show interfaces dummy <text> brief
×	not yet documented	show-interfaces-dummy.xml.in: show interfaces dummy detail	show interfaces dummy detail
✓	<i>show interfaces ethernet &lt;interface&gt;</i>	show-interfaces-ethernet.xml.in: show interfaces ethernet	show interfaces ethernet <text>
×	not yet documented	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> brief	show interfaces ethernet <text> brief
×	not yet documented	show-interfaces-ethernet.xml.in: show interfaces ethernet detail	show interfaces ethernet detail
×	not yet documented	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> identify	show interfaces ethernet <text> identify
✓	<i>show interfaces ethernet &lt;interface&gt; physical</i>	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> physical	show interfaces ethernet <text> physical
✓	<i>show interfaces ethernet &lt;interface&gt; physical offload</i>	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> physical offload	show interfaces ethernet <text> physical offload
×	not yet documented	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> statistics	show interfaces ethernet <text> statistics

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show interfaces ethernet &lt;interface&gt; transceiver</i>	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> transceiver	show interfaces ethernet <text> transceiver
×	not yet documented	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> vif <vif>	show interfaces ethernet <text> vif <text>
×	not yet documented	show-interfaces-ethernet.xml.in: show interfaces ethernet <ethernet> vif <vif> brief	show interfaces ethernet <text> vif <text> brief
×	not yet documented	show-interfaces-geneve.xml.in: show interfaces geneve	show interfaces geneve <text>
×	not yet documented	show-interfaces-geneve.xml.in: show interfaces geneve <geneve> brief	show interfaces geneve <text> brief
×	not yet documented	show-interfaces-geneve.xml.in: show interfaces geneve detail	show interfaces geneve detail
×	not yet documented	show-interfaces-input.xml.in: show interfaces input	show interfaces input <text>
×	not yet documented	show-interfaces-input.xml.in: show interfaces input <input> brief	show interfaces input <text> brief
×	not yet documented	show-interfaces-input.xml.in: show interfaces input detail	show interfaces input detail
×	not yet documented	show-interfaces-l2tpv3.xml.in: show interfaces l2tpv3	show interfaces l2tpv3 <text>
×	not yet documented	show-interfaces-l2tpv3.xml.in: show interfaces l2tpv3 <l2tpv3> brief	show interfaces l2tpv3 <text> brief
×	not yet documented	show-interfaces-l2tpv3.xml.in: show interfaces l2tpv3 detail	show interfaces l2tpv3 detail
✓	<i>show interfaces loopback</i>	show-interfaces-loopback.xml.in: show interfaces loopback	show interfaces loopback <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-interfaces-loopback.xml.in: show interfaces loopback <loopback> brief	show interfaces loopback <text> brief
×	not yet documented	show-interfaces-loopback.xml.in: show interfaces loopback detail	show interfaces loopback detail
×	<i>show interfaces loopback lo</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>show interfaces macsec &lt;interface&gt;</i>	show-interfaces-macsec.xml.in: show interfaces macsec <macsec>	show interfaces macsec <text>
×	not yet documented	openvpn.xml.in: show interfaces openvpn <openvpn>	show interfaces openvpn <text>
×	not yet documented	openvpn.xml.in: show interfaces openvpn <openvpn> brief	show interfaces openvpn <text> brief
×	not yet documented	openvpn.xml.in: show interfaces openvpn detail	show interfaces openvpn detail
×	not yet documented	openvpn.xml.in: show interfaces openvpn <openvpn> user <user> mfa qr code	show interfaces openvpn <text> user <text> mfa qr code
×	not yet documented	openvpn.xml.in: show interfaces openvpn <openvpn> user <user> mfa secret	show interfaces openvpn <text> user <text> mfa secret
×	not yet documented	openvpn.xml.in: show interfaces openvpn <openvpn> user <user> mfa uri	show interfaces openvpn <text> user <text> mfa uri
✓	<i>show interfaces pppoe &lt;interface&gt;</i>	show-interfaces-pppoe.xml.in: show interfaces pppoe	show interfaces pppoe <text>
×	not yet documented	show-interfaces-pppoe.xml.in: show interfaces pppoe detail	show interfaces pppoe detail
×	not yet documented	show-interfaces-pppoe.xml.in: show interfaces pppoe <pppoe> log	show interfaces pppoe <text> log
×	<i>show interfaces pppoe &lt;interface&gt; queue</i>	Nothing found in XML Definitions	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-interfaces-pppoe.xml.in: show interfaces pppoe <pppoe> statistics	show interfaces pppoe <text> statistics
×	not yet documented	show-interfaces-pseudo-ethernet.xml.in: show interfaces pseudo-ethernet	show interfaces pseudo-ethernet <text>
×	not yet documented	show-interfaces-pseudo-ethernet.xml.in: show interfaces pseudo-ethernet <pseudo-ethernet> brief	show interfaces pseudo-ethernet <text> brief
×	not yet documented	show-interfaces-pseudo-ethernet.xml.in: show interfaces pseudo-ethernet detail	show interfaces pseudo-ethernet detail
✓	<i>show interfaces sstpc &lt;interface&gt;</i>	show-interfaces-sstpc.xml.in: show interfaces sstpc	show interfaces sstpc <text>
×	not yet documented	show-interfaces-sstpc.xml.in: show interfaces sstpc detail	show interfaces sstpc detail
×	not yet documented	show-interfaces-sstpc.xml.in: show interfaces sstpc <sstpc> log	show interfaces sstpc <text> log
×	not yet documented	show-interfaces-sstpc.xml.in: show interfaces sstpc <sstpc> statistics	show interfaces sstpc <text> statistics
×	not yet documented	show-interfaces.xml.in: show interfaces summary	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show interfaces system
×	not yet documented	Nothing found in XML Definitions	show interfaces system enabled
×	not yet documented	show-interfaces-tunnel.xml.in: show interfaces tunnel	show interfaces tunnel <text>
×	not yet documented	show-interfaces-tunnel.xml.in: show interfaces tunnel <tunnel> brief	show interfaces tunnel <text> brief
×	not yet documented	show-interfaces-tunnel.xml.in: show interfaces tunnel detail	show interfaces tunnel detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show interfaces virtual-ethernet &lt;interface&gt;</i>	show-interfaces-virtual-ethernet.xml.in: show interfaces virtual-ethernet	show interfaces virtual-ethernet <text>
×	not yet documented	show-interfaces-virtual-ethernet.xml.in: show interfaces virtual-ethernet <virtual-ethernet> brief	show interfaces virtual-ethernet <text> brief
×	not yet documented	show-interfaces-virtual-ethernet.xml.in: show interfaces virtual-ethernet detail	show interfaces virtual-ethernet detail
×	not yet documented	Nothing found in XML Definitions	show interfaces vrrp <text>
×	not yet documented	Nothing found in XML Definitions	show interfaces vrrp <text> brief
×	not yet documented	Nothing found in XML Definitions	show interfaces vrrp detail
×	not yet documented	show-interfaces-vti.xml.in: show interfaces vti	show interfaces vti <text>
×	not yet documented	show-interfaces-vti.xml.in: show interfaces vti <vti> brief	show interfaces vti <text> brief
×	not yet documented	show-interfaces-vti.xml.in: show interfaces vti detail	show interfaces vti detail
×	not yet documented	show-interfaces-vxlan.xml.in: show interfaces vxlan	show interfaces vxlan <text>
×	not yet documented	show-interfaces-vxlan.xml.in: show interfaces vxlan <vxlan> brief	show interfaces vxlan <text> brief
×	not yet documented	show-interfaces-vxlan.xml.in: show interfaces vxlan de- tail	show interfaces vxlan de- tail
✓	<i>show interfaces wireguard &lt;interface&gt;</i>	show-interfaces-wireguard.xml.in: show interfaces wireguard	show interfaces wireguard <text>
×	not yet documented	show-interfaces-wireguard.xml.in: show interfaces wireguard <wireguard> allowed-ips	show interfaces wireguard <text> allowed-ips

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-interfaces-wireguard.xml.in: show interfaces wireguard detail	show interfaces wireguard detail
×	not yet documented	show-interfaces-wireguard.xml.in: show interfaces wireguard <wireguard> endpoints	show interfaces wireguard <text> endpoints
×	not yet documented	show-interfaces-wireguard.xml.in: show interfaces wireguard <wireguard> peers	show interfaces wireguard <text> peers
✓	<i>show interfaces wireguard &lt;interface&gt; public-key</i>	show-interfaces-wireguard.xml.in: show interfaces wireguard <wireguard> public-key	show interfaces wireguard <text> public-key
×	not yet documented	show-interfaces-wireguard.xml.in: show interfaces wireguard <wireguard> summary	show interfaces wireguard <text> summary
×	<i>show interfaces wireguard wg01 summary</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>show interfaces wireless &lt;wlanX&gt;</i>	show-interfaces-wireless.xml.in: show interfaces wireless <wireless>	show interfaces wireless <text>
✓	<i>show interfaces wireless &lt;wlanX&gt; brief</i>	show-interfaces-wireless.xml.in: show interfaces wireless <wireless> brief	show interfaces wireless <text> brief
✓	<i>show interfaces wireless detail</i>	show-interfaces-wireless.xml.in: show interfaces wireless detail	show interfaces wireless detail
✓	<i>show interfaces wireless info</i>	show-interfaces-wireless.xml.in: show interfaces wireless info	show interfaces wireless info
×	<i>show interfaces wireless &lt;wlanX&gt; queue</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>show interfaces wireless &lt;wlanX&gt; scan</i>	show-interfaces-wireless.xml.in: show interfaces wireless <wireless> scan	show interfaces wireless <text> scan

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-interfaces-wireless.xml.in: show interfaces wireless <wireless> scan detail	show interfaces wireless <text> scan detail
×	not yet documented	show-interfaces-wireless.xml.in: show interfaces wireless <wireless> stations	show interfaces wireless <text> stations
×	not yet documented	show-interfaces-wireless.xml.in: show interfaces wireless <wireless> vif <vif>	show interfaces wireless <text> vif <text>
×	not yet documented	show-interfaces-wireless.xml.in: show interfaces wireless <wireless> vif <vif> brief	show interfaces wireless <text> vif <text> brief
✓	<i>show interfaces wwan &lt;interface&gt;</i>	show-interfaces-wwan.xml.in: show interfaces wwan	show interfaces wwan <text>
✓	<i>show interfaces wwan &lt;interface&gt; capabilities</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> capabilities	show interfaces wwan <text> capabilities
×	not yet documented	show-interfaces-wwan.xml.in: show interfaces wwan de- tail	show interfaces wwan <text> detail
✓	<i>show interfaces wwan &lt;interface&gt; firmware</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> firmware	show interfaces wwan <text> firmware
✓	<i>show interfaces wwan &lt;interface&gt; imei</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> imei	show interfaces wwan <text> imei
✓	<i>show interfaces wwan &lt;interface&gt; imsi</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> imsi	show interfaces wwan <text> imsi
×	not yet documented	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> log	show interfaces wwan <text> log
✓	<i>show interfaces wwan &lt;interface&gt; model</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> model	show interfaces wwan <text> model

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show interfaces wwan</i> <i>&lt;interface&gt; msisdn</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> msisdn	show interfaces wwan <text> msisdn
✓	<i>show interfaces wwan</i> <i>&lt;interface&gt; revision</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> revision	show interfaces wwan <text> revision
✓	<i>show interfaces wwan</i> <i>&lt;interface&gt; signal</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> signal	show interfaces wwan <text> signal
✓	<i>show interfaces wwan</i> <i>&lt;interface&gt; sim</i>	show-interfaces-wwan.xml.in: show interfaces wwan <wwan> sim	show interfaces wwan <text> sim
×	<i>show interfaces wwan</i> <i>&lt;interface&gt; summary</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-ip-access-paths-prefix-community-lists.xml.in: show ip access-list <access-list>	show ip access-list <text>
×	not yet documented	show-ip-access-paths-prefix-community-lists.xml.in: show ip as-path-access-list <as-path-access-list>	show ip as-path-access-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp	show ip bgp
×	not yet documented	show-ip-bgp.xml.in: show ip bgp attribute-info	show ip bgp attribute-info
✓	<i>show ip bgp</i> <i>cidr-only</i>	show-ip-bgp.xml.in: show ip bgp cidr-only	show ip bgp cidr-only
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community	show ip bgp community <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community-info	show ip bgp community-info
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community-list <community-list>	show ip bgp community-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community-list <community-list> exact-match	show ip bgp community-list <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community accept-own	show ip bgp community accept-own

