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| **Troubleshooting** |

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| Sometimes things break or don’t work as expected. This section describes several |

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| troubleshooting tools provided by VyOS that can help when something goes wrong. |

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| **Connectivity Tests** |

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| **Basic Connectivity Tests** |

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| 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):

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| **ping <destination>** |

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| Send ICMP echo requests to destination host. There are multiple options to ping, inkl. |

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| VRF support. |

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| 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 |

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| **traceroute <destination>** |

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| Trace path to target. |

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| vyos@vyos:~$ traceroute  Possible completions:  <hostname> Track network path to specified node  <x.x.x.x>  <h:h:h:h:h:h:h:h>  ipv4 Track network path to <hostname|IPv4 address> ipv6 Track network path to <hostname|IPv6 address> |

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| **Advanced Connectivity Tests** |

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| **monitor traceroute <destination>** |

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| However, another helper is available which combines ping and traceroute into a single |

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| tool. An example of its output is shown: |

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| vyos@vyos:~$ mtr 10.62.212.12 |

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| My traceroute [v0.85]  vyos (0.0.0.0)  Keys: Help Display mode Restart statistics Order of fields quit Packets Pings  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 |

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| **Note** |

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| The output consumes the screen and will replace your command prompt. |

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| Several options are available for changing the display output. Press *h* to invoke the built |

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| in help system. To quit, just press *q* and you’ll be returned to the VyOS command |

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| prompt. |

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| **IPv6 Topology Discovery** |

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| IPv6 uses different techniques to discover its Neighbors/topology. |

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| **Router Discovery** |

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| **force ipv6-rd interface <interface> [address <ipv6-address>]** |

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| Discover routers via eth0. |

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| Example: |

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| 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 |

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| 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:fef8:3f11 |
| **Neighbor Discovery** |

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| **force ipv6-nd interface <interface> address <ipv6-address>** |

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| Example: |

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| 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 |

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| **Interface names** |

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| If you find the names of your interfaces have changed, this could be because your MAC |

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| addresses have changed. | |
|  | For example, you have a VyOS VM with 4 Ethernet interfaces named eth0, |

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| eth1, eth2 and eth3. Then, you migrate your VyOS VM to a different host and |

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| find your interfaces now are eth4, eth5, eth6 and eth7. |

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| One way to fix this issue **taking control of the MAC addresses** is: |

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| Log into VyOS and run this command to display your interface settings. |

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| show interfaces detail |

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| Take note of MAC addresses. |

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| Now, in order to update a MAC address in the configuration, run this |

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| command specifying the interface name and MAC address you want. |

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| set interfaces eth0 hw-id 00:0c:29:da:a4:fe |

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| 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

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|  | host allows so.  Another example could be when cloning VyOS VMs in GNS3 and you get into |

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| the same issue: interface names have changed. |

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| 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

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| automatically. |

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| **Monitoring** |

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| VyOS features several monitoring tools. |

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| 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) conntrack-sync  Monitor conntrack-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 |

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| **Traffic Dumps** To monitor interface traffic, issue the monitor traffic interface <name> command,   |  | | --- | |  | |

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| replacing *<name>* with your chosen interface. |

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| 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:~$ |

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| To quit monitoring, press *Ctrl-c* and you’ll be returned to the VyOS command prompt. |

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| Traffic can be filtered and saved. |

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| 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 |

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| **Interface Bandwidth Usage** |

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| to take a quick view on the used bandwidth of an interface use the monitor bandwidth command   |  | | --- | |  |   vyos@vyos:~$ monitor bandwidth interface eth0 |

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| show the following: |

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| B (RX Bytes/second)  198.00 .|....|.....................................................  165.00 .|....|.....................................................  132.00 ||..|.|.....................................................  99.00 ||..|.|.....................................................  66.00 |||||||.....................................................  33.00 |||||||.....................................................  1 5 10 15 20 25 30 35 40 45 50 55 60 |

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| --- |
| KiB (TX Bytes/second)  3.67 ......|.....................................................  3.06 ......|.....................................................  2.45 ......|.....................................................  1.84 ......|.....................................................  1.22 ......|.....................................................  0.61 :::::||.....................................................  1 5 10 15 20 25 30 35 40 45 50 55 60 |

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| **Interface Performance** To take a look on the network bandwidth between two nodes, the monitor bandwidth-   |  | | --- | |  |  |  | | --- | |  |   test command is used to run iperf. |

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| 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. |

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| 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:h> |

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| **Monitor command** The monitor command command allows you to repeatedly run a command to view a   |  | | --- | |  | |

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| continuously refreshed output. The command is run and output every 2 seconds, |

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| allowing you to monitor the output continuously without having to re-run the command. |

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| This can be useful to follow routing adjacency formation. |

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| vyos@router:~$ monitor command "show interfaces" |
| Will clear the screen and show you the output of show interfaces every 2 seconds.   |  | | --- | |  | |

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| Every 2.0s: /opt/vyatta/bin/vyatta-op-cmd-wrapper Sun Mar 26 02:49:46 2019 |

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| 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 |

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| **Terminal/Console** |

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| Sometimes you need to clear counters or statistics to troubleshoot better. To do this use the clear command in Operational mode.   |  | | --- | |  | |

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| to clear the console output |

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| vyos@vyos:~$ clear console |

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| --- |
| to clear interface counters |

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| --- |
| # clear all interfaces  vyos@vyos:~$ clear interface ethernet counters  # clear specific interface |

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| --- |
| vyos@vyos:~$ clear interface ehternet eth0 counters |
| The command follow the same logic as the set command in configuration mode.   |  | | --- | |  | |

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| # 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 |

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| to clear counters on firewall rulesets or single rules |

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| --- |
| vyos@vyos:~$ clear firewall name <ipv4 ruleset name> counters  vyos@vyos:~$ clear firewall name <ipv4 ruleset name> rule <rule#> counters |

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| --- |
| vyos@vyos:~$ clear firewall ipv6-name <ipv6 ruleset name> counters  vyos@vyos:~$ clear firewall ipv6-name <ipv6 ruleset name> rule <rule#> counters **System Information** |

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| **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.

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| These are the boot steps for VyOS 1.2 |

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| 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 |

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| 1. Starts FRR - successor to GNU Zebra and Quagga  2. Initialises the boot configuration file - copies over config.boot.default if there   |  | | --- | |  | |

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| is no configuration |

3. Runs the configuration migration, if the configuration is for an older

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| version of VyOS  4. Runs The pre-config script, if there is one /config/scripts/vyos-preconfig-   |  | | --- | |  | |

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| |  | | --- | | bootup.script | |

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| --- | --- | --- | --- | --- |
| 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   |  | | --- | |  | |

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| --- | --- |
| 8. The boot configuration file is then applied by /opt/vyatta/sbin/ vyatta-boot-   |  | | --- | |  | |

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| |  | | --- | | config-loader/opt/vyatta/etc/config/config.boot |   1. The config loader script writes log entries to /var/log/vyatta-config-   |  | | --- | |  | |

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| --- | --- | --- | --- | --- |
| |  | | --- | | 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   |  | | --- | |  | |

Previous Next