

# ARISTA

## Troubleshooting Guide

### VeloCloud SD-WAN

Version 5.2



<b>Headquarters</b>	<b>Support</b>	<b>Sales</b>
5453 Great America Parkway Santa Clara, CA 95054 USA +1-408-547-5500	+1-408-547-5502 +1-866-476-0000	+1-408-547-5501 +1-866-497-0000
<a href="http://www.arista.com/en/">www.arista.com/en/</a>	<a href="mailto:support@arista.com">support@arista.com</a>	<a href="mailto:sales@arista.com">sales@arista.com</a>

© Copyright 2025 Arista Networks, Inc. All rights reserved. The information contained herein is subject to change without notice. The trademarks, logos, and service marks ("Marks") displayed in this documentation are the property of Arista Networks in the United States and other countries. Use of the Marks is subject to the Arista Networks Terms of Use Policy, available at [www.arista.com/en/terms-of-use](http://www.arista.com/en/terms-of-use). Use of marks belonging to other parties is for informational purposes only.

# Contents

- Chapter 1: Arista VeloCloud SD-WAN Troubleshooting Guide..... 1**
- Chapter 2: Intended Audience..... 2**
- Chapter 3: About Remote Diagnostics..... 3**
- Chapter 4: Run Remote Diagnostic Tests on Edges.....4**
- Chapter 5: Remote Diagnostic Tests on Edges.....5**
  - 5.1 ARP Table Dump..... 5
  - 5.2 Clear ARP Cache.....7
  - 5.3 Ping IPv6 Test.....7
  - 5.4 Ping Test..... 8
  - 5.5 Traceroute.....9
  - 5.6 DNS Test.....9
  - 5.7 DNS/DHCP Service Restart..... 10
  - 5.8 EVDSL Modem Status..... 11
  - 5.9 Get IP Threat Reputation Test..... 12
  - 5.10 Get URL Category and Reputation Test..... 12
  - 5.11 Interface Status.....13
  - 5.12 LTE Modem Information..... 14
  - 5.13 Flush Firewall Sessions.....17
  - 5.14 List Active Firewall Sessions.....18
  - 5.15 IPv6 Clear ND Cache.....20
  - 5.16 IPv6 ND Table Dump..... 21
  - 5.17 IPv6 Route Table Dump.....22
  - 5.18 Flush DNS Cache.....25
  - 5.19 Flush Flows..... 25
  - 5.20 Flush NAT.....26
  - 5.21 NAT Table Dump.....26
  - 5.22 List Active Flows.....27
  - 5.23 Show BFD/BFDv6 Peer Status..... 28
  - 5.24 Show BFD/BFDv6 Peer Counters.....30
  - 5.25 Show BFD Settings..... 30
  - 5.26 Show BFDv6 Settings..... 31
  - 5.27 List BGP Redistributed Routes..... 32
  - 5.28 List BGP Routes.....32
  - 5.29 List Routes per Prefix.....33
  - 5.30 Show BGP Neighbor Advertised Routes.....34
  - 5.31 Show BGP Neighbor Learned Routes..... 35
  - 5.32 Show BGP Neighbor Received Routes.....36
  - 5.33 Show BGP Neighbor Details.....37
  - 5.34 Show BGP Routes per Prefix..... 38
  - 5.35 Show BGP Summary..... 39
  - 5.36 Show BGP Table.....41

5.37 Show BGPv6 Neighbor Advertised Routes.....	42
5.38 Show BGPv6 Neighbor Learned Routes.....	43
5.39 Show BGPv6 Neighbor Received Routes.....	45
5.40 Show BGPv6 Neighbor Details.....	46
5.41 Show BGPv6 Routes per Prefix.....	48
5.42 Show BGPv6 Summary.....	49
5.43 Show BGPv6 Table.....	50
5.44 List OSPF Redistributed Routes.....	51
5.45 List OSPF Routes.....	52
5.46 Show OSPF Database.....	53
5.47 Show OSPF Database for E1 Self-Originate Routes.....	54
5.48 Show OSPF Neighbors.....	55
5.49 Show OSPF Route Table.....	56
5.50 Show OSPF Setting.....	57
5.51 List OSPFv3 Redistributed Routes.....	57
5.52 List OSPFv3 Routes.....	58
5.53 Show OSPFv3 Database.....	59
5.54 Show OSPFv3 Database for E1 Self-Originate Routes.....	60
5.55 Show OSPFv3 Neighbors.....	61
5.56 Show OSPFv3 Route Table.....	61
5.57 Show OSPFv3 Setting.....	62
5.58 Dump Context Logging Information.....	63
5.59 Enable or Disable Context Logging.....	64
5.60 Gateway.....	64
5.61 HA Info.....	65
5.62 List Clients.....	66
5.63 List Paths.....	67
5.64 MIBs for Edge.....	69
5.65 NTP Dump.....	69
5.66 Reset USB Modem.....	70
5.67 System Information.....	71
5.68 Route Table Dump.....	72
5.69 VPN Test.....	79
5.70 WAN Link Bandwidth Test.....	80
<b>Chapter 6: Perform Remote Actions with New Orchestrator UI.....</b>	<b>81</b>
<b>Chapter 7: Diagnostic Bundles for Edges.....</b>	<b>83</b>
7.1 Request Packet Capture Bundle.....	84
7.2 Request Diagnostic Bundle.....	86
<b>Chapter 8: Diagnostic Bundles for Gateways.....</b>	<b>89</b>
8.1 Request Diagnostic Bundles for Gateways.....	89
8.2 Request Packet Capture Bundle for Gateways.....	91
<b>Chapter 9: References.....</b>	<b>94</b>
9.1 Related Documents.....	94

## **Arista VeloCloud SD-WAN Troubleshooting Guide**

---

The Arista VeloCloud SD-WAN™ Troubleshooting Guide provides details about the logging capabilities available in Orchestrator . It also provides details about the most common issues and troubleshooting information for the VeloCloud product.

### Intended Audience

---

The Arista VeloCloud SD-WAN Troubleshooting Guide is intended for network administrators, network analysts, and IT administrators responsible for deploying, monitoring, and managing Enterprise branch network.

## About Remote Diagnostics

---

VeloCloud Orchestrator supports bi-directional communication with the VeloCloud Edge by using WebSockets. WebSocket is a full-duplex communication protocol over a single TCP connection. WebSockets easily support communication between a Web browser (or other client applications) and a Web server with much lower overhead than HTTP polling. Remote Diagnostics uses a bi-directional WebSocket connection instead of the live-mode heartbeat mechanism to improve the responsiveness of the Remote Diagnostics in the VeloCloud Orchestrator.