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community accept-own-nexthop	show ip bgp community accept-own-nexthop
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community blackhole	show ip bgp community blackhole
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community exact-match	show ip bgp community <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community graceful-shutdown	show ip bgp community graceful-shutdown
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community llgr-stale	show ip bgp community llgr-stale
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community local-AS	show ip bgp community local-AS
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community no-advertise	show ip bgp community no-advertise
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community no-export	show ip bgp community no-export
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community no-llgr	show ip bgp community no-llgr
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community no-peer	show ip bgp community no-peer
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community route-filter-translated-v4	show ip bgp community route-filter-translated-v4
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community route-filter-translated-v6	show ip bgp community route-filter-translated-v6
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community route-filter-v4	show ip bgp community route-filter-v4
×	not yet documented	show-ip-bgp.xml.in: show ip bgp community route-filter-v6	show ip bgp community route-filter-v6
×	not yet documented	show-ip-bgp.xml.in: show ip bgp dampening dampened-paths	show ip bgp dampening dampened-paths
×	not yet documented	show-ip-bgp.xml.in: show ip bgp dampening flap-statistics	show ip bgp dampening flap-statistics

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp dampening parameters	show ip bgp dampening parameters
×	not yet documented	show-ip-bgp.xml.in: show ip bgp filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast <unicast>	show ip bgp ipv4 unicast <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast cidr-only	show ip bgp ipv4 unicast cidr-only
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast community <community>	show ip bgp ipv4 unicast community <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast community-list <community-list>	show ip bgp ipv4 unicast community-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast community-list <community-list> exact-match	show ip bgp ipv4 unicast community-list <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast neighbors <neighbors>	show ip bgp ipv4 unicast neighbors <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast neighbors <neighbors> advertised-routes	show ip bgp ipv4 unicast neighbors <text> advertised-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast neighbors <neighbors> filtered-routes	show ip bgp ipv4 unicast neighbors <text> filtered-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast neighbors <neighbors> prefix-counts	show ip bgp ipv4 unicast neighbors <text> prefix-counts
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast neighbors <neighbors> received-routes	show ip bgp ipv4 unicast neighbors <text> received-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast neighbors <neighbors> routes	show ip bgp ipv4 unicast neighbors <text> routes

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast paths	show ip bgp ipv4 unicast paths
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast prefix-list <prefix-list>	show ip bgp ipv4 unicast prefix-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast regexp <regexp>	show ip bgp ipv4 unicast regexp <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast route-map <route-map>	show ip bgp ipv4 unicast route-map <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp ipv4 unicast summary	show ip bgp ipv4 unicast summary
×	not yet documented	show-ip-bgp.xml.in: show ip bgp large-community	show ip bgp large-community <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp large-community-info	show ip bgp large-community-info
×	not yet documented	show-ip-bgp.xml.in: show ip bgp large-community-list <large-community-list>	show ip bgp large-community-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp large-community-list <large-community-list> exact-match	show ip bgp large-community-list <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp large-community <large-community> exact-match	show ip bgp large-community <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp memory	show ip bgp memory
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors>	show ip bgp neighbors <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> advertised-routes	show ip bgp neighbors <text> advertised-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> dampened-routes	show ip bgp neighbors <text> dampened-routes

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> filtered- routes	show ip bgp neighbors <text> filtered-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> flap-statistics	show ip bgp neighbors <text> flap-statistics
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> prefix-counts	show ip bgp neighbors <text> prefix-counts
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> received- routes	show ip bgp neighbors <text> received-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> received prefix-filter	show ip bgp neighbors <text> received prefix- filter
×	not yet documented	show-ip-bgp.xml.in: show ip bgp neighbors <neighbors> routes	show ip bgp neighbors <text> routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp paths	show ip bgp paths
×	not yet documented	show-ip-bgp.xml.in: show ip bgp prefix-list <prefix-list>	show ip bgp prefix-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp regexp <reg- exp>	show ip bgp regexp <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp route-map <route-map>	show ip bgp route-map <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp statistics	show ip bgp statistics
×	not yet documented	show-ip-bgp.xml.in: show ip bgp summary	show ip bgp summary
×	not yet documented	show-ip-bgp.xml.in: show ip bgp summary es- tablished	show ip bgp summary es- tablished
×	not yet documented	show-ip-bgp.xml.in: show ip bgp summary failed	show ip bgp summary failed
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf>	show ip bgp vrf <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> attribute-info	show ip bgp vrf <text> attribute-info

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> cidr-only	show ip bgp vrf <text> cidr-only
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community	show ip bgp vrf <text> community <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community-info	show ip bgp vrf <text> community-info
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community-list <community-list>	show ip bgp vrf <text> community-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community-list <community-list> exact-match	show ip bgp vrf <text> community-list <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community accept-own	show ip bgp vrf <text> community accept-own
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community accept-own-nextthop	show ip bgp vrf <text> community accept-own-nextthop
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community blackhole	show ip bgp vrf <text> community blackhole
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community exact-match	show ip bgp vrf <text> community <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community graceful-shutdown	show ip bgp vrf <text> community graceful-shutdown
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community llgr-stale	show ip bgp vrf <text> community llgr-stale
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community local-AS	show ip bgp vrf <text> community local-AS
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community no-advertise	show ip bgp vrf <text> community no-advertise
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community no-export	show ip bgp vrf <text> community no-export

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community no-llgr	show ip bgp vrf <text> community no-llgr
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community no-peer	show ip bgp vrf <text> community no-peer
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community route-filter- translated-v4	show ip bgp vrf <text> community route-filter- translated-v4
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community route-filter- translated-v6	show ip bgp vrf <text> community route-filter- translated-v6
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community route-filter-v4	show ip bgp vrf <text> community route-filter-v4
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> community route-filter-v6	show ip bgp vrf <text> community route-filter-v6
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> dampening dampened- paths	show ip bgp vrf <text> dampening dampened- paths
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> dampening flap-statistics	show ip bgp vrf <text> dampening flap-statistics
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> dampening parameters	show ip bgp vrf <text> dampening parameters
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> filter-list <filter-list>	Nothing found in VyOS
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast <unicast>	show ip bgp vrf <text> ipv4 unicast <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast cidr-only	show ip bgp vrf <text> ipv4 unicast cidr-only
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast community <com- munity>	show ip bgp vrf <text> ipv4 unicast community <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast community- list <community-list>	show ip bgp vrf <text> ipv4 unicast community- list <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast community- list <community-list> exact-match	show ip bgp vrf <text> ipv4 unicast community- list <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast neighbors <neigh- bors>	show ip bgp vrf <text> ipv4 unicast neighbors <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast neighbors <neigh- bors> advertised-routes	show ip bgp vrf <text> ipv4 unicast neighbors <text> advertised-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast neighbors <neigh- bors> filtered-routes	show ip bgp vrf <text> ipv4 unicast neighbors <text> filtered-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast neighbors <neigh- bors> prefix-counts	show ip bgp vrf <text> ipv4 unicast neighbors <text> prefix-counts
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast neighbors <neigh- bors> received-routes	show ip bgp vrf <text> ipv4 unicast neighbors <text> received-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast neighbors <neigh- bors> routes	show ip bgp vrf <text> ipv4 unicast neighbors <text> routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast paths	show ip bgp vrf <text> ipv4 unicast paths
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast prefix-list <prefix- list>	show ip bgp vrf <text> ipv4 unicast prefix-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast regexp <regexp>	show ip bgp vrf <text> ipv4 unicast regexp <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast route-map <route- map>	show ip bgp vrf <text> ipv4 unicast route-map <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> ipv4 unicast summary	show ip bgp vrf <text> ipv4 unicast summary
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> large-community	show ip bgp vrf <text> large-community <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> large-community-info	show ip bgp vrf <text> large-community-info
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> large-community-list <large-community-list>	show ip bgp vrf <text> large-community-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> large-community-list <large-community-list> exact-match	show ip bgp vrf <text> large-community-list <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> large-community <large- community> exact-match	show ip bgp vrf <text> large-community <text> exact-match
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> memory	show ip bgp vrf <text> memory
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors>	show ip bgp vrf <text> neighbors <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> advertised-routes	show ip bgp vrf <text> neighbors <text> advertised-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> dampened-routes	show ip bgp vrf <text> neighbors <text> dampened-routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> filtered-routes	show ip bgp vrf <text> neighbors <text> filtered- routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> flap-statistics	show ip bgp vrf <text> neighbors <text> flap- statistics
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> prefix-counts	show ip bgp vrf <text> neighbors <text> prefix- counts
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> received-routes	show ip bgp vrf <text> neighbors <text> received-routes