The WebSocket communication involves the following two WebSocket connections for passing WebSocket messages from a Web browser to a VeloCloud Edge and vice versa:

- A WebSocket connection between a Web browser (Orchestrator UI portal) and an Orchestrator. This connection is responsible for all communications with the Web browser and for setting up the system properties needed for establishing a WebSocket connection.
- Another WebSocket connection between an Orchestrator and an Edge. This connection is persistent and setup on Edge activation for processing heartbeats from the Edge and sending back responses to the Orchestrator.

While establishing WebSocket connections between a Web browser and an Edge, in order to ensure Web security against Distributed Denial-of-Service (DDoS) and Cross site request forgery (CSRF) attacks, the browser origin address that is used to access the Orchestrator UI is validated for incoming requests.

In most Orchestrators, the browser origin address/DNS hostname is the same as the value of the `network.public.address` system property. To support scenarios where the address used to access the Orchestrator UI from the browser is different from the value of the `network.public.address` system property, the following system properties are added newly for WebSocket connections:

- `network.portal.websocket.address`- Allows to set an alternate address/ DNS hostname to access the UI from a browser if the browser address is not the same as the value of `network.public.address` system property. By default, the `network.portal.websocket.address` system property is not set.
- `session.options.websocket.portal.idle.timeout`- Allows to set the total amount of time (in seconds) the browser WebSocket connection is active in an idle state. By default, the browser WebSocket connection is active for 300 seconds in an idle state.

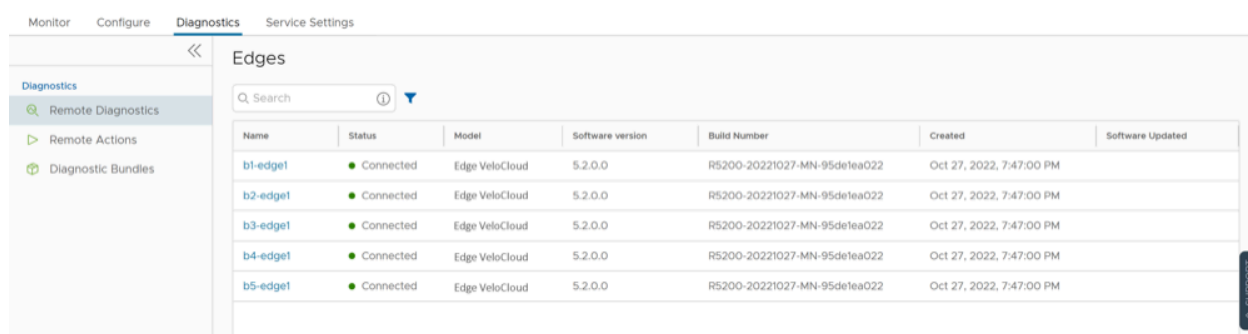
## Run Remote Diagnostic Tests on Edges

VeloCloud Orchestrator allows you to run various Remote Diagnostic tests on a selected Edge.

To run Remote Diagnostics on an Edge:

1. In the New Orchestrator UI, select the **Diagnostics** tab.  
The **Remote Diagnostics** page displays the existing Edges.

**Figure 4-1: Remote Diagnostics**



The screenshot shows the 'Diagnostics' tab in the VeloCloud Orchestrator UI. The 'Edges' section is active, displaying a table of existing edges. The table has columns for Name, Status, Model, Software version, Build Number, Created, and Software Updated. Five edges are listed, all with a 'Connected' status and 'Edge VeloCloud' model.

Name	Status	Model	Software version	Build Number	Created	Software Updated
b1-edge1	Connected	Edge VeloCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b2-edge1	Connected	Edge VeloCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b3-edge1	Connected	Edge VeloCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b4-edge1	Connected	Edge VeloCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b5-edge1	Connected	Edge VeloCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	

2. Select the link to an Edge.



**Note:** You can also run the Remote Diagnostics test using the **Shortcuts** option available in the **Configure > Edges** or **Monitor > Edges** pages.

A connection is established to the Edge and the **Remote Diagnostics** window displays all the possible Remote Diagnostics tests that you can run on the Edge.

3. Choose an appropriate Remote Diagnostics test to run on the Edge and select **Run**.  
The diagnostic information is fetched from the Edge and displayed on the screen.

## Remote Diagnostic Tests on Edges

---

VeloCloud Orchestrator allows you to run various remote diagnostics test on a selected Edge. The remote diagnostic information contains Edge-specific logs for analysis.

### 5.1 ARP Table Dump

#### What is the Purpose of This Test

Run this test to:

- Verify the IP address to MAC address binding on the LAN/WAN interfaces that are connected to the Edge on which the test is run.
- View the status of the ARP cache.

#### When Can You Run This Test

The following are the scenarios when you can run this test:

- Clients in the same broadcast domain are not reachable.
- Interface device not reachable.
- Next hop is not reachable.

#### What to Check in the Test Output

Run the **ARP Table Dump** test on the required Edge. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

Following is an example of the test output:

**Figure 5-1: ARP Table Dump Sample Output**

**ARP Table Dump** Run

View the Contents of the ARP Table. This output is limited to display 1000 ARP entries.

Max Entries

**Test Duration: 1.002 seconds**

Stale Timeout: 2min   Dead Timeout: 25min   Cleanup Timeout: 240min			
<b>LAN-VLAN1</b>			
10.0.1.25	00:ba:be:71:0d:7b	ALIVE	6s
<b>LAN-VLAN100</b>			
10.100.1.100	00:ba:be:71:0d:7b	ALIVE	6s
<b>LAN-VLAN101</b>			
10.101.1.100	00:ba:be:71:0d:7b	ALIVE	5s
<b>GE3</b>			
169.254.7.9	00:ba:be:16:40:2c	ALIVE	1s
169.254.7.12	00:ba:be:29:43:07	REFRESH	212s
<b>GE4</b>			
169.254.6.33	00:ba:be:39:a6:86	ALIVE	1s
<b>GE5</b>			
172.17.1.3	00:ba:be:0a:aa:e9	ALIVE	1s
172.18.1.3	00:ba:be:0a:aa:e9	ALIVE	1s
172.16.1.3	00:ba:be:0a:aa:e9	ALIVE	1s

The output is limited to displaying 1000 ARP entries. Following are the possible ARP cache statuses:

- Alive—Interface is reachable.
- Dead—Interface is not reachable.
- Refresh—Interface is trying to relearn the ARP.

To identify the cause for the device reachability issue:

1. In the output of the **ARP Table Dump** test, verify the ARP cache status of the interface. If the status is of any value other than **Alive**, run the **Clear ARP Cache** test to clear the cache of the previously stored ARP value.



**Note:** You can clear the ARP cache for only one interface at a time.

2. Run the **ARP Table Dump** test again to verify the IP address and the MAC address mapping on the LAN/WAN interface.
3. If the problem persists, collect Diagnostic and Packet Capture bundles and contact Arista Customer Support. See [Diagnostic Bundles for Edges](#).

## 5.2 Clear ARP Cache

### What is the Purpose of This Test

Clears specific interface-learned ARP entries from the ARP table.

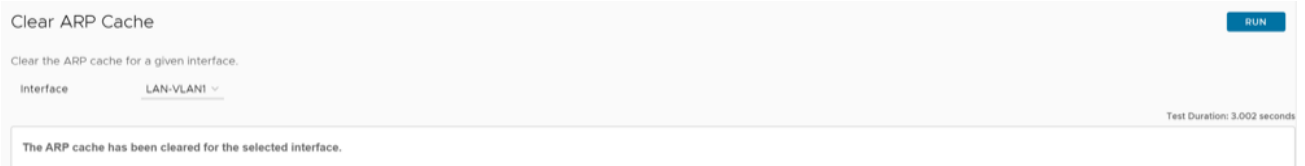
### When Can You Run This Test

This test is run when there are stale entries in the ARP table dump test. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Clear ARP Cache** test on the required Edge. Following is an example of the test output:

**Figure 5-2: Clear ARP Cache Sample Output**



## 5.3 Ping IPv6 Test

### What is the Purpose of This Test

Verifies if the next hop or an IPv6 address is reachable from the interface.

### When Can You Run This Test

Run this test to check the following:

- IPv6 reachability
- Packet Loss
- RTT

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Ping IPv6** test on the required Edge. Check if the output displays *Reachable*. For a successful PING test, packet transmitted must be equal to packet received. If not, capture the Interface and Destination IP addresses to see where the packet is getting dropped. Following is an example of the test output:

**Figure 5-3: Ping IPv6 Test Sample Output**

The screenshot shows a web interface for a "Ping IPv6 Test". At the top right is a blue "RUN" button. Below the title, there is a description: "Run a ping IPv6 test to the any underlay destination via the selected source interface". The "Destination" field contains "fd00:1:1::1" and the "Ping From" field contains "fd00:1:1::2 GE4 (Global Segment)". In the bottom right corner, it says "Test Duration: 43.023 seconds". The main output area displays "fd00:1:1::1: Not Reachable".

## 5.4 Ping Test

### What is the Purpose of This Test

Run this test if the next hop or an IPv4 address is reachable from the interface.

### When Can You Run This Test

Run this test to check the following:

- IPv4 reachability
- Packet Loss
- RTT

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Ping** test on the required Edge. Check if the output displays *Reachable*. For a successful PING test, packet transmitted must be equal to packet received. If not, capture the Interface and Destination IP addresses to see where the packet is getting dropped. Following is an example of the test output:

**Figure 5-4: Ping Test Sample Output**

The screenshot shows a web interface for a "Ping Test". At the top right is a blue "RUN" button. Below the title, there is a description: "Run a ping test to the destination specified.". The "Segment" dropdown is set to "Global Segment", the "Destination" field contains "192.168.0.1", and the "Ping From" field contains "192.168.0.199 GE5 (All Segments)". In the bottom right corner, it says "Test Duration: 11.008 seconds". The main output area displays "192.168.0.1: Reachable" followed by two bullet points: "• Min RTT: 1ms, Max RTT: 1ms, Avg RTT: 1ms" and "• Success Rate: 100% (Packets transmitted: 7, Packets received: 7)".

## 5.5 Traceroute

### What is the Purpose of This Test

- Displays path and nodes to destination from Edge interface.
- Measures transit delays of packets at each hop across an Internet Protocol (IP) network.

### When Can You Run This Test

Run this test in parallel with the PING test to understand routing or network reachability issues. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Traceroute** test on the required Edge. Following is an example of the test output:

**Figure 5-5: Traceroute Sample Output**



The screenshot shows a web interface for running a Traceroute test. At the top, there is a 'Traceroute' title and a 'RUN' button. Below the title, instructions state: 'Run a traceroute via the Gateway or directly out any of the WAN interfaces to the destination specified.' The configuration section shows 'Destination' set to '4.2.2.2' and 'Traceroute Using' set to 'GES'. A 'Test Duration: 3.003 seconds' indicator is visible in the top right corner. The main area displays the test output in a code block:

```

traceroute to 4.2.2.2 (4.2.2.2), 30 hops max, 60 byte packets
 1 192.168.0.1 (192.168.0.1) 0.439 ms 0.469 ms 0.538 ms
 2 10.226.0.1 (10.226.0.1) 2.070 ms 2.204 ms 2.535 ms
 3 * * *
 4 * * *
 5 14.141.20.137.static-vsn1.net.in (14.141.20.137) 2.535 ms 2.493 ms 2.465 ms
 6 172.28.175.46 (172.28.175.46) 2.452 ms 1.630 ms 2.469 ms
 7 ix-ae-2-1336.tcore2.svw-singapore.as6453.net (180.87.84.78) 45.899 ms 33.773 ms 33.665 ms
 8 lf-be-19-2.ecore1.esin4-singapore.as6453.net (180.87.15.113) 35.904 ms * 33.814 ms
 9 180.87.108.145 (180.87.108.145) 67.677 ms 67.597 ms 67.600 ms
10 * * *
11 b.resolvers.Level3.net (4.2.2.2) 66.969 ms 64.924 ms 67.023 ms

```

- Verify if the Destination IP address is seen as last hop.
- To measure transit delay, check the time (ms) which is displayed next to the IP address.
- If the Destination IP address is not seen, check the last hop seen for route reachability to both source and destination to resolve the routing issue.

## 5.6 DNS Test

### What is the Purpose of This Test

Run this test to confirm whether the Edge can resolve the Domain name to IP address.

### When Can You Run This Test

The following are the scenarios when you can run this test:

- Domain name is not resolved.

- Name lookup error occurs.
- Name lookup error logs are seen.



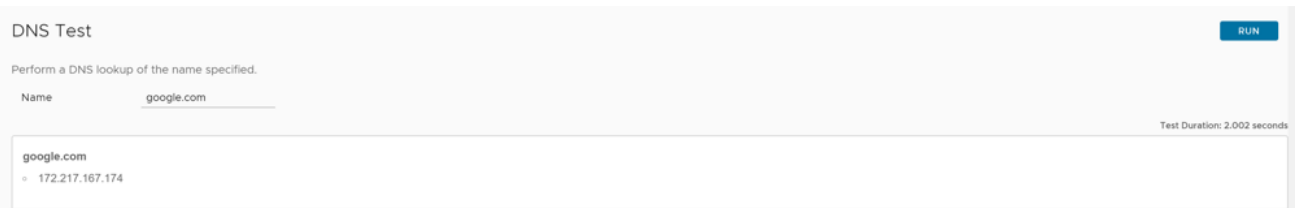
**Note:** This test is specific to Edge DNS, not for clients located in the LAN side.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **DNS Test** on the required Edge. Following is an example of the test output:

**Figure 5-6: DNS Test Sample Output**



Verify that the name provided is resolved to an IP address. If it is not resolved, kindly check the DNS setting under the **Device** tab of Edge configuration, and then try restarting the DNS server or check if DNS Server is reachable or not.