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> re- ceived prefix-filter	show ip bgp vrf <text> neighbors <text> received prefix-filter
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> neighbors <neighbors> routes	show ip bgp vrf <text> neighbors <text> routes
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> paths	show ip bgp vrf <text> paths
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> prefix-list <prefix-list>	show ip bgp vrf <text> prefix-list <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> reg- exp <regex>	show ip bgp vrf <text> regex <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> route-map <route-map>	show ip bgp vrf <text> route-map <text>
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> statistics	show ip bgp vrf <text> statistics
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> summary	show ip bgp vrf <text> summary
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> summary established	show ip bgp vrf <text> summary established
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> summary failed	show ip bgp vrf <text> summary failed
×	not yet documented	show-ip-bgp.xml.in: show ip bgp vrf <vrf> wide	show ip bgp vrf <text> wide
×	not yet documented	show-ip-bgp.xml.in: show ip bgp wide	show ip bgp wide
×	not yet documented	show-ip-access-paths- prefix-community- lists.xml.in: show ip community-list <community-list>	show ip community-list <text>
×	not yet documented	show-ip-access-paths- prefix-community- lists.xml.in: show ip extcommunity-list <extcommunity-list>	show ip extcommunity-list <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-access-paths-prefix-community-lists.xml.in: show ip forwarding	show ip forwarding
×	not yet documented	Nothing found in XML Definitions	show ip groups
×	not yet documented	show-ip-igmp.xml.in: show ip igmp groups	show ip igmp groups
×	not yet documented	show-ip-igmp.xml.in: show ip igmp interface	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show ip igmp interfaces
×	not yet documented	show-ip-igmp.xml.in: show ip igmp join	show ip igmp join
×	not yet documented	show-ip-igmp.xml.in: show ip igmp sources	show ip igmp sources
×	not yet documented	show-ip-igmp.xml.in: show ip igmp statistics	show ip igmp statistics
×	not yet documented	show-ip-access-paths-prefix-community-lists.xml.in: show ip large-community-list <large-community-list>	show ip large-community-list <text>
×	not yet documented	multicast-group.xml.in: show ip multicast group	Nothing found in VyOS
×	not yet documented	multicast-group.xml.in: show ip multicast group interface <interface>	Nothing found in VyOS
×	not yet documented	show-ip-multicast.xml.in: show ip multicast interface	show ip multicast interface
×	not yet documented	show-ip-multicast.xml.in: show ip multicast route	show ip multicast route
×	not yet documented	show-ip-multicast.xml.in: show ip multicast summary	show ip multicast summary
×	not yet documented	show-ip.xml.in: show ip neighbors	show ip neighbors
×	not yet documented	show-ip.xml.in: show ip neighbors interface <interface>	show ip neighbors interface <text>
×	not yet documented	show-ip.xml.in: show ip neighbors state <state>	show ip neighbors state <text>
×	not yet documented	show-ip.xml.in: show ip nht	Nothing found in VyOS
×	not yet documented	show-ip.xml.in: show ip nht vrf <vrf>	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	<i>show ipoe-server sessions</i>	Nothing found in XML Definitions	show ipoe-server sessions
×	not yet documented	Nothing found in XML Definitions	show ipoe-server statistics
×	not yet documented	show-ip-ospf.xml.in: show ip ospf	show ip ospf
✓	<i>show ip ospf border-routers</i>	show-ip-ospf.xml.in: show ip ospf border-routers	show ip ospf border-routers
✓	<i>show ip ospf database &lt;type&gt; [A.B.C.D] [adv-router &lt;A.B.C.D&gt; self-originate]</i>	show-ip-ospf.xml.in: show ip ospf database	show ip ospf database
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database asbr-summary <asbr-summary>	show ip ospf database asbr-summary <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database asbr-summary <asbr-summary> adv-router <adv-router>	show ip ospf database asbr-summary <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database asbr-summary <asbr-summary> self-originate	show ip ospf database asbr-summary <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database external <external>	show ip ospf database external <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database external <external> adv-router <adv-router>	show ip ospf database external <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database external <external> self-originate	show ip ospf database external <text> self-originate
✓	<i>show ip ospf database max-age</i>	show-ip-ospf.xml.in: show ip ospf database max-age	show ip ospf database max-age
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database network <network>	show ip ospf database network <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database network <network> adv-router <adv-router>	show ip ospf database network <text> adv-router <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database network <network> self-originate	show ip ospf database network <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database nssa-external <nssa-external>	show ip ospf database nssa-external <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database nssa-external <nssa-external> adv-router <adv-router>	show ip ospf database nssa-external <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database nssa-external <nssa-external> self-originate	show ip ospf database nssa-external <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-area <opaque-area>	show ip ospf database opaque-area <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-area <opaque-area> adv-router <adv-router>	show ip ospf database opaque-area <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-area <opaque-area> self-originate	show ip ospf database opaque-area <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-as <opaque-as>	show ip ospf database opaque-as <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-as <opaque-as> adv-router <adv-router>	show ip ospf database opaque-as <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-as <opaque-as> self-originate	show ip ospf database opaque-as <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-link <opaque-link>	show ip ospf database opaque-link <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-link <opaque- link> adv-router <adv- router>	show ip ospf database opaque-link <text> adv- router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database opaque-link <opaque- link> self-originate	show ip ospf database opaque-link <text> self- originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database router <router>	show ip ospf database router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database router <router> adv-router <adv-router>	show ip ospf database router <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database router <router> self- originate	show ip ospf database router <text> self- originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database self- originate	show ip ospf database self- originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database summary <summary>	show ip ospf database summary <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database summary <summary> adv-router <adv-router>	show ip ospf database summary <text> adv- router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf database summary <summary> self-originate	show ip ospf database summary <text> self- originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf graceful- restart helper	show ip ospf graceful- restart helper
✓	<i>show ip ospf interface [&lt;interface&gt;]</i>	show-ip-ospf.xml.in: show ip ospf interface <in- terface>	show ip ospf interface <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf mpls ldp- sync	show ip ospf mpls ldp- sync
×	not yet documented	show-ip-ospf.xml.in: show ip ospf mpls ldp- sync interface <interface>	show ip ospf mpls ldp- sync interface <text>
✓	<i>show ip ospf neighbor &lt;interface&gt;</i>	show-ip-ospf.xml.in: show ip ospf neighbor <neighbor>	show ip ospf neighbor <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
✓	<i>show ip ospf neighbor detail</i>	show-ip-ospf.xml.in: show ip ospf neighbor detail	show ip ospf neighbor detail
✓	<i>show ip ospf route [detail]</i>	show-ip-ospf.xml.in: show ip ospf route	show ip ospf route
×	not yet documented	show-ip-ospf.xml.in: show ip ospf route detail	show ip ospf route detail
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf>	show ip ospf vrf <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> border-routers	show ip ospf vrf <text> border-routers
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database	show ip ospf vrf <text> database
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database asbr-summary <asbr-summary>	show ip ospf vrf <text> database asbr-summary <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database asbr-summary <asbr-summary> adv-router <adv-router>	show ip ospf vrf <text> database asbr-summary <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database asbr-summary <asbr-summary> self-originate	show ip ospf vrf <text> database asbr-summary <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database external <external>	show ip ospf vrf <text> database external <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database external <external> adv-router <adv-router>	show ip ospf vrf <text> database external <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database external <external> self-originate	show ip ospf vrf <text> database external <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database max-age	show ip ospf vrf <text> database max-age
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database network <network>	show ip ospf vrf <text> database network <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database network <network> adv-router <adv-router>	show ip ospf vrf <text> database network <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database network <network> self-originate	show ip ospf vrf <text> database network <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database nssa-external <nssa-external>	show ip ospf vrf <text> database nssa-external <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database nssa-external <nssa-external> adv-router <adv-router>	show ip ospf vrf <text> database nssa-external <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database nssa-external <nssa-external> self-originate	show ip ospf vrf <text> database nssa-external <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-area <opaque-area>	show ip ospf vrf <text> database opaque-area <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-area <opaque-area> adv-router <adv-router>	show ip ospf vrf <text> database opaque-area <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-area <opaque-area> self-originate	show ip ospf vrf <text> database opaque-area <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-as <opaque-as>	show ip ospf vrf <text> database opaque-as <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-as <opaque-as> adv-router <adv-router>	show ip ospf vrf <text> database opaque-as <text> adv-router <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-as <opaque-as> self-originate	show ip ospf vrf <text> database opaque-as <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-link <opaque-link>	show ip ospf vrf <text> database opaque-link <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-link <opaque-link> adv-router <adv-router>	show ip ospf vrf <text> database opaque-link <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database opaque-link <opaque-link> self-originate	show ip ospf vrf <text> database opaque-link <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database router <router>	show ip ospf vrf <text> database router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database router <router> adv-router <adv-router>	show ip ospf vrf <text> database router <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database router <router> self-originate	show ip ospf vrf <text> database router <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database self-originate	show ip ospf vrf <text> database self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database summary <summary>	show ip ospf vrf <text> database summary <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database summary <summary> adv-router <adv-router>	show ip ospf vrf <text> database summary <text> adv-router <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> database summary <summary> self-originate	show ip ospf vrf <text> database summary <text> self-originate
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> graceful-restart helper	show ip ospf vrf <text> graceful-restart helper

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> interface <interface>	show ip ospf vrf <text> interface <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> mpls ldp-sync	show ip ospf vrf <text> mpls ldp-sync
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> mpls ldp-sync interface <interface>	show ip ospf vrf <text> mpls ldp-sync interface <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> neighbor <neighbor>	show ip ospf vrf <text> neighbor <text>
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> neighbor detail	show ip ospf vrf <text> neighbor detail
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> route	show ip ospf vrf <text> route
×	not yet documented	show-ip-ospf.xml.in: show ip ospf vrf <vrf> route detail	show ip ospf vrf <text> route detail
×	not yet documented	show-ip-pim.xml.in: show ip pim assert	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim assert-internal	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim assert-metric	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim assert-winner-metric	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim bsm-database	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim bsr	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim bsrp-info	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim channel	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim group-type	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim interface	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show ip pim interfaces
×	not yet documented	show-ip-pim.xml.in: show ip pim join	show ip pim join

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-pim.xml.in: show ip pim local-membership	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim neighbor	show ip pim neighbor
×	not yet documented	show-ip-pim.xml.in: show ip pim nexthop	show ip pim nexthop
×	not yet documented	Nothing found in XML Definitions	show ip pim rp
×	not yet documented	show-ip-pim.xml.in: show ip pim rp-info	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim rpf	show ip pim rpf
×	not yet documented	show-ip-pim.xml.in: show ip pim secondary	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim state	show ip pim state
×	not yet documented	show-ip-pim.xml.in: show ip pim statistics	show ip pim statistics
×	not yet documented	show-ip-pim.xml.in: show ip pim upstream	show ip pim upstream
×	not yet documented	show-ip-pim.xml.in: show ip pim upstream-join-desired	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim upstream-rpf	Nothing found in VyOS
×	not yet documented	show-ip-pim.xml.in: show ip pim vxlan-groups	Nothing found in VyOS
×	not yet documented	show-ip-ports.xml.in: show ip ports	show ip ports
×	not yet documented	show-ip-access-paths-prefix-community-lists.xml.in: show ip prefix-list <prefix-list>	show ip prefix-list <text>
×	not yet documented	show-ip-access-paths-prefix-community-lists.xml.in: show ip protocol	show ip protocol
✓	<i>show ip rip</i>	show-ip-rip.xml.in: show ip rip	show ip rip
✓	<i>show ip rip status</i>	show-ip-rip.xml.in: show ip rip status	show ip rip status
×	not yet documented	show-ip-route.xml.in: show ip route <route>	show ip route <text>
×	<i>show ip route 0.0.0.0</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-ip-route.xml.in: show ip route bgp	show ip route bgp

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ip-route.xml.in: show ip route cache <cache>	show ip route cache <text>
×	not yet documented	show-ip-route.xml.in: show ip route connected	show ip route connected
×	not yet documented	show-ip-route.xml.in: show ip route forward <forward>	show ip route forward <text>
×	not yet documented	show-ip-route.xml.in: show ip route isis	show ip route isis
×	not yet documented	show-ip-route.xml.in: show ip route kernel	show ip route kernel
×	not yet documented	show-ip-route.xml.in: show ip route <text> <route> longer-prefixes	show ip route <text> longer-prefixes
×	not yet documented	show-ip-route.xml.in: show ip route ospf	show ip route ospf
×	not yet documented	show-ip-route.xml.in: show ip route rip	show ip route rip
×	not yet documented	show-ip-route.xml.in: show ip route static	show ip route static
×	not yet documented	show-ip-route.xml.in: show ip route summary	show ip route summary
×	not yet documented	show-ip-route.xml.in: show ip route summary ta- ble <table>	show ip route summary ta- ble <text>
×	not yet documented	show-ip-route.xml.in: show ip route supernets- only	show ip route supernets- only
×	not yet documented	show-ip-route.xml.in: show ip route table <ta- ble>	show ip route table <text>
×	not yet documented	show-ip-route.xml.in: show ip route tag <tag>	show ip route tag <text>
✓	<i>show ip route vrf</i> <name>	show-ip-route.xml.in: show ip route vrf <vrf>	show ip route vrf <text> <text>
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> bgp	show ip route vrf <text> bgp
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> connected	show ip route vrf <text> connected
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> isis	show ip route vrf <text> isis
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> kernel	show ip route vrf <text> kernel

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	show ip route vrf <text> <text> longer-prefixes
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> node.tag	Nothing found in VyOS
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> node.tag longer-prefixes	Nothing found in VyOS
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> ospf	show ip route vrf <text> ospf
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> rip	show ip route vrf <text> rip
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> static	show ip route vrf <text> static
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> summary	show ip route vrf <text> summary
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> supernets-only	show ip route vrf <text> supernets-only
×	not yet documented	show-ip-route.xml.in: show ip route vrf <vrf> tag <tag>	show ip route vrf <text> tag <text>
✓	<i>show ipv6 access-list</i>	show-ipv6.xml.in: show ipv6 access-list <access-list>	show ipv6 access-list <text>
✓	<i>show ipv6 forwarding</i>	show-ipv6.xml.in: show ipv6 forwarding	show ipv6 forwarding
×	<i>show ipv6 groups</i>	Nothing found in XML Definitions	show ipv6 groups
×	not yet documented	show-ipv6-mld.xml.in: show ipv6 mld groups	Nothing found in VyOS
×	not yet documented	show-ipv6-mld.xml.in: show ipv6 mld interface	Nothing found in VyOS
×	not yet documented	show-ipv6-mld.xml.in: show ipv6 mld joins	Nothing found in VyOS
×	not yet documented	show-ipv6-mld.xml.in: show ipv6 mld statistics	Nothing found in VyOS
×	not yet documented	multicast-group.xml.in: show ipv6 multicast group	Nothing found in VyOS
×	not yet documented	multicast-group.xml.in: show ipv6 multicast group interface <interface>	Nothing found in VyOS
×	<i>show ipv6 neighbors</i>	Nothing found in XML Definitions	show ipv6 neighbors
×	not yet documented	Nothing found in XML Definitions	show ipv6 neighbors interface <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	show ipv6 neighbors state <text>
×	not yet documented	show-ipv6.xml.in: show ipv6 nht	Nothing found in VyOS
×	not yet documented	show-ipv6.xml.in: show ipv6 nht vrf <vrf>	Nothing found in VyOS
✓	<i>show ipv6 ospfv3</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3	show ipv6 ospfv3
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 area <area>	show ipv6 ospfv3 area <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 area <area> router <router>	show ipv6 ospfv3 area <text> router <text>
✓	<i>show ipv6 ospfv3 border-routers</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 border-routers <border-routers>	show ipv6 ospfv3 border-routers <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 border-routers detail	show ipv6 ospfv3 border-routers detail
✓	<i>show ipv6 ospfv3 database &lt;type&gt; [A.B.C.D] [adv-router &lt;A.B.C.D&gt; self-originate]</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database	show ipv6 ospfv3 database <text> <text>
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 database <text> adv-router <text> detail
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 database <text> adv-router <text> dump
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 database <text> adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database <text> adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database <text> adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database <text> adv-router <text> linkstate-id <text> internal

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any>	show ipv6 ospfv3 database any <text> <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any any <any> detail	show ipv6 ospfv3 database any any <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any any <any> dump	show ipv6 ospfv3 database any any <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any any <any> internal	show ipv6 ospfv3 database any any <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> detail	show ipv6 ospfv3 database any <text> <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> dump	show ipv6 ospfv3 database any <text> <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> internal	show ipv6 ospfv3 database any <text> <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database any <any> node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external	show ipv6 ospfv3 database as-external <text> <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external adv-router <adv-router> detail	show ipv6 ospfv3 database as-external adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external adv-router <adv-router> dump	show ipv6 ospfv3 database as-external adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external adv-router <adv-router> internal	show ipv6 ospfv3 database as-external adv-router <text> internal