## 5.7 DNS/DHCP Service Restart

### What is the Purpose of This Test

Run this test to restart both DNS and DHCP processes in the Edge.

### When Can You Run This Test

The following are the scenarios when you can run this test:

- The Edge is acting as DHCP and DNS server to LAN network devices.
- The DNS and DHCP servers fail.
- DNS and DHCP processes get stalled.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **DNS/DHCP Service Restart** test on the required Edge. Following is an example of the test output:

**Figure 5-7: DNS/DHCP Service Restart Sample Output**



**Note:** Any output other than the above indicates issues with either DNS/DHCP processes or Orchestrator API call issue, contact the support team.

## 5.8 EVDSL Modem Status

### What is the Purpose of This Test

Run this test to check the status of the Asymmetric Digital Subscriber Line (ADSL) or Very-high-bit-rate Digital Subscriber Line (VDSL) link.

### When Can You Run This Test

Run this test to check the following details of the ADSL/VDSL link:

- Mode
- Uptime
- Peer MAC Address
- Status
- Link rate

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **EVDSL Modem Status** test on the required Edge. Following is an example of the test output:

**Figure 5-8: EVDSL Modem Status Sample Output**

Name	Mode	Vendor MAC	xDSL Mode	Link Time	Status	Link Rate	Annex	Profile	TxPmts/RxPmts
SFP1	DSL	00:0E:AD:00:70:06	VDSL2	3711362	Showtime	550440192	AnnexB	17a	104520796/139833636
SFP2	Standard	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**Table 1: EVDSL Modem Status- Options and Descriptions**

Option	Description
Name	The SFP interface name where the link is connected to.
Mode	The mode in which the interface is operating. If the interface is used for DSL connection, then the mode will be listed as <b>DSL</b> .
Vendor MAC	The mac address of the DSL peer device.
xDSL Mode	VDSL or ADSL.
Link Time	Uptime of the link.
Status	<b>Showtime</b> indicates that the line is in sync.

## 5.9 Get IP Threat Reputation Test

### What is the Purpose of This Test

Run this test on the required Edge by providing the IP address to view the threat category of the given IP.

### When Can You Run This Test

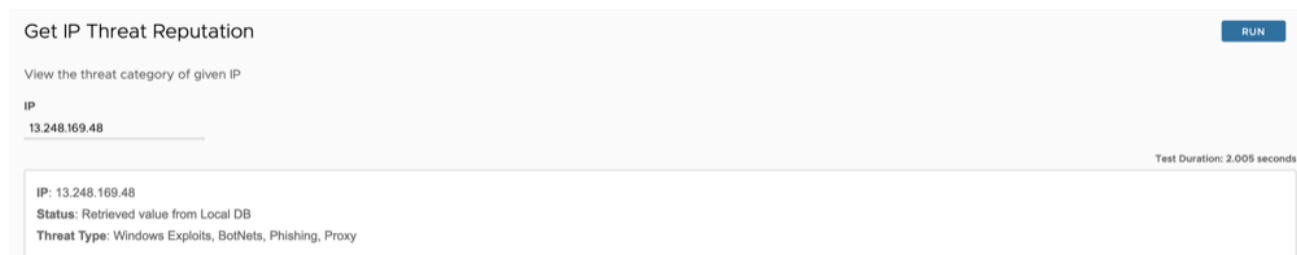
You can run this test when IP Threats are detected and to obtain the threat category of the given IP.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Get IP Threat Reputation** on the required Edge. Following is an example of the test output:

**Figure 5-9: Get IP Threat Reputation Test Sample Output**



## 5.10 Get URL Category and Reputation Test

### What is the Purpose of This Test

Run this test on the required Edge by providing the URL to view the category and reputation score of a given URL.

### When Can You Run This Test

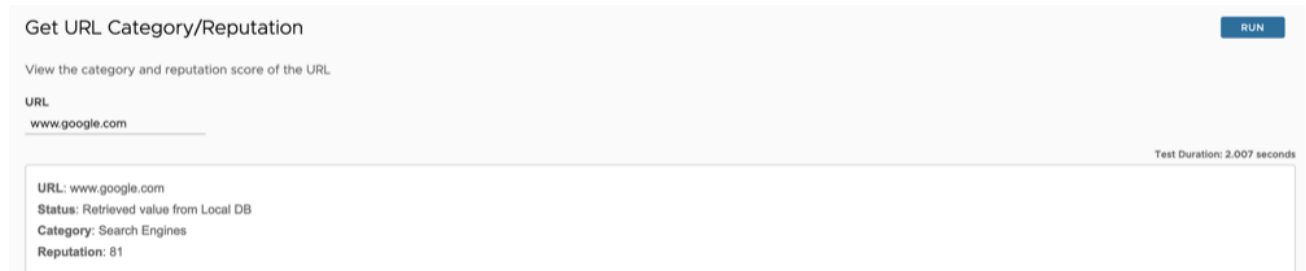
You can run this test to check the category and reputation score of a threat URL.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Get URL Category and Reputation** on the required Edge. Following is an example of the test output:

**Figure 5-10: Get URL Category and Reputation Test Sample Output**



## 5.11 Interface Status

### What is the Purpose of This Test

Run this test to:

- Verify the configuration and status of the interface.
- Check packet loss situation.

### When Can You Run This Test

Run this test to check the following:

- The link detected must be true. If it is false, then you must check the physical cabling and peer end configuration.
- Ideally RX and TX should be "0". If the RX and TX errors are incrementing, then try replacing the cables/SFP's. The values do not increase when this test is run twice.
- Negotiation parameter for interface issue.
- For Modem interface, verify if the signal quality strength is above 80% for a good wireless WAN link.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Interface Status** test on the required Edge. Following is an example of the test output:

**Figure 5-11: Interface Status Sample Output**

Interface Status RUN

View the MAC address and connection status of physical interfaces. Test Duration: 3.003 seconds

Routed Interfaces

Name	MAC Address	Link Detected	IP Address	Netmask	IPv6 Address	Speed	Autonegotiation	RX errors	TX errors	Collisions
GE3	00:50:56:9C:C5:28	true	169.254.9.3	255.255.255.248	fd00:1:1:1:2:64	10000 Mbps, full duplex	off	0	0	0
GE4	00:50:56:9C:5D:97	true	169.254.7.10	255.255.255.248	fd00:1:1:2:2:64	10000 Mbps, full duplex	off	0	0	0
GE5	00:50:56:9C:1D:C7	true	172.16.1.10	255.255.255.248	fd00:1:1:3:2:64	10000 Mbps, full duplex	off	0	0	0
GE6	00:50:56:9C:18:5E	true	172.16.1.2	255.255.255.248	fd00:1:1:4:2:64	10000 Mbps, full duplex	off	0	0	0
GE7	00:50:56:9C:A7:13	true	172.16.1.33	255.255.255.248	fd00:1:1:5:2:64	10000 Mbps, full duplex	off	0	0	0
GE8	00:50:56:9C:1B:CC	true	169.254.12.2	255.255.255.248	fd00:1:1:6:2:64	10000 Mbps, full duplex	off	0	0	0