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database as-external adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database as-external adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database as-external adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external any <any>	show ipv6 ospfv3 database as-external any <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external any <any> de- tail	show ipv6 ospfv3 database as-external any <text> de- tail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external any <any> dump	show ipv6 ospfv3 database as-external any <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external any <any> in- ternal	show ipv6 ospfv3 database as-external any <text> in- ternal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> detail	show ipv6 ospfv3 database as-external <text> <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> dump	show ipv6 ospfv3 database as-external <text> <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> internal	show ipv6 ospfv3 database as-external <text> <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database as-external linkstate-id <text> detail

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database as-external linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database as-external linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> self-originated	show ipv6 ospfv3 database as-external self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> self-originated detail	show ipv6 ospfv3 database as-external self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> self-originated dump	show ipv6 ospfv3 database as-external self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database as-external <as-external> self-originated internal	show ipv6 ospfv3 database as-external self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database detail	show ipv6 ospfv3 database <text> <text> detail
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 database <text> <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership	show ipv6 ospfv3 database group-membership <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership adv- router <adv-router> detail	show ipv6 ospfv3 database group-membership adv- router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership adv- router <adv-router> dump	show ipv6 ospfv3 database group-membership adv- router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership adv- router <adv-router> internal	show ipv6 ospfv3 database group-membership adv- router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership adv- router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database group-membership adv- router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership adv- router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database group-membership adv- router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership adv- router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database group-membership adv- router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership detail	show ipv6 ospfv3 database group-membership <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership dump	show ipv6 ospfv3 database group-membership <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership inter- nal	show ipv6 ospfv3 database group-membership <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database group-membership linkstate-id <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database group-membership linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database group-membership linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership self- originated	show ipv6 ospfv3 database group-membership self- originated

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership self- originated detail	show ipv6 ospfv3 database group-membership self- originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership self- originated dump	show ipv6 ospfv3 database group-membership self- originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database group-membership self- originated internal	show ipv6 ospfv3 database group-membership self- originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix	show ipv6 ospfv3 database inter-prefix <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix adv-router <adv-router> detail	show ipv6 ospfv3 database inter-prefix adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix adv-router <adv-router> dump	show ipv6 ospfv3 database inter-prefix adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix adv-router <adv-router> internal	show ipv6 ospfv3 database inter-prefix adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database inter-prefix adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database inter-prefix adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database inter-prefix adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix detail	show ipv6 ospfv3 database inter-prefix <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix dump	show ipv6 ospfv3 database inter-prefix <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix internal	show ipv6 ospfv3 database inter-prefix <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database inter-prefix linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database inter-prefix linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database inter-prefix linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag self- originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix self-originated	show ipv6 ospfv3 database inter-prefix self-originated

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix self-originated detail	show ipv6 ospfv3 database inter-prefix self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix self-originated dump	show ipv6 ospfv3 database inter-prefix self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-prefix self-originated internal	show ipv6 ospfv3 database inter-prefix self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router	show ipv6 ospfv3 database inter-router <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router adv-router <adv-router> detail	show ipv6 ospfv3 database inter-router adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router adv-router <adv-router> dump	show ipv6 ospfv3 database inter-router adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router adv-router <adv-router> internal	show ipv6 ospfv3 database inter-router adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database inter-router adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database inter-router adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database inter-router adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router detail	show ipv6 ospfv3 database inter-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router dump	show ipv6 ospfv3 database inter-router <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router internal	show ipv6 ospfv3 database inter-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database inter-router linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database inter-router linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database inter-router linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag self- originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router self-originated	show ipv6 ospfv3 database inter-router self-originated

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router self-originated detail	show ipv6 ospfv3 database inter-router self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router self-originated dump	show ipv6 ospfv3 database inter-router self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database inter-router self-originated internal	show ipv6 ospfv3 database inter-router self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database internal	show ipv6 ospfv3 database <text> <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix	show ipv6 ospfv3 database intra-prefix <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix adv-router <adv-router> detail	show ipv6 ospfv3 database intra-prefix adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix adv-router <adv-router> dump	show ipv6 ospfv3 database intra-prefix adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix adv-router <adv-router> internal	show ipv6 ospfv3 database intra-prefix adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database intra-prefix adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database intra-prefix adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database intra-prefix adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix detail	show ipv6 ospfv3 database intra-prefix <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix dump	show ipv6 ospfv3 database intra-prefix <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix internal	show ipv6 ospfv3 database intra-prefix <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database intra-prefix linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database intra-prefix linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database intra-prefix linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag self- originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix node.tag self- originated internal	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix self-originated	show ipv6 ospfv3 database intra-prefix self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix self-originated detail	show ipv6 ospfv3 database intra-prefix self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix self-originated dump	show ipv6 ospfv3 database intra-prefix self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database intra-prefix self-originated internal	show ipv6 ospfv3 database intra-prefix self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link <text>	show ipv6 ospfv3 database link <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link adv-router <adv- router> detail	show ipv6 ospfv3 database link adv-router <text> de- tail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link adv-router <adv- router> dump	show ipv6 ospfv3 database link adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link adv-router <adv- router> internal	show ipv6 ospfv3 database link adv-router <text> in- ternal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database link adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database link adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database link adv-router <text> linkstate-id <text> inter- nal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link detail	show ipv6 ospfv3 database link <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link dump	show ipv6 ospfv3 database link <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link internal	show ipv6 ospfv3 database link <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database link linkstate-id <text> de- tail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database link linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database link linkstate-id <text> in- ternal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link self-originated	show ipv6 ospfv3 database link self-originated

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link self-originated detail	show ipv6 ospfv3 database link self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link self-originated dump	show ipv6 ospfv3 database link self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database link self-originated internal	show ipv6 ospfv3 database link self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network	show ipv6 ospfv3 database network <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network adv-router <adv- router> detail	show ipv6 ospfv3 database network adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network adv-router <adv- router> dump	show ipv6 ospfv3 database network adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network adv-router <adv- router> internal	show ipv6 ospfv3 database network adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database network adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database network adv-router <text> linkstate-id <text> dump

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database network adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network detail	show ipv6 ospfv3 database network <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network dump	show ipv6 ospfv3 database network <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network internal	show ipv6 ospfv3 database network <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database network linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database network linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database network linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag self- originated detail	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network self-originated	show ipv6 ospfv3 database network self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network self-originated detail	show ipv6 ospfv3 database network self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network self-originated dump	show ipv6 ospfv3 database network self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database network self-originated in- ternal	show ipv6 ospfv3 database network self-originated in- ternal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag adv-router <adv- router> detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag adv-router <adv- router> dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag adv-router <adv- router> internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag adv-router <adv- router> linkstate-id <linkstate-id> detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag adv-router <adv- router> linkstate-id <linkstate-id> dump	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag adv-router <adv- router> linkstate-id <linkstate-id> internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag linkstate-id <linkstate-id> detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag linkstate-id <linkstate-id> dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag linkstate-id <linkstate-id> internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag self- originated detail	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router	show ipv6 ospfv3 database router <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router adv-router <adv- router> detail	show ipv6 ospfv3 database router adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router adv-router <adv- router> dump	show ipv6 ospfv3 database router adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router adv-router <adv- router> internal	show ipv6 ospfv3 database router adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database router adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database router adv-router <text> linkstate-id <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database router adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router detail	show ipv6 ospfv3 database router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router dump	show ipv6 ospfv3 database router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router internal	show ipv6 ospfv3 database router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router linkstate- id <linkstate-id> detail	show ipv6 ospfv3 database router linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router linkstate- id <linkstate-id> dump	show ipv6 ospfv3 database router linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router linkstate- id <linkstate-id> internal	show ipv6 ospfv3 database router linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag self- originated detail	Nothing found in VyOS

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router self-originated	show ipv6 ospfv3 database router self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router self-originated de- tail	show ipv6 ospfv3 database router self-originated de- tail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router self-originated dump	show ipv6 ospfv3 database router self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database router self-originated in- ternal	show ipv6 ospfv3 database router self-originated in- ternal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database self-originated	show ipv6 ospfv3 database self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database self-originated detail	show ipv6 ospfv3 database self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database self-originated dump	show ipv6 ospfv3 database self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database self-originated internal	show ipv6 ospfv3 database self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 <text>	show ipv6 ospfv3 database type-7 <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 adv-router <adv- router> detail	show ipv6 ospfv3 database type-7 adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 adv-router <adv- router> dump	show ipv6 ospfv3 database type-7 adv-router <text> dump

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 adv-router <adv- router> internal	show ipv6 ospfv3 database type-7 adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database type-7 adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database type-7 adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database type-7 adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 detail	show ipv6 ospfv3 database type-7 <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 dump	show ipv6 ospfv3 database type-7 <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 internal	show ipv6 ospfv3 database type-7 <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 linkstate-id <linkstate-id> detail	show ipv6 ospfv3 database type-7 linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 linkstate-id <linkstate-id> dump	show ipv6 ospfv3 database type-7 linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 linkstate-id <linkstate-id> internal	show ipv6 ospfv3 database type-7 linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag dump	Nothing found in VyOS

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag self- originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 self-originated	show ipv6 ospfv3 database type-7 self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 self-originated de- tail	show ipv6 ospfv3 database type-7 self-originated de- tail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 self-originated dump	show ipv6 ospfv3 database type-7 self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 database type-7 self-originated in- ternal	show ipv6 ospfv3 database type-7 self-originated in- ternal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 graceful-restart helper	show ipv6 ospfv3 graceful-restart helper
✓	<i>show ipv6 ospfv3 interface [prefix]   [&lt;interface&gt; [prefix]]</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 inter- face <interface>	show ipv6 ospfv3 inter- face <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 inter- face <interface> prefix <prefix>	show ipv6 ospfv3 inter- face prefix <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 inter- face <interface> prefix <prefix> detail	show ipv6 ospfv3 inter- face prefix <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 interface <interface> prefix <prefix> match	show ipv6 ospfv3 interface prefix <text> match
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 linkstate detail	show ipv6 ospfv3 linkstate detail
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 linkstate network <text> <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 linkstate network <network> node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 linkstate router <router>	show ipv6 ospfv3 linkstate router <text>
✓	<i>show ipv6 ospfv3 neighbor</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 neighbor	show ipv6 ospfv3 neighbor
✓	<i>show ipv6 ospfv3 neighbor detail</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 neighbor detail	show ipv6 ospfv3 neighbor detail
✓	<i>show ipv6 ospfv3 neighbor drchoice</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 neighbor drchoice	show ipv6 ospfv3 neighbor drchoice
✓	<i>show ipv6 ospfv3 redistribute</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 redistribute	show ipv6 ospfv3 redistribute
✓	<i>show ipv6 ospfv3 route</i>	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route <route>	show ipv6 ospfv3 route <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route detail	show ipv6 ospfv3 route detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route external-1	show ipv6 ospfv3 route external-1
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route external-1 detail	show ipv6 ospfv3 route external-1 detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route external-2	show ipv6 ospfv3 route external-2
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route external-2 detail	show ipv6 ospfv3 route external-2 detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route inter-area	show ipv6 ospfv3 route inter-area

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route inter-area detail	show ipv6 ospfv3 route inter-area detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route intra-area	show ipv6 ospfv3 route intra-area
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route intra-area detail	show ipv6 ospfv3 route intra-area detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route <route> longer	show ipv6 ospfv3 route <text> longer
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route <route> match	show ipv6 ospfv3 route <text> match
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route <route> match detail	show ipv6 ospfv3 route <text> match detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 route summary	show ipv6 ospfv3 route summary
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf>	show ipv6 ospfv3 vrf <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> area <area>	show ipv6 ospfv3 vrf <text> area <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> area <area> router <router>	show ipv6 ospfv3 vrf <text> area <text> router <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> border-routers <border-routers>	show ipv6 ospfv3 vrf <text> border-routers <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> border-routers detail	show ipv6 ospfv3 vrf <text> border-routers detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database	show ipv6 ospfv3 vrf <text> database <text> <text>
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 vrf <text> database <text> adv-router <text> detail
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 vrf <text> database <text> adv-router <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 vrf <text> database <text> adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database <text> adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database <text> adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database <text> adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any>	show ipv6 ospfv3 vrf <text> database any <text> <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any any <any> detail	show ipv6 ospfv3 vrf <text> database any any <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any any <any> dump	show ipv6 ospfv3 vrf <text> database any any <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any any <any> internal	show ipv6 ospfv3 vrf <text> database any any <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> detail	show ipv6 ospfv3 vrf <text> database any <text> <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> dump	show ipv6 ospfv3 vrf <text> database any <text> <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> internal	show ipv6 ospfv3 vrf <text> database any <text> <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> node.tag	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database any <any> node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external	show ipv6 ospfv3 vrf <text> database as-external <text> <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database as-external adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external adv-router <adv-router> dump	show ipv6 ospfv3 vrf <text> database as-external adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external adv-router <adv-router> internal	show ipv6 ospfv3 vrf <text> database as-external adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database as-external adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database as-external adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database as-external adv-router <text> linkstate-id <text> internal

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external any <any>	show ipv6 ospfv3 vrf <text> database as-external any <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external any <any> detail	show ipv6 ospfv3 vrf <text> database as-external any <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external any <any> dump	show ipv6 ospfv3 vrf <text> database as-external any <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external any <any> internal	show ipv6 ospfv3 vrf <text> database as-external any <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> detail	show ipv6 ospfv3 vrf <text> database as-external <text> <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> dump	show ipv6 ospfv3 vrf <text> database as-external <text> <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> internal	show ipv6 ospfv3 vrf <text> database as-external <text> <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database as-external linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database as-external linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database as-external linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> node.tag	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as-external <as-external> node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as- external <as-external> self-originated	show ipv6 ospfv3 vrf <text> database as- external self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as- external <as-external> self-originated detail	show ipv6 ospfv3 vrf <text> database as- external self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as- external <as-external> self-originated dump	show ipv6 ospfv3 vrf <text> database as- external self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database as- external <as-external> self-originated internal	show ipv6 ospfv3 vrf <text> database as- external self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database detail	show ipv6 ospfv3 vrf <text> database <text> <text> detail
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 vrf <text> database <text> <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership	show ipv6 ospfv3 vrf <text> database group- membership <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database group- membership adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership adv-router <adv-router> dump	show ipv6 ospfv3 vrf <text> database group- membership adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership adv-router <adv-router> internal	show ipv6 ospfv3 vrf <text> database group- membership adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database group- membership adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database group- membership adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database group- membership adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership detail	show ipv6 ospfv3 vrf <text> database group- membership <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership dump	show ipv6 ospfv3 vrf <text> database group- membership <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership internal	show ipv6 ospfv3 vrf <text> database group- membership <text> internal

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database group- membership linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database group- membership linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database group- membership linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag self-originated dump	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group- membership node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group-membership self- originated	show ipv6 ospfv3 vrf <text> database group-membership self- originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group-membership self- originated detail	show ipv6 ospfv3 vrf <text> database group-membership self- originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group-membership self- originated dump	show ipv6 ospfv3 vrf <text> database group-membership self- originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database group-membership self- originated internal	show ipv6 ospfv3 vrf <text> database group-membership self- originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix	show ipv6 ospfv3 vrf <text> database inter- prefix <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix adv-router <adv- router> detail	show ipv6 ospfv3 vrf <text> database inter- prefix adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix adv-router <adv- router> dump	show ipv6 ospfv3 vrf <text> database inter- prefix adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix adv-router <adv- router> internal	show ipv6 ospfv3 vrf <text> database inter- prefix adv-router <text> internal

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database inter- prefix adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database inter- prefix adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database inter- prefix adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix detail	show ipv6 ospfv3 vrf <text> database inter- prefix <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix dump	show ipv6 ospfv3 vrf <text> database inter- prefix <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix internal	show ipv6 ospfv3 vrf <text> database inter- prefix <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter-prefix linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database inter- prefix linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter-prefix linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database inter- prefix linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter-prefix linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database inter- prefix linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag self- originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix self-originated	show ipv6 ospfv3 vrf <text> database inter- prefix self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix self-originated detail	show ipv6 ospfv3 vrf <text> database inter- prefix self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix self-originated dump	show ipv6 ospfv3 vrf <text> database inter- prefix self-originated dump

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- prefix self-originated internal	show ipv6 ospfv3 vrf <text> database inter- prefix self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router	show ipv6 ospfv3 vrf <text> database inter- router <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router adv-router <adv- router> detail	show ipv6 ospfv3 vrf <text> database inter- router adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router adv-router <adv- router> dump	show ipv6 ospfv3 vrf <text> database inter- router adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router adv-router <adv- router> internal	show ipv6 ospfv3 vrf <text> database inter- router adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database inter- router adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database inter- router adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database inter- router adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router detail	show ipv6 ospfv3 vrf <text> database inter- router <text> detail

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router dump	show ipv6 ospfv3 vrf <text> database inter- router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router internal	show ipv6 ospfv3 vrf <text> database inter- router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database inter- router linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database inter- router linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database inter- router linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag self- originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag self- originated detail	Nothing found in VyOS

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag self- originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router node.tag self- originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router self-originated	show ipv6 ospfv3 vrf <text> database inter- router self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router self-originated detail	show ipv6 ospfv3 vrf <text> database inter- router self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router self-originated dump	show ipv6 ospfv3 vrf <text> database inter- router self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database inter- router self-originated internal	show ipv6 ospfv3 vrf <text> database inter- router self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database internal	show ipv6 ospfv3 vrf <text> database <text> <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix	show ipv6 ospfv3 vrf <text> database intra- prefix <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix adv-router <adv- router> detail	show ipv6 ospfv3 vrf <text> database intra- prefix adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix adv-router <adv- router> dump	show ipv6 ospfv3 vrf <text> database intra- prefix adv-router <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix adv-router <adv- router> internal	show ipv6 ospfv3 vrf <text> database intra- prefix adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix adv-router <adv- router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database intra- prefix adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix adv-router <adv- router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database intra- prefix adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix adv-router <adv- router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database intra- prefix adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix detail	show ipv6 ospfv3 vrf <text> database intra- prefix <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix dump	show ipv6 ospfv3 vrf <text> database intra- prefix <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix internal	show ipv6 ospfv3 vrf <text> database intra- prefix <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database intra- prefix linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database intra- prefix linkstate-id <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database intra-prefix linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra-prefix self-originated	show ipv6 ospfv3 vrf <text> database intra-prefix self-originated

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix self-originated detail	show ipv6 ospfv3 vrf <text> database intra- prefix self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix self-originated dump	show ipv6 ospfv3 vrf <text> database intra- prefix self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database intra- prefix self-originated internal	show ipv6 ospfv3 vrf <text> database intra- prefix self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link	show ipv6 ospfv3 vrf <text> database link <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database link adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link adv-router <adv-router> dump	show ipv6 ospfv3 vrf <text> database link adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link adv-router <adv-router> internal	show ipv6 ospfv3 vrf <text> database link adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database link adv- router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database link adv- router <text> linkstate-id <text> dump

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database link adv- router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link detail	show ipv6 ospfv3 vrf <text> database link <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link dump	show ipv6 ospfv3 vrf <text> database link <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link internal	show ipv6 ospfv3 vrf <text> database link <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database link linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database link linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database link linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag internal	Nothing found in VyOS

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link self-originated	show ipv6 ospfv3 vrf <text> database link self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link self-originated detail	show ipv6 ospfv3 vrf <text> database link self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link self-originated dump	show ipv6 ospfv3 vrf <text> database link self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database link self-originated internal	show ipv6 ospfv3 vrf <text> database link self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database linkstate- id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database linkstate- id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database linkstate- id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database <text> linkstate-id <text> internal

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network	show ipv6 ospfv3 vrf <text> database network <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database network adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network adv-router <adv-router> dump	show ipv6 ospfv3 vrf <text> database network adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network adv-router <adv-router> internal	show ipv6 ospfv3 vrf <text> database network adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database net- work adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database net- work adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database net- work adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network detail	show ipv6 ospfv3 vrf <text> database network <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network dump	show ipv6 ospfv3 vrf <text> database network <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network internal	show ipv6 ospfv3 vrf <text> database network <text> internal

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Table 2 – continued from previous page

Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database network linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database network linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database network linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag self-originated dump	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network self-originated	show ipv6 ospfv3 vrf <text> database network self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network self-originated detail	show ipv6 ospfv3 vrf <text> database network self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network self-originated dump	show ipv6 ospfv3 vrf <text> database network self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database network self-originated internal	show ipv6 ospfv3 vrf <text> database network self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag adv-router <adv-router> detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag adv-router <adv-router> dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag adv-router <adv-router> internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag adv-router <adv-router> linkstate-id <linkstate-id> detail	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag adv-router <adv-router> linkstate-id <linkstate-id> dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag adv-router <adv-router> linkstate-id <linkstate-id> internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag linkstate-id <linkstate-id> detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag linkstate-id <linkstate-id> dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag linkstate-id <linkstate-id> internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag detail	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router <text>	show ipv6 ospfv3 vrf <text> database router <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database router adv-router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> dump	show ipv6 ospfv3 vrf <text> database router adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> internal	show ipv6 ospfv3 vrf <text> database router adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database router adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database router adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database router adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database router <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router dump	show ipv6 ospfv3 vrf <text> database router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router internal	show ipv6 ospfv3 vrf <text> database router <text> internal

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database router linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database router linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database router linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag self-originated dump	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router self-originated	show ipv6 ospfv3 vrf <text> database router self-originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router self-originated detail	show ipv6 ospfv3 vrf <text> database router self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router self-originated dump	show ipv6 ospfv3 vrf <text> database router self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database router self-originated internal	show ipv6 ospfv3 vrf <text> database router self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database self- originated	show ipv6 ospfv3 vrf <text> database self- originated
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database self- originated detail	show ipv6 ospfv3 vrf <text> database self- originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database self- originated dump	show ipv6 ospfv3 vrf <text> database self- originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database self- originated internal	show ipv6 ospfv3 vrf <text> database self- originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 <text>	show ipv6 ospfv3 vrf <text> database type-7 <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 adv-router <adv-router> detail	show ipv6 ospfv3 vrf <text> database type-7 adv-router <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 adv-router <adv-router> dump	show ipv6 ospfv3 vrf <text> database type-7 adv-router <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 adv-router <adv-router> internal	show ipv6 ospfv3 vrf <text> database type-7 adv-router <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 adv-router <adv-router> linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database type-7 7 adv-router <text> linkstate-id <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 adv-router <adv-router> linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database type-7 7 adv-router <text> linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 adv-router <adv-router> linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database type-7 7 adv-router <text> linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 detail	show ipv6 ospfv3 vrf <text> database type-7 <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 dump	show ipv6 ospfv3 vrf <text> database type-7 <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 internal	show ipv6 ospfv3 vrf <text> database type-7 <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 linkstate-id <linkstate-id> detail	show ipv6 ospfv3 vrf <text> database type-7 linkstate-id <text> detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 linkstate-id <linkstate-id> dump	show ipv6 ospfv3 vrf <text> database type-7 linkstate-id <text> dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 linkstate-id <linkstate-id> internal	show ipv6 ospfv3 vrf <text> database type-7 linkstate-id <text> internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag self-originated	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag self-originated detail	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag self-originated dump	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 node.tag self-originated internal	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 self-originated	show ipv6 ospfv3 vrf <text> database type-7 self-originated

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 self-originated detail	show ipv6 ospfv3 vrf <text> database type-7 self-originated detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 self-originated dump	show ipv6 ospfv3 vrf <text> database type-7 self-originated dump
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> database type-7 self-originated internal	show ipv6 ospfv3 vrf <text> database type-7 self-originated internal
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> graceful-restart helper	show ipv6 ospfv3 vrf <text> graceful-restart helper
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> interface <inter- face>	show ipv6 ospfv3 vrf <text> interface <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> interface <inter- face> prefix <prefix>	show ipv6 ospfv3 vrf <text> interface prefix <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> interface <inter- face> prefix <prefix> detail	show ipv6 ospfv3 vrf <text> interface prefix <text> detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> interface <inter- face> prefix <prefix> match	show ipv6 ospfv3 vrf <text> interface prefix <text> match
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> linkstate detail	show ipv6 ospfv3 vrf <text> linkstate detail
×	not yet documented	Nothing found in XML Definitions	show ipv6 ospfv3 vrf <text> linkstate network <text> <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> linkstate network <network> node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> linkstate router <router>	show ipv6 ospfv3 vrf <text> linkstate router <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> neighbor	show ipv6 ospfv3 vrf <text> neighbor
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> neighbor detail	show ipv6 ospfv3 vrf <text> neighbor detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> neighbor drchoice	show ipv6 ospfv3 vrf <text> neighbor drchoice
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> redistribute	show ipv6 ospfv3 vrf <text> redistribute
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route <route>	show ipv6 ospfv3 vrf <text> route <text>
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route detail	show ipv6 ospfv3 vrf <text> route detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route external-1	show ipv6 ospfv3 vrf <text> route external-1
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route external-1 detail	show ipv6 ospfv3 vrf <text> route external-1 detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route external-2	show ipv6 ospfv3 vrf <text> route external-2
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route external-2 detail	show ipv6 ospfv3 vrf <text> route external-2 detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route inter-area	show ipv6 ospfv3 vrf <text> route inter-area
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route inter-area detail	show ipv6 ospfv3 vrf <text> route inter-area detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route intra-area	show ipv6 ospfv3 vrf <text> route intra-area
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route intra-area detail	show ipv6 ospfv3 vrf <text> route intra-area detail