Modem Interfaces

Name	Link Detected	IP Address	Netmask	IPv6 Address	Signal Quality	Operator Name	RX errors	TX errors	Collisions
------	---------------	------------	---------	--------------	----------------	---------------	-----------	-----------	------------

Switch Ports

Name	MAC Address	Link Detected	Speed	RX errors	TX errors	Collisions
GE1	00:50:56:9C:E1:7A	true	10000 Mbps, full duplex	0	0	0
GE2	00:50:56:9C:42:A7	true	10000 Mbps, full duplex	0	0	0

## 5.12 LTE Modem Information

### What is the Purpose of This Test

Run this test to get details about the following:

- Modem
- Connection
- Location
- Signal Strength
- Status of the LTE

### When Can You Run This Test

The following are the scenarios when you can run this test:

- Issues with LTE disconnections.
- Failure to understand the current state of the LTE.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **LTE Modem Information** test on the required Edge. Following are the examples of the test outputs:

- **Modem Information**

**Figure 5-12: Modem Information Sample Output**

```

Modem Information
{
  "Manufacturer": "Sierra Wireless, Incorporated",
  "Model": "EM7455",
  "Modem identifier": "359073060235219",
  "Firmware Revision": "SWI9X30C_02.33.03.00 r8209 CARMD-EV-FRMWR2 2019/08/28 20 59 30",
  "Hardware Revision": "1.0",
  "Supported capabilities": "gsm-umts, lte",
  "Current capabilities": "gsm-umts, lte",
  "own number": "NA",
  "state": "connected",
  "failed reason": "-",
  "Power state": "on",
  "current modes": "allowed 3g, 4g; preferred 4g",
  "imei": "359073060235219",
  "operator code": "311480",
  "operator name": "VZW",
  "registration state": "home",
  "signal quality(%)": "100"
}

```

Verify the following in the output:

- Operator name must be correct.
  - Signal quality must be above 70 % for better reception.
  - Registration state must display home for better speed.
  - LTE must be in a connected state. If disconnected, check for the failure reason.
- **Connection Information**
- Figure 5-13: Connection Information Sample Output**

```

Connection Information
{
  "Bearer": "Available",
  "Connected": "yes",
  "Suspended": "no",
  "Interface": "wwan0",
  "APN": "",
  "IP type": "ipv4v6",
  "user": "--",
  "password": "NA",
  "IP method": "static",
  "IP address": "100.88.59.190",
  "Gateway": "100.88.59.189",
  "DNS": "198.224.173.135",
  "MTU": "1428",
  "Stats Duration": "45390",
  "Rx bytes": "6636796",
  "Tx bytes": "34505527"
}

```

Verify the following in the output:

- Rx and Tx are incrementing as expected.
- IPv4 and IPv6 address and interface must be assigned with WAN information.
- Connected state must be "yes".
- If Suspended state is "yes", try resetting the LTE Modem.

---

- Location Information

Figure 5-14: Location Information Sample Output

```
Location Information
{
  "Operator code": "311",
  "Operator name": "480",
  "Location area code": "FFFE",
  "tracking area code": "1F07",
  "cell id": "00792D02"
}
```

- Signal Information

Figure 5-15: Signal Information Sample Output

```
Signal Information
{
  "serving": {
    "EARFCN": "5230",
    "MCC": "311",
    "MNC": "480",
    "TAC": "7943",
    "CID": "00792D02",
    "Bd": "13",
    "D": "3",
    "U": "3",
    "SNR": "22",
    "PCI": "433",
    "RSRQ": "-6.2",
    "RSRP": "-71.4",
    "RSSI": "-48.7",
    "RXLV": "--"
  },
  "IntraFreq": {
    "PCI": "433",
    "RSRQ": "-6.2",
    "RSRP": "-71.4",
    "RSSI": "-48.7",
    "RXLV": "--"
  },
  "InterFreq": {
    "EARFCN": "2075",
    "ThresholdLow": "0",
    "ThresholdHi": "0",
    "Priority": "0",
    "PCI": "433",
    "RSRQ": "-18.7",
    "RSRP": "-128.1",
    "RSSI": "-101.6",
    "RXLV": "0"
  }
}
```

Verify whether the mode is online, and then check for "last error code", which indicates that the LTE is in failed state.

- **Status Information**

**Figure 5-16: Status Information Sample Output**

```

Status Information
response: '!GSTATUS:
Current Time: 46460           Temperature: 55
Reset Counter: 1             Mode: ONLINE
System mode: LTE             PS state: Attached
LTE band: B13                LTE bw: 10 MHz
LTE Rx chan: 5230           LTE Tx chan: 23230
LTE CA state: INACTIVE       LTE SCell band:B4
LTE SCell bw:15 MHz         LTE SCell chan:2075
EMM state: Registered        Normal Service
RRC state: RRC Connected
IMS reg state: Full Srv      IMS mode: Normal

PCC RxM RSSI: -53           RSRP (dBm): -71
PCC RxD RSSI: -54           RSRP (dBm): -72
SCC RxM RSSI: -101          RSRP (dBm): -130
SCC RxD RSSI: -101          RSRP (dBm): -132
Tx Power: --                TAC: 1F07 (7943)
RSRQ (dB): -6.1             Cell ID: 00792D02 (7941378)
SINR (dB): 20.4'

```

- **Debug Information**

**Figure 5-17: Debug Information Sample Output**

```

Debug Information
{
  "response": "LTE Engineering",
  "IMSI": "311 480 753787712",
  "State": "Connected",
  "PLMN ID": "311 480",
  "PCI": "433",
  "Band": "13",
  "UL Channel": "23230",
  "DL Channel": "5230",
  "RSRP": "-71.4 dBm",
  "RSRQ": "-6.0 dB",
  "RS-SINR": "21.8 dB",
  "Tx Pwr": "0 dBm",
  "IP - internet": "IPv4 100.88.59.190 IPv6 2600 1010 B010 35B5 0 13 30A0 4A01",
  "APN": "Internet VZWINTERNET OTA vzwadmin",
  "Technology": "LTE",
  "Tx Diversity": "NA",
  "QLIC": "NA",
  "PRL": "NA",
  "Chipset": "MDM9x35",
  "AMSS Version": "MPSS.80.2.5.1.c1-00168-M9635TAAAAANAZM-1",
  "Device Version": "SW19X30C_02.33.03.00 r8209 CARMD-EV-FRMWR2 2019/08/28 20 59 30",
  "Hardware Version": "40",
  "IP Address": "EVDO,NA,1x NA",
  "Last Error code": "NA"
}

```

## 5.13 Flush Firewall Sessions

### What is the Purpose of This Test

This is similar to the Flush Flows options, but is specifically for the Stateful Firewall. This causes the Edge to not just flush the sessions, but actively send a TCP RST for the TCP-based sessions.