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route <route> longer	show ipv6 ospfv3 vrf <text> route <text> longer
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route <route> match	show ipv6 ospfv3 vrf <text> route <text> match
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route <route> match detail	show ipv6 ospfv3 vrf <text> route <text> match detail
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrf <vrf> route summary	show ipv6 ospfv3 vrf <text> route summary
×	not yet documented	show-ipv6-ospfv3.xml.in: show ipv6 ospfv3 vrfs	show ipv6 ospfv3 vrfs
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim bsm- database	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim bsr	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim bsrp-info	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim channel	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim interface	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim join	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim local- membership	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim neighbor	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim nexthop	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim rp-info	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim rpf	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim secondary	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim state	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim statistics	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim upstream	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim upstream-join-desired	Nothing found in VyOS
×	not yet documented	show-ipv6-pim.xml.in: show ipv6 pim upstream-rpf	Nothing found in VyOS
✓	<i>show ipv6 prefix-list</i>	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list <prefix-list>	show ipv6 prefix-list <text> <text>
×	not yet documented	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list detail <detail>	show ipv6 prefix-list detail <text>
×	not yet documented	Nothing found in XML Definitions	show ipv6 prefix-list <text> <text> first-match
×	not yet documented	Nothing found in XML Definitions	show ipv6 prefix-list <text> <text> longer
×	not yet documented	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list <prefix-list> node.tag	Nothing found in VyOS
×	not yet documented	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list <prefix-list> node.tag first-match	Nothing found in VyOS
×	not yet documented	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list <prefix-list> node.tag longer	Nothing found in VyOS
×	not yet documented	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list <prefix-list> seq <seq>	show ipv6 prefix-list <text> seq <text>
×	not yet documented	show-ipv6-prefix-list.xml.in: show ipv6 prefix-list summary <summary>	show ipv6 prefix-list summary <text>
✓	<i>show ipv6 ripng</i>	show-ipv6.xml.in: show ipv6 ripng	show ipv6 ripng
✓	<i>show ipv6 ripng status</i>	show-ipv6.xml.in: show ipv6 ripng status	show ipv6 ripng status
✓	<i>show ipv6 route</i>	show-ipv6-route.xml.in: show ipv6 route <route>	show ipv6 route <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route bgp	show ipv6 route bgp

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route cache <cache>	show ipv6 route cache <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route connected	show ipv6 route connected
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route forward <forward>	show ipv6 route forward <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route isis	show ipv6 route isis
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route kernel	show ipv6 route kernel
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route <text> longer-prefixes	show ipv6 route <text> longer-prefixes
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route ospfv3	show ipv6 route ospfv3
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route ripng	show ipv6 route ripng
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route static	show ipv6 route static
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route summary	show ipv6 route summary
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route summary table <table>	show ipv6 route summary table <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route table <table>	show ipv6 route table <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route tag <tag>	show ipv6 route tag <text>
✓	<i>show ipv6 route vrf &lt;name&gt;</i>	show-ipv6-route.xml.in: show ipv6 route vrf <vrf>	show ipv6 route vrf <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> bgp	show ipv6 route vrf <text> bgp
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> connected	show ipv6 route vrf <text> connected
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> isis	show ipv6 route vrf <text> isis
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> kernel	show ipv6 route vrf <text> kernel
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> node.tag	Nothing found in VyOS

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×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> node.tag longer-prefixes	Nothing found in VyOS
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> ospfv3	show ipv6 route vrf <text> ospfv3
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> ripng	show ipv6 route vrf <text> ripng
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> static	show ipv6 route vrf <text> static
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> summary	show ipv6 route vrf <text> summary
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> supernets-only	show ipv6 route vrf <text> supernets-only
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> table <table>	show ipv6 route vrf <text> table <text>
×	not yet documented	show-ipv6-route.xml.in: show ipv6 route vrf <vrf> tag <tag>	show ipv6 route vrf <text> tag <text>
×	not yet documented	show-isis.xml.in: show isis database <database>	show isis database <text>
×	not yet documented	show-isis.xml.in: show isis database detail	show isis database detail
×	not yet documented	show-isis.xml.in: show isis fast-reroute sum- mary	Nothing found in VyOS
×	not yet documented	show-isis.xml.in: show isis fast-reroute sum- mary level-1	Nothing found in VyOS
×	not yet documented	show-isis.xml.in: show isis fast-reroute sum- mary level-2	Nothing found in VyOS
×	not yet documented	show-isis.xml.in: show isis hostname	show isis hostname
×	not yet documented	show-isis.xml.in: show isis interface <inter- face>	show isis interface <text>
×	not yet documented	show-isis.xml.in: show isis interface detail	show isis interface detail
×	not yet documented	show-isis.xml.in: show isis mpls-te interface <interface>	show isis mpls-te interface <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-isis.xml.in: show isis mpls-te router	show isis mpls-te router
×	not yet documented	show-isis.xml.in: show isis mpls ldp-sync	show isis mpls ldp-sync
×	not yet documented	show-isis.xml.in: show isis mpls ldp-sync interface <interface>	show isis mpls ldp-sync interface <text>
×	not yet documented	show-isis.xml.in: show isis neighbor <neighbor>	show isis neighbor <text>
×	not yet documented	show-isis.xml.in: show isis neighbor detail	show isis neighbor detail
×	not yet documented	show-isis.xml.in: show isis route	show isis route
×	not yet documented	show-isis.xml.in: show isis route level-1	show isis route level-1
×	not yet documented	show-isis.xml.in: show isis route level-2	show isis route level-2
✓	<i>show isis route prefix-sid</i>	show-isis.xml.in: show isis route prefix-sid	show isis route prefix-sid
✓	<i>show isis segment-routing node</i>	show-isis.xml.in: show isis segment-routing node	show isis segment-routing node
×	not yet documented	show-isis.xml.in: show isis spf-delay-ietf	show isis spf-delay-ietf
×	not yet documented	show-isis.xml.in: show isis summary	show isis summary
×	not yet documented	show-isis.xml.in: show isis topology	show isis topology
×	not yet documented	show-isis.xml.in: show isis topology level-1	show isis topology level-1
×	not yet documented	show-isis.xml.in: show isis topology level-2	show isis topology level-2
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> database <database>	show isis vrf <text> database <text>
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> database detail	show isis vrf <text> database detail
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> fast- reroute summary	Nothing found in VyOS
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> fast- reroute summary level-1	Nothing found in VyOS
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> fast- reroute summary level-2	Nothing found in VyOS

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×	not yet documented	show-isis.xml.in: show isis vrf <vrf> host-name	show isis vrf <text> host-name
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> interface <interface>	show isis vrf <text> interface <text>
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> interface detail	show isis vrf <text> interface detail
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> mpls-te interface <interface>	show isis vrf <text> mpls-te interface <text>
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> mpls-te router	show isis vrf <text> mpls-te router
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> mpls ldp-sync	show isis vrf <text> mpls ldp-sync
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> mpls ldp-sync interface <interface>	show isis vrf <text> mpls ldp-sync interface <text>
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> neighbor <neighbor>	show isis vrf <text> neighbor <text>
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> neighbor detail	show isis vrf <text> neighbor detail
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> route	show isis vrf <text> route
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> route level-1	show isis vrf <text> route level-1
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> route level-2	show isis vrf <text> route level-2
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> route prefix-sid	show isis vrf <text> route prefix-sid
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> segment-routing node	show isis vrf <text> segment-routing node
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> spf-delay-ietf	show isis vrf <text> spf-delay-ietf
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> summary	show isis vrf <text> summary

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> topology	show isis vrf <text> topology
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> topology level-1	show isis vrf <text> topology level-1
×	not yet documented	show-isis.xml.in: show isis vrf <vrf> topology level-2	show isis vrf <text> topology level-2
×	not yet documented	l2tp-server.xml.in: show l2tp-server sessions	show l2tp-server sessions
×	not yet documented	l2tp-server.xml.in: show l2tp-server statistics	show l2tp-server statistics
×	not yet documented	show-license.xml.in: show license	show license
✓	<i>show lldp neighbors</i>	lldp.xml.in: show lldp neighbors	show lldp neighbors
×	<i>show lldp neighbors detail</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>show lldp neighbors interface &lt;interface&gt;</i>	lldp.xml.in: show lldp neighbors interface <interface>	show lldp neighbors interface <text>
✓	<i>show log [all   authorization   cluster   conntrack-sync   ...]</i>	show-log.xml.in: show log	show log <text>
×	not yet documented	show-log.xml.in: show log all	show log all
×	not yet documented	show-log.xml.in: show log audit	show log audit
×	not yet documented	show-log.xml.in: show log authorization	show log authorization
×	not yet documented	show-log.xml.in: show log certbot	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log cluster	show log cluster
×	not yet documented	show-log.xml.in: show log conntrack-sync	show log conntrack-sync
✓	<i>show log console-server</i>	show-log.xml.in: show log console-server	show log console-server
×	not yet documented	Nothing found in XML Definitions	show log container <text>
✓	<i>show log dhcp client</i>	show-log.xml.in: show log dhcp client	show log dhcp client
✓	<i>show log dhcp client interface &lt;interface&gt;</i>	show-log.xml.in: show log dhcp client interface <interface>	show log dhcp client interface <text>

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✓	<i>show log dhcp server</i>	show-log.xml.in: show log dhcp server	show log dhcp server
✓	<i>show log dhcpv6 client</i>	show-log.xml.in: show log dhcpv6 client	show log dhcpv6 client
✓	<i>show log dhcpv6 client interface &lt;interface&gt;</i>	show-log.xml.in: show log dhcpv6 client interface <interface>	show log dhcpv6 client interface <text>
✓	<i>show log dhcpv6 server</i>	show-log.xml.in: show log dhcpv6 server	show log dhcpv6 server
×	not yet documented	Nothing found in XML Definitions	show log dns dynamic
×	not yet documented	Nothing found in XML Definitions	show log dns forwarding
×	<i>show log firewall</i>	show-log.xml.in: show log firewall	Nothing found in VyOS
×	<i>show log firewall bridge</i>	show-log.xml.in: show log firewall bridge	Nothing found in VyOS
×	<i>show log firewall bridge forward</i>	show-log.xml.in: show log firewall bridge forward	Nothing found in VyOS
×	<i>show log firewall bridge forward filter</i>	show-log.xml.in: show log firewall bridge forward filter	Nothing found in VyOS
×	<i>show log firewall bridge forward filter rule &lt;rule&gt;</i>	show-log.xml.in: show log firewall bridge forward filter rule <rule>	Nothing found in VyOS
×	<i>show log firewall bridge name &lt;name&gt;</i>	show-log.xml.in: show log firewall bridge name <name>	Nothing found in VyOS
×	<i>show log firewall bridge name &lt;name&gt; rule &lt;rule&gt;</i>	show-log.xml.in: show log firewall bridge name <name> rule <rule>	Nothing found in VyOS
×	<i>show log firewall ipv4 [forward   input   output   name]</i>	show-log.xml.in: show log firewall ipv4	Nothing found in VyOS
×	<i>show log firewall ipv4 [forward   input   output] filter</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>show log firewall ipv4 [forward   input   output] filter rule &lt;rule&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 forward	Nothing found in VyOS

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-log.xml.in: show log firewall ipv4 forward filter	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 forward filter rule <rule>	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 input	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 input filter	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 input filter rule <rule>	Nothing found in VyOS
×	<i>show log firewall ipv4 name &lt;name&gt;</i>	show-log.xml.in: show log firewall ipv4 name <name>	Nothing found in VyOS
×	<i>show log firewall ipv4 name &lt;name&gt; rule &lt;rule&gt;</i>	show-log.xml.in: show log firewall ipv4 name <name> rule <rule>	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 output	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 output filter	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv4 output filter rule <rule>	Nothing found in VyOS
×	<i>show log firewall ipv6 [forward   input   output   name]</i>	show-log.xml.in: show log firewall ipv6	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show log firewall ipv6-name <text>
×	not yet documented	Nothing found in XML Definitions	show log firewall ipv6-name <text> rule <text>
×	<i>show log firewall ipv6 [forward   input   output] filter</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	<i>show log firewall ipv6 [forward   input   output] filter rule &lt;rule&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 forward	Nothing found in VyOS