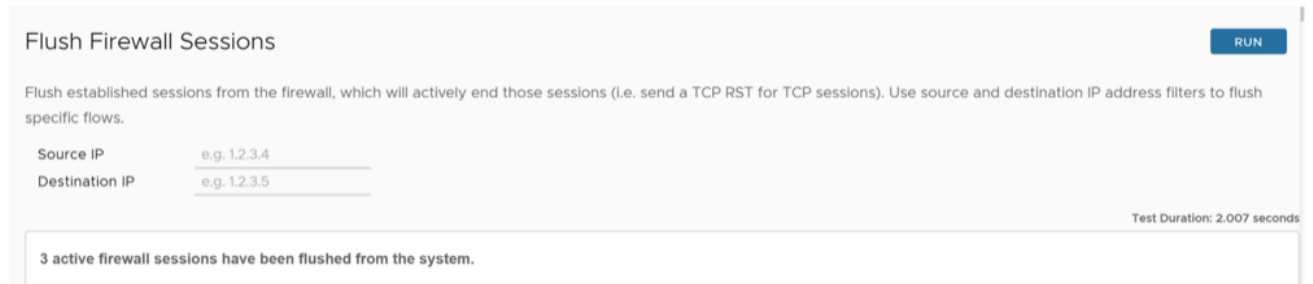
### When Can You Run This Test

Run the **Flush Firewall Sessions** test on the required Edge by providing the Source and Destination IP addresses to flush the active firewalls session which needs to be reset. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-18: Flush Firewall Sessions Sample Output**



Flush Firewall Sessions RUN

Flush established sessions from the firewall, which will actively end those sessions (i.e. send a TCP RST for TCP sessions). Use source and destination IP address filters to flush specific flows.

Source IP

Destination IP


Test Duration: 2.007 seconds

3 active firewall sessions have been flushed from the system.

## 5.14 List Active Firewall Sessions

### What is the Purpose of This Test

This allows you to see the current state of the active firewall sessions (up to a maximum of 1000 sessions). You can filter by Source and Destination IP and Port as well as Segment to limit the number of sessions returned.

 **Note:** IPv6 firewall session information can be viewable from the New Orchestrator UI. To view IPv6 firewall session information, you must run the **List Active Firewall Sessions** test from the New Orchestrator UI.

### When Can You Run This Test

To verify if the session is allowed or blocked. If it is allowed, it would be seen in the output. Also, you can see the current state of the session.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **List Active Firewall Sessions** test on the required Edge. Following is an example of the test output:

**Figure 5-19: List Active Firewall Sessions Sample Output**

List Active Firewall Sessions RUN

List active sessions in the firewall. Use source and destination IP address filters to view the exact sessions you want to see. This output is limited to a maximum of 1000 sessions.

Segment

Max Flows

Source IP/Port

Destination IP/Port

Test Duration: 1.002 seconds

Segment	Src IP	Dst IP	Protocol	Src Port	Dst Port	Application	Firewall Policy	TCP State	Bytes Sent	Bytes Rcvd	Duration (secs)
Global Segment	10.0.1.25	10.0.1.1	TCP	35760	179	bgp	AllowAny	CLOSED	258	164	0
Global Segment	10.0.1.25	10.0.1.1	UDP	49152	3784	udp	AllowAny	N/A	3796	5120	63

You can verify denied traffic of firewall under **Monitor > Firewall logs**.

**Figure 5-20: Monitor Firewall Logs**

Firewall Logs

Time	Segment	Edge	Action	Interface	Protocol	Source IP	Source Port	Destination IP	Destination Port	Rule	Reason	By
Aug 23, 2022, 1:56:14 PM	Global Segment	b1-edge1	DENY	VLAN-1	ICMP	10.0.1.25		8.8.8.8		Test	Rule-Action-Drop	

The Remote Diagnostics output displays the following information:

---

**Table 2: List Active Firewall Sessions Field Descriptions**

Field	Description
Segment	Specifies the segment in which the firewall session is processed by the Edge. You can also filter the output based on specific segment.
Src IP	Specifies the source IP which initiated the firewall session.
Dst IP	Specifies the destination IP of the firewall session.
Protocol	Specifies the protocol that the firewall session traffic is using.
Src Port	Specifies the source port of the firewall session traffic.
Dst Port	Specifies the destination port of the firewall session traffic.
Application	Specifies the application that is identified by the Application engine/DPI engine.
Firewall Policy	Specifies the firewall rule which is being matched by the session among the configured firewall rules.
TCP State	<p>Specifies the current TCP state of the session. In the output you will see the current TCP state of any flows. There are 11 distinct TCP states as defined in <i>RFC 793</i>:</p> <ul style="list-style-type: none"><li>• <b>SERVER_LISTEN</b>- represents the initial state of the TCP FSM on the Edge. This state is not shown in the Remote Diagnostic output, as this is the default state as soon as the session is created for the first packet of the flow. If it is SYN, then it is immediately moved to SYN_SENT state.</li><li>• <b>SYN_SENT</b>- Session moves to this state, when you see a connection request SYN from the Client to the Server.</li><li>• <b>SYN_RECEIVED</b>- represents a state where SYN+ACK is received from the Server side.</li><li>• <b>ESTABLISHED</b>- represents a state after 3-away handshake completing ACK from the Client side. Session is now ready for the data transfer phase.</li><li>• <b>CLIENT_FIN</b>- From the ESTABLISHED state, transition happens to the CLIENT_FIN state after FIN is received from the Client side. In this state, only FIN or ACK retransmits are allowed from the Client side. But from the Server side, all packets are allowed, with an exception to FIN which moves the state to CLOSING.</li><li>• <b>SERVER_FIN</b>- From the ESTABLISHED state, transition happens to the SERVER_FIN state after FIN received from the Server side. In this state, only FIN or ACK retransmits are allowed from the Server side. But from the Client side, all packets are allowed, with an exception to FIN which moves the state to CLOSING.</li><li>• <b>CLOSING</b>- represents a state when FIN was received from both the Server and Client ends. In this state, only SYN packets are allowed to reopen the session.</li><li>• <b>CLOSED</b>- represents a state where RST packet received from either the Server or the Client end. In this state, only SYN packets are allowed to reopen the session, any other packets are dropped.</li></ul>
Bytes Sent	Specifies the firewall session traffic from source IP to destination IP in Bytes.
Bytes Received	Specifies the firewall session traffic from destination IP to source IP in Bytes.
Duration	Specifies the age of the firewall session in seconds.

---

## 5.15 IPv6 Clear ND Cache

### What is the Purpose of This Test

Clear Neighbor Discovery (ND) cache command is used to clear specific interface learned neighbor entries and their corresponding Layer 2 information.

### When Can You Run This Test

Run this test if there is a change of neighbor IP addressing or Layer 2 information. Choose the interface for which the change has taken place.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

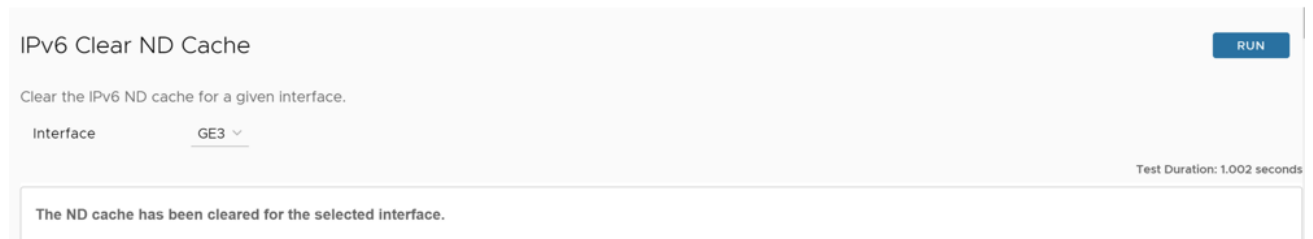
The query should run and provide an output stating as follows:

```
The ND cache has been cleared for the selected interface
```

If you see any other result like for example, "Timed out", check the Edge status.

Following is an example of the test output:

**Figure 5-21: IPv6 Clear ND Cache Sample Output**



## 5.16 IPv6 ND Table Dump

### What is the Purpose of This Test

IPv6 Neighbor Discovery (ND) Table Dump command shows IPv6 neighbor entries and their corresponding Layer 2 information for each interface.

### When Can You Run This Test

Run this test if you want to verify IPv6 neighbors and the corresponding Layer 2 MAC mapping information.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-22: IPv6 ND Table Dump Sample Output**



IPv6 ND Cache			
<b>GE4</b>			
fd00:1:1:2::1	00:50:56:9c:c3:ee	REACHABLE	
<b>GE5</b>			
fd00:1:1:3::1	00:50:56:9c:0d:3a	REACHABLE	
fe80::250:56ff:fe9c:d3a	00:50:56:9c:0d:3a	STALE	
<b>GE6</b>			
fd00:1:1:4::1	00:50:56:9c:f3:50	REACHABLE	
<b>GE3</b>			
fe80::250:56ff:fe9c:5c2b	00:50:56:9c:5c:2b	STALE	
fd00:1:1:1::1	00:50:56:9c:5c:2b	REACHABLE	

The Remote Diagnostics output displays the following information for each interface:

- IPv6 address of neighbor
- Corresponding Layer 2 MAC address
- Status of neighbor. The status can be any one of the following:
  - **Reachable**- This shows the neighbor information has been updated recently.
  - **Stale**- This shows the neighbor information was collected in past but not used currently.

## 5.17 IPv6 Route Table Dump

### What is the Purpose of This Test

IPv6 Route Table Dump command lists the complete Routing table in IPv6.

### When Can You Run This Test

Run this test if you want to verify the Route in the FIB table of IPv6. You can run the test by specifying any of the following options:

- **Segment**- Select the segment for which routes must be displayed. Select "all" for all segments.
- **Prefix**- Specify a particular prefix for which routes must be displayed.
- **Routes**- Select any of the following options from the drop-down menu:
  - **all**- Display all the routes for every prefix.

- **preferred**- Display the most preferred route alone for every prefix (this is the route being used for data forwarding).

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).



**Note:** The Route Table Dump command output has a limit of 16000 routes.

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-23: IPv6 Route Table Dump Sample Output**

The screenshot shows the 'IPv6 Route Table Dump' interface. It includes a 'Segment' dropdown set to 'all', a 'Prefix' field with an example '2001:db8:1::1/24', and a 'Router' dropdown set to 'preferred'. Below this is a table titled 'Segmented Route Table' with columns: Address, Segment, Network, Type, Cost, Preference, Other, Resolvable/Not-Res, Next-Hop Name, Backup/Other-Name, Cost/Reason, and Next-Resolvable-Reason. The table lists various IPv6 routes with their respective attributes.

Address	Segment	Network	Type	Cost	Preference	Other	Resolvable/Not-Res	Next-Hop Name	Backup/Other-Name	Cost/Reason	Next-Resolvable-Reason
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Edge	0	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Edge	0	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Edge	0	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Edge	0	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	0	0	0	Res	Clear	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Connected	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	200	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Connected	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	200	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Connected	0	0	0	Res	Clear-IPV6	Static	100,000,000,000	100,000,000,000
2001:db8:1::1/24	Static-Prepared	2001:db8:1::1/24	Static	200	0	0	Res	Clear-IPV6	preferred	100,000,000,000	100,000,000,000

The Remote Diagnostics output displays the following information:

**Table 3: IPv6 Route Table Dump Field Descriptions**

Field	Description
Address	Specifies the IPv6 routes available in the table.
Segment	Specifies the segment in which the routes are available and handled by the Edge.
Netmask	Specifies the range of addresses in IPv6.
Type	Specifies the route type, such as Cloud, Edge2Edge, any (Underlay or Connected), and so on.
Cost	Specifies the route cost or metric used in selection of route criteria.
Preference	Specifies the route preference.
Order	Specifies the order of the route.
Reachable	Specifies the status of the route: <ul style="list-style-type: none"> <li>• True- Reachable</li> <li>• False- Not Reachable</li> </ul>
Next Hop	Indicates the local exit interface in case of local routes. In case of overlay/remote routes, it indicates the type of next hop. For example, "Cloud gateway" in case of cloud routes, "Cloud VPN" in case of datacenter, or "edge to edge" routes etc,
Next Hop Name	Specifies the name of the next hop device.
Destination Name	Specifies the name of the destination device.
Lost Reason	Specifies the codes for different reasons for the routes being lost to next preferred route on the Edge.
(Not) Reachable Reason	Specifies the reason for the route being reachable or not reachable.



**Note:** An unresolved route, learned over multi-hop BGP, might point to an intermediate interface.

The following table lists the reason codes and the corresponding description:

**Table 4: Reason Code Descriptions**

Reason Code	Description
PR_UNREACHABLE	In case of overlay routes, the remote peer, which is either Gateway or Edge, is not reachable.
IF_DOWN	Egress Interface is down.
INVALID_IFIDX	Egress Interface if-index for this route is invalid.
SLA_STATE_DOWN	State given by IP SLA tracking is down.
HA_STANDBY	When the local Edge is a Standby, all routes synced from the active are marked as reachable for operational convenience.
LOCAL_MGMT	Management routes are always reachable.
LOOPBACK	Loopback IP address is always reachable.
SELF_ROUTE	Self IP routes are always reachable.
RECUR_UNRES	Recursive routes are marked as reachable so that recursive resolution can be done for operational convenience.
VPN_VIA_NAT	vpnViaNat routes are always reachable.
SLA_STATE_UP	State given by IP SLA tracking is up.
IF_RESOLVED	Egress interface is up and resolved.
PR_REACHABLE	In case of overlay routes, the remote peer, which is either Gateway or Edge, is reachable.

## 5.18 Flush DNS Cache

The Flush DNS Cache remote diagnostic test is introduced in the 6.1.0 release to make domain-based business policies more reliable.

### What is the Purpose of This Test

Currently, even though DNS cache is removed every 10 minutes, only entries with a TTL  $\leq 0$  are removed. The DPI-based entries are initially cached with a TTL of 24 hours and last at least that long in the cache, preventing new entries from being learned. This prevents reliable DNS lookups to support domain-based business policies. The **Flush DNS Cache** test will remove all entries from the cache and helps to free up space for new entries in order that domain-based business policies can be reliable.

### When Can You Run This Test

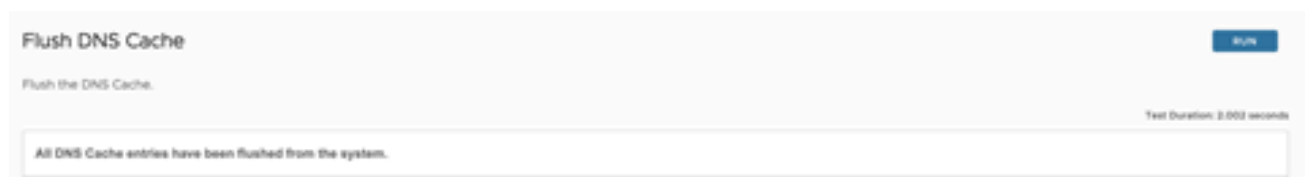
To clear all DNS cache entries from a specific Edge, run the **Flush DNS Cache** test on that Edge. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Verify if all DNS cache entries are cleared from the Edge device.

Following is an example of the test output:

**Figure 5-24: Flush DNS Cache Sample Output**



## 5.19 Flush Flows

### What is the Purpose of This Test

To clear all current active sessions/specific flows in the device.

### When Can You Run This Test

When specific traffic is not hitting the correct business policy or having issues with the specific flow.

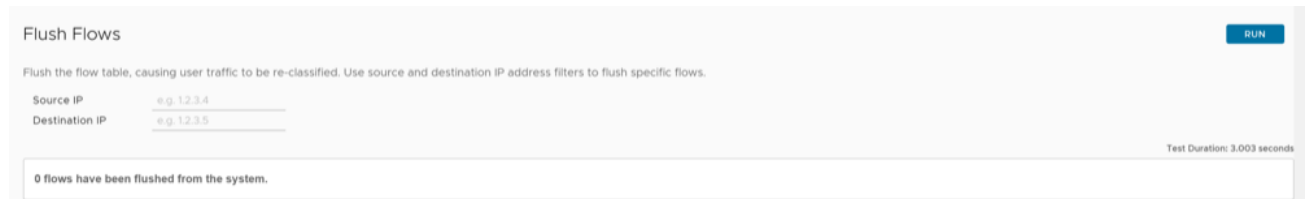
Run the **Flush Firewall Sessions** test on the required Edge by providing the Source or Destination IP address or both. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Verify if flows flushed is equal to the flows seen. This would create a minor and temporary blip in network.

Following is an example of the test output:

**Figure 5-25: Flush Flows Sample Output**



## 5.20 Flush NAT

### What is the Purpose of This Test

To remove all the existing NAT entries from the device.

### When Can You Run This Test

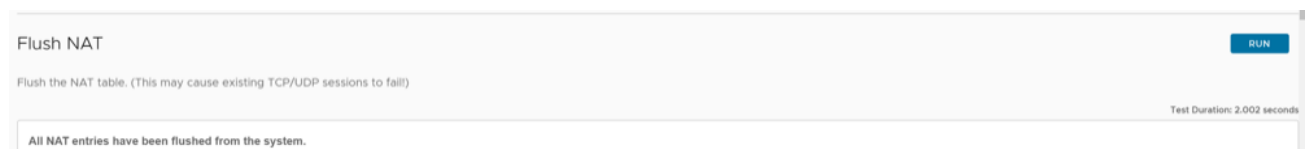
Run this test if NAT table is having improper NAT entry or if you have NAT related issues. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

All the NAT entries would be flushed and could cause an impact for current traffic.

Following is an example of the test output:

**Figure 5-26: Flush NAT Sample Output**



## 5.21 NAT Table Dump

### What is the Purpose of This Test

To verify if proper NATing is happening on the device.

### When Can You Run This Test

Run this test if there are NATing issues. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Use the Destination filter to view the exact entries in the NAT table. The output is limited to a maximum of 1000 entries.

Following is an example of the test output:

**Figure 5-27: NAT Table Dump Sample Output**

The screenshot shows a web interface titled "NAT Table Dump" with a "RUN" button. Below the title, there is a description: "View the contents of the NAT Table. Use the destination IP address filter to view the exact entries you want to see. This output is limited to a maximum of 1000 entries." There are two input fields: "Destination IP" with a placeholder "e.g. 1.2.3.5" and "Max Entries" set to "100". A "Test Duration: 2.007 seconds" indicator is visible on the right. The main content is a table with the following data:

Src IP	Dst IP	Protocol	Src Port	Dst Port	NAT Src IP	NAT Src Port
192.168.100.225	170.114.2.58	TCP	57479	443	192.168.0.199	20001
192.168.100.225	172.217.163.206	TCP	59548	443	192.168.0.199	20001
192.168.100.225	170.114.14.75	TCP	57474	443	192.168.0.199	20001
192.168.100.225	142.250.199.161	TCP	59542	443	192.168.0.199	20001
192.168.100.225	142.250.76.161	TCP	59525	443	192.168.0.199	20001
192.168.100.225	142.250.199.161	TCP	59545	443	192.168.0.199	20004
192.168.100.225	66.170.111.53	TCP	16993	8080	192.168.0.199	20001
192.168.100.225	142.250.182.100	TCP	57673	443	192.168.0.199	20004

## 5.22 List Active Flows

### What is the Purpose of This Test

Run this test to understand the behavior of current flows.

### When Can You Run This Test

To analyze how an incoming traffic flow is sent out from VeloCloud SD-WAN. For specific flow issues, you could use Source IP/Port or Destination IP/Port as filters to view that specific traffic flow. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-28: List Active Flows Sample Output**

List Active Flows RUN

List active flows in the system. Use source and destination IP address filters to view the exact flows you want to see. This output is limited to a maximum of 1000 flows.

Segment

Max Flows

Source IP/Port

Destination IP/Port

Test Duration: 3.011 seconds

Src IP	Dst IP	Segment	Protocol	Src Port	Dst Port	DSCP	Application