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×	not yet documented	show-log.xml.in: show log firewall ipv6 forward filter	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 forward filter rule <rule>	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 input	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 input filter	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 input filter rule <rule>	Nothing found in VyOS
×	<i>show log firewall ipv6 name &lt;name&gt;</i>	show-log.xml.in: show log firewall ipv6 name <name>	Nothing found in VyOS
×	<i>show log firewall ipv6 name &lt;name&gt; rule &lt;rule&gt;</i>	show-log.xml.in: show log firewall ipv6 name <name> rule <rule>	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 output	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 output filter	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log firewall ipv6 output filter rule <rule>	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show log firewall name <text>
×	not yet documented	Nothing found in XML Definitions	show log firewall name <text> rule <text>
×	not yet documented	show-log.xml.in: show log flow-accounting	show log flow-accounting
×	not yet documented	show-log.xml.in: show log https	show log https
×	not yet documented	show-log.xml.in: show log ids ddos-protection	show log ids ddos-protection
✓	<i>show log image &lt;name&gt; [all   authorization   directory   file &lt;file name&gt;   tail &lt;lines&gt;]</i>	show-log.xml.in: show log image <image>	show log image <text>

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×	not yet documented	show-log.xml.in: show log image <image> all	show log image <text> all
×	not yet documented	show-log.xml.in: show log image <image> authorization	show log image <text> au- thorization
×	not yet documented	show-log.xml.in: show log image <image> tail <tail>	show log image <text> tail <text>
×	not yet documented	show-login.xml.in: show login	show login
×	not yet documented	show-login.xml.in: show login groups	show login groups
×	not yet documented	show-login.xml.in: show login level	show login level
×	not yet documented	show-login.xml.in: show login user	show login user
×	not yet documented	show-log.xml.in: show log ipoe-server	show log ipoe-server
×	not yet documented	show-log.xml.in: show log ipsec	show log ipsec
×	not yet documented	show-log.xml.in: show log kernel	show log kernel
×	not yet documented	show-log.xml.in: show log l2tp	show log l2tp
✓	<i>show log lldp</i>	show-log.xml.in: show log lldp	show log lldp
×	not yet documented	show-log.xml.in: show log macsec	show log macsec
×	not yet documented	show-log.xml.in: show log macsec interface <interface>	show log macsec interface <text>
×	<i>show log mdns repeater</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log nat	show log nat
×	not yet documented	show-log.xml.in: show log ndp-proxy	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log nhrp	show log nhrp
×	not yet documented	show-log.xml.in: show log ntp	show log ntp
×	not yet documented	show-log.xml.in: show log openconnect	show log openconnect
×	not yet documented	show-log.xml.in: show log openvpn	show log openvpn
×	not yet documented	show-log.xml.in: show log openvpn inter- face <interface>	show log openvpn inter- face <text>

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×	not yet documented	show-log.xml.in: show log pppoe	show log pppoe
×	not yet documented	show-log.xml.in: show log pppoe-server	show log pppoe-server
×	not yet documented	show-log.xml.in: show log pppoe interface <interface>	show log pppoe interface <text>
×	not yet documented	show-log.xml.in: show log pptp	show log pptp
×	not yet documented	show-log.xml.in: show log protocol bfd	show log protocol bfd
×	not yet documented	show-log.xml.in: show log protocol bgp	show log protocol bgp
×	not yet documented	show-log.xml.in: show log protocol isis	show log protocol isis
×	not yet documented	show-log.xml.in: show log protocol mpls	show log protocol mpls
×	not yet documented	show-log.xml.in: show log protocol multi- cast	show log protocol multi- cast
×	not yet documented	show-log.xml.in: show log protocol nhrp	show log protocol nhrp
×	not yet documented	show-log.xml.in: show log protocol ospf	show log protocol ospf
×	not yet documented	show-log.xml.in: show log protocol ospfv3	show log protocol ospfv3
×	not yet documented	show-log.xml.in: show log protocol rip	show log protocol rip
×	not yet documented	show-log.xml.in: show log protocol ripng	show log protocol ripng
×	not yet documented	show-log.xml.in: show log protocol static	show log protocol static
×	not yet documented	show-log.xml.in: show log router-advert	show log router-advert
×	not yet documented	show-log.xml.in: show log snmp	show log snmp
✓	<i>show log ssh</i>	show-log.xml.in: show log ssh	show log ssh
×	<i>show log ssh dynamic-protection</i>	show-log.xml.in: show log ssh dynamic- protection	Nothing found in VyOS
×	not yet documented	show-log.xml.in: show log sstp	show log sstp
×	not yet documented	show-log.xml.in: show log sstp	show log sstp
×	not yet documented	show-log.xml.in: show log sstp interface <interface>	show log sstp interface <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-log.xml.in: show log tail	show log tail <text>
×	not yet documented	show-log.xml.in: show log vpn	show log vpn
×	not yet documented	Nothing found in XML Definitions	show log vpp
×	not yet documented	show-log.xml.in: show log vrrp	show log vrrp
×	not yet documented	show-log.xml.in: show log webproxy	show log webproxy
×	not yet documented	show-monitoring.xml.in: show monitoring	show monitoring
✓	<i>show mpls ldp binding</i>	show-mpls.xml.in: show mpls ldp binding <binding>	show mpls ldp binding <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding <binding> detail	show mpls ldp binding <text> detail
×	not yet documented	show-mpls.xml.in: show mpls ldp binding local-label <local-label>	show mpls ldp binding local-label <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding local-label <local-label> detail	show mpls ldp binding local-label <text> detail
×	not yet documented	show-mpls.xml.in: show mpls ldp binding local-label <local-label> neighbor <neighbor>	show mpls ldp binding local-label <text> neigh- bor <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding local-label <local-label> remote-label <remote-label>	show mpls ldp binding local-label <text> remote- label <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding neighbor <neighbor>	show mpls ldp binding neighbor <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding neighbor <neighbor> de- tail	show mpls ldp binding neighbor <text> detail
×	not yet documented	show-mpls.xml.in: show mpls ldp binding neighbor <neighbor> local-label <local-label>	show mpls ldp binding neighbor <text> local- label <text>

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Status 156/3227	Documentation	XML	in VyOS 1.4-rolling-202308240020
×	not yet documented	show-mpls.xml.in: show mpls ldp binding neighbor <neighbor> remote-label <remote-label>	show mpls ldp binding neighbor <text> remote-label <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding remote-label <remote-label>	show mpls ldp binding remote-label <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding remote-label <remote-label> detail	show mpls ldp binding remote-label <text> detail
×	not yet documented	show-mpls.xml.in: show mpls ldp binding remote-label <remote-label> local-label <local-label>	show mpls ldp binding remote-label <text> local-label <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp binding remote-label <remote-label> neighbor <neighbor>	show mpls ldp binding remote-label <text> neighbor <text>
✓	<i>show mpls ldp discovery</i>	show-mpls.xml.in: show mpls ldp discovery	show mpls ldp discovery
×	not yet documented	show-mpls.xml.in: show mpls ldp discovery detail	show mpls ldp discovery detail
✓	<i>show mpls ldp interface</i>	show-mpls.xml.in: show mpls ldp interface	show mpls ldp interface
✓	<i>show mpls ldp neighbor</i>	show-mpls.xml.in: show mpls ldp neighbor <neighbor>	show mpls ldp neighbor <text>
×	not yet documented	show-mpls.xml.in: show mpls ldp neighbor <neighbor> capabilities	show mpls ldp neighbor <text> capabilities
✓	<i>show mpls ldp neighbor detail</i>	show-mpls.xml.in: show mpls ldp neighbor <neighbor> detail	show mpls ldp neighbor <text> detail
×	not yet documented	show-mpls.xml.in: show mpls pseudowire	show mpls pseudowire
×	not yet documented	show-mpls.xml.in: show mpls table	show mpls table
×	not yet documented	nat66.xml.in: show nat66 destination rules	show nat66 destination rules
×	not yet documented	nat66.xml.in: show nat66 destination statistics	show nat66 destination statistics

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×	not yet documented	nat66.xml.in: show nat66 destination translations	show nat66 destination translations
×	not yet documented	nat66.xml.in: show nat66 destination translations address <address>	show nat66 destination translations address <text>
×	not yet documented	nat66.xml.in: show nat66 source rules	show nat66 source rules
×	not yet documented	nat66.xml.in: show nat66 source statistics	show nat66 source statistics
×	not yet documented	nat66.xml.in: show nat66 source translations	show nat66 source translations
×	not yet documented	nat66.xml.in: show nat66 source translations address <address>	show nat66 source translations address <text>
×	not yet documented	nat.xml.in: show nat destination rules	show nat destination rules
×	not yet documented	nat.xml.in: show nat destination statistics	show nat destination statistics
×	not yet documented	nat.xml.in: show nat destination translations	show nat destination translations
×	not yet documented	nat.xml.in: show nat destination translations address <address>	show nat destination translations address <text>
×	not yet documented	nat.xml.in: show nat source rules	show nat source rules
×	not yet documented	nat.xml.in: show nat source statistics	show nat source statistics
×	not yet documented	nat.xml.in: show nat source translations	show nat source translations
×	not yet documented	nat.xml.in: show nat source translations address <address>	show nat source translations address <text>
×	not yet documented	show-netns.xml.in: show netns	show netns
×	not yet documented	nhrp.xml.in: show nhrp interface	show nhrp interface
×	not yet documented	nhrp.xml.in: show nhrp tunnel	show nhrp tunnel
×	not yet documented	Nothing found in XML Definitions	show ntp
×	not yet documented	Nothing found in XML Definitions	show ntp system

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×	not yet documented	Nothing found in XML Definitions	show openconnect-server sessions
×	not yet documented	Nothing found in XML Definitions	show openconnect-server user <text> otp full
×	not yet documented	Nothing found in XML Definitions	show openconnect-server user <text> otp key-b32
×	not yet documented	Nothing found in XML Definitions	show openconnect-server user <text> otp key-hex
×	not yet documented	Nothing found in XML Definitions	show openconnect-server user <text> otp qrcode
×	not yet documented	Nothing found in XML Definitions	show openconnect-server user <text> otp uri
✓	<i>show openvpn client</i>	openvpn.xml.in: show openvpn client	show openvpn client
✓	<i>show openvpn server</i>	openvpn.xml.in: show openvpn server	show openvpn server
✓	<i>show openvpn site-to-site</i>	openvpn.xml.in: show openvpn site-to-site	show openvpn site-to-site
×	not yet documented	Nothing found in XML Definitions	show pki
×	<i>show pki ca &lt;name&gt;</i>	Nothing found in XML Definitions	show pki ca <text>
×	not yet documented	Nothing found in XML Definitions	show pki ca <text> pem
×	<i>show pki certificate &lt;name&gt;</i>	Nothing found in XML Definitions	show pki certificate <text>
×	not yet documented	Nothing found in XML Definitions	show pki certificate <text> fingerprint <text>
×	not yet documented	Nothing found in XML Definitions	show pki certificate <text> pem
×	<i>show pki crl</i>	Nothing found in XML Definitions	show pki crl <text>
×	not yet documented	Nothing found in XML Definitions	show pki crl <text> pem
×	not yet documented	policy-route.xml.in: show policy route <route>	show policy route <text>
×	not yet documented	policy-route.xml.in: show policy route6 <route6>	show policy route6 <text>
×	not yet documented	policy-route.xml.in: show policy route6 <route6> rule <rule>	show policy route6 <text> rule <text>
×	not yet documented	policy-route.xml.in: show policy route <route> rule <rule>	show policy route <text> rule <text>
×	not yet documented	show-poweroff.xml.in: show poweroff	show poweroff
×	not yet documented	Nothing found in XML Definitions	show pppoe-server interfaces

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×	<i>show pppoe-server sessions</i>	Nothing found in XML Definitions	show pppoe-server sessions
×	not yet documented	Nothing found in XML Definitions	show pppoe-server statistics
✓	<i>show pptp-server sessions</i>	pptp-server.xml.in: show pptp-server sessions	show pptp-server sessions
×	not yet documented	pptp-server.xml.in: show pptp-server statistics	show pptp-server statistics
✓	<i>show protocols static arp</i>	show-protocols.xml.in: show protocols static arp	show protocols static arp
×	not yet documented	show-protocols.xml.in: show protocols static arp interface <interface>	show protocols static arp interface <text>
×	<i>show protocols static arp interface eth1</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>show raid &lt;RAID-1-device&gt;</i>	show-raid.xml.in: show raid <raid>	show raid <text>
×	not yet documented	show-reboot.xml.in: show reboot	show reboot
×	not yet documented	Nothing found in XML Definitions	show remote-config openvpn <text> remote-platform <text>
×	not yet documented	show-reverse-proxy.xml.in: show reverse-proxy	show reverse-proxy
×	not yet documented	show-route-map.xml.in: show route-map <route-map>	show route-map <text>
×	not yet documented	Nothing found in XML Definitions	show rpki cache-connection
×	not yet documented	Nothing found in XML Definitions	show rpki cache-server
×	not yet documented	Nothing found in XML Definitions	show rpki prefix-table
×	not yet documented	show-segment-routing.xml.in: show segment-routing srv6 locator	Nothing found in VyOS
×	not yet documented	sflow.xml.in: show sflow	show sflow
×	not yet documented	snmp.xml.in: show snmp community <community>	show snmp community <text>
×	not yet documented	snmp.xml.in: show snmp community <community> host <host>	show snmp community <text> host <text>
×	not yet documented	snmp.xml.in: show snmp mib ifmib	show snmp mib ifmib

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×	not yet documented	snmp.xml.in: show snmp mib ifmib ifAlias <ifAlias>	show snmp mib ifmib ifAlias <text>
×	not yet documented	snmp.xml.in: show snmp mib ifmib ifDescr <ifDescr>	show snmp mib ifmib ifDescr <text>
×	not yet documented	snmp.xml.in: show snmp mib ifmib ifIndex <ifIndex>	show snmp mib ifmib ifIndex <text>
×	not yet documented	snmp.xml.in: show snmp v3	show snmp v3
×	not yet documented	snmp.xml.in: show snmp v3 certificates	show snmp v3 certificates
×	not yet documented	snmp.xml.in: show snmp v3 group	show snmp v3 group
×	not yet documented	snmp.xml.in: show snmp v3 trap-target	show snmp v3 trap-target
×	not yet documented	snmp.xml.in: show snmp v3 user	show snmp v3 user
×	not yet documented	snmp.xml.in: show snmp v3 view	show snmp v3 view
×	<i>show ssh dynamic-protection</i>	show-ssh.xml.in: show ssh dynamic- protection	Nothing found in VyOS
×	<i>show ssh fingerprints</i>	show-ssh.xml.in: show ssh fingerprints	Nothing found in VyOS
×	<i>show ssh fingerprints ascii</i>	show-ssh.xml.in: show ssh fingerprints ascii	Nothing found in VyOS
✓	<i>show sstp-server sessions</i>	sstp-server.xml.in: show sstp-server sessions	show sstp-server sessions
×	not yet documented	sstp-server.xml.in: show sstp-server statistics	show sstp-server statistics
✓	<i>show system acceleration qat</i>	show-acceleration.xml.in: show system acceleration qat	show system acceleration qat
✓	<i>show system acceleration qat device &lt;device&gt; config</i>	show-acceleration.xml.in: show system acceleration qat device <device> config	show system acceleration qat device <text> config
✓	<i>show system acceleration qat device &lt;device&gt; flows</i>	show-acceleration.xml.in: show system acceleration qat device <device> flows	show system acceleration qat device <text> flows
✓	<i>show system acceleration qat interrupts</i>	show-acceleration.xml.in: show system acceleration qat interrupts	show system acceleration qat interrupts
✓	<i>show system acceleration qat status</i>	show-acceleration.xml.in: show system acceleration qat status	show system acceleration qat status

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✓	<i>show system commit</i>	show-system.xml.in: show system commit	show system commit
✓	<i>show system commit diff &lt;number&gt;</i>	show-system.xml.in: show system commit diff <diff>	show system commit diff <text>
×	not yet documented	show-system.xml.in: show system commit file <file>	show system commit file <text>
×	not yet documented	show-system.xml.in: show system commit file <file> compare <com- pare>	show system commit file <text> compare <text>
×	not yet documented	show-system.xml.in: show system commit file <file> compare <com- pare> commands	show system commit file <text> compare <text> commands
×	not yet documented	show-system.xml.in: show system connections	show system connections
×	not yet documented	show-system.xml.in: show system connections tcp	show system connections tcp
×	not yet documented	show-system.xml.in: show system connections tcp all	show system connections tcp all
×	not yet documented	show-system.xml.in: show system connections tcp numeric	show system connections tcp numeric
×	not yet documented	show-system.xml.in: show system connections udp	show system connections udp
×	not yet documented	show-system.xml.in: show system connections udp numeric	show system connections udp numeric
×	not yet documented	show-system.xml.in: show system cpu	show system cpu
✓	<i>show system image</i>	system-image.xml.in: show system image	show system image
×	not yet documented	system-image.xml.in: show system image details	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show system image stor- age
×	not yet documented	Nothing found in XML Definitions	show system image ver- sion
×	not yet documented	show-system.xml.in: show system kernel- messages	show system kernel- messages
×	not yet documented	show-system.xml.in: show system login authen- tication user <user> otp	Nothing found in VyOS

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×	not yet documented	show-system.xml.in: show system login authentication user <user> otp full	Nothing found in VyOS
×	not yet documented	show-system.xml.in: show system login authentication user <user> otp key-b32	Nothing found in VyOS
×	not yet documented	show-system.xml.in: show system login authentication user <user> otp qr-code	Nothing found in VyOS
×	not yet documented	show-system.xml.in: show system login authentication user <user> otp uri	Nothing found in VyOS
×	not yet documented	show-system.xml.in: show system login users	show system login users
×	not yet documented	show-system.xml.in: show system login users all	show system login users all
×	not yet documented	show-system.xml.in: show system login users locked	show system login users locked
×	not yet documented	show-system.xml.in: show system login users other	show system login users other
×	not yet documented	show-system.xml.in: show system login users vyos	show system login users vyos
×	not yet documented	show-system.xml.in: show system memory	show system memory
×	not yet documented	show-system.xml.in: show system memory cache	show system memory cache
×	not yet documented	show-system.xml.in: show system memory detail	show system memory detail
×	not yet documented	show-system.xml.in: show system memory routing-daemons	show system memory routing-daemons
×	not yet documented	show-system.xml.in: show system processes	show system processes
×	not yet documented	show-system.xml.in: show system processes extensive	show system processes extensive
×	not yet documented	show-system.xml.in: show system processes summary	show system processes summary

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×	not yet documented	show-system.xml.in: show system processes tree	show system processes tree
×	not yet documented	show-system.xml.in: show system routing-daemons	show system routing-daemons
×	not yet documented	show-system.xml.in: show system storage	show system storage
×	not yet documented	show-system.xml.in: show system updates	show system updates
×	not yet documented	show-system.xml.in: show system uptime	show system uptime
×	not yet documented	show-table.xml.in: show table	show table
×	not yet documented	Nothing found in XML Definitions	show tech-support
×	not yet documented	Nothing found in XML Definitions	show tech-support brief
×	not yet documented	Nothing found in XML Definitions	show tech-support brief save <text>
×	not yet documented	Nothing found in XML Definitions	show tech-support brief save-uncompressed <text>
×	not yet documented	Nothing found in XML Definitions	show tech-support private
×	not yet documented	Nothing found in XML Definitions	show tech-support private brief
×	not yet documented	Nothing found in XML Definitions	show tech-support private brief save <text>
×	not yet documented	Nothing found in XML Definitions	show tech-support private brief save-uncompressed <text>
×	not yet documented	Nothing found in XML Definitions	show tech-support private save <text>
×	not yet documented	Nothing found in XML Definitions	show tech-support private save-uncompressed <text>
×	not yet documented	show-techsupport_report.xml.in: show tech-support report	show tech-support report
×	not yet documented	Nothing found in XML Definitions	show tech-support save <text>
×	not yet documented	Nothing found in XML Definitions	show tech-support save-uncompressed <text>
×	not yet documented	show-users.xml.in: show users	show users
×	not yet documented	show-users.xml.in: show users recent <recent>	show users recent <text>
✓	<i>show version</i>	show-version.xml.in: show version	show version

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×	not yet documented	show-version.xml.in: show version all	show version all
✓	<i>show version frr</i>	show-version.xml.in: show version frr	show version frr
×	not yet documented	show-version.xml.in: show version funny	show version funny
✓	<i>show version kernel</i>	show-version.xml.in: show version kernel	show version kernel
×	not yet documented	show-virtual-server.xml.in: show virtual-server	show virtual-server
×	not yet documented	vpn-ipsec.xml.in: show vpn debug	show vpn debug
×	not yet documented	vpn-ipsec.xml.in: show vpn debug peer <peer>	show vpn debug peer <text>
×	not yet documented	vpn-ipsec.xml.in: show vpn debug peer <peer> tunnel <tunnel>	show vpn debug peer <text> tunnel <text>
×	not yet documented	vpn-ipsec.xml.in: show vpn ike sa	show vpn ike sa
×	not yet documented	vpn-ipsec.xml.in: show vpn ike sa nat-traversal	show vpn ike sa nat-traversal
×	not yet documented	vpn-ipsec.xml.in: show vpn ike sa peer <peer>	show vpn ike sa peer <text>
×	not yet documented	vpn-ipsec.xml.in: show vpn ike secrets	show vpn ike secrets
×	not yet documented	vpn-ipsec.xml.in: show vpn ike status	show vpn ike status
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec connections	show vpn ipsec connections
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec policy	show vpn ipsec policy
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec remote-access connection-id <connection-id>	show vpn ipsec remote-access connection-id <text>
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec remote-access detail	show vpn ipsec remote-access detail
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec remote-access summary	show vpn ipsec remote-access summary

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×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec remote-access username <username>	show vpn ipsec remote-access username <text>
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec sa	show vpn ipsec sa
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec sa detail	show vpn ipsec sa detail
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec state	show vpn ipsec state
×	not yet documented	vpn-ipsec.xml.in: show vpn ipsec status	show vpn ipsec status
✓	<i>show vrf &lt;name&gt;</i>	show-vrf.xml.in: show vrf <vrf>	show vrf <text>
×	not yet documented	show-vrf.xml.in: show vrf <vrf> processes	show vrf <text> processes
×	not yet documented	show-vrf.xml.in: show vrf <vrf> vni	Nothing found in VyOS
×	not yet documented	Nothing found in XML Definitions	show vrrp
×	not yet documented	Nothing found in XML Definitions	show vrrp detail
×	not yet documented	Nothing found in XML Definitions	show vrrp statistics
×	not yet documented	Nothing found in XML Definitions	show wan-load-balance
×	not yet documented	Nothing found in XML Definitions	show wan-load-balance connection
×	not yet documented	Nothing found in XML Definitions	show wan-load-balance status
×	not yet documented	Nothing found in XML Definitions	show wan-load-balance status with-dns
×	not yet documented	Nothing found in XML Definitions	show webproxy blacklist categories
×	not yet documented	Nothing found in XML Definitions	show webproxy log
×	not yet documented	Nothing found in XML Definitions	show webproxy update-log
×	not yet documented	show-zebra.xml.in: show zebra	show zebra
×	not yet documented	show-zebra.xml.in: show zebra client summary	show zebra client summary
×	not yet documented	show-zebra.xml.in: show zebra dplane	show zebra dplane
×	not yet documented	show-zebra.xml.in: show zebra router table summary	show zebra router table summary

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×	not yet documented	Nothing found in XML Definitions	show zone-policy
×	not yet documented	Nothing found in XML Definitions	show zone-policy zone <text>
×	<i>set system image default-boot [image-name]</i>	Nothing found in XML Definitions	set system image default-boot <text>
×	not yet documented	telnet.xml.in: telnet to <to>	telnet to <text>
×	not yet documented	telnet.xml.in: telnet to <to> port <port>	telnet to <text> port <text>
×	not yet documented	terminal.xml.in: set terminal key query-help <query-help>	set terminal key query-help <text>
×	not yet documented	terminal.xml.in: set terminal length <length>	set terminal length <text>
×	not yet documented	terminal.xml.in: set terminal pager <pager>	set terminal pager <text>
×	not yet documented	terminal.xml.in: set terminal width <width>	set terminal width <text>
✓	<i>traceroute &lt;destination&gt;</i>	traceroute.xml.in: traceroute <traceroute>	traceroute <text> <text>
×	not yet documented	traceroute.xml.in: traceroute <traceroute> node.tag	Nothing found in VyOS
×	<i>traceroute vrf &lt;name&gt; [ipv4   ipv6] &lt;host&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
✓	<i>update container image &lt;containername&gt;</i>	container.xml.in: update container image <image>	update container image <text>
×	not yet documented	Nothing found in XML Definitions	update dns dynamic
✓	<i>update geoip</i>	geoip.xml.in: update geoip	update geoip
✓	<i>update webproxy blacklists</i>	webproxy.xml.in: update webproxy blacklists	update webproxy blacklists
×	<i>update webproxy blacklists category &lt;category&gt;</i>	Nothing found in XML Definitions	Nothing found in VyOS
×	not yet documented	webproxy.xml.in: update webproxy blacklists vrf <vrf>	update webproxy blacklists vrf <text>
×	not yet documented	wake-on-lan.xml.in: wake-on-lan interface <interface> host <host>	wake-on-lan interface <text> host <text>

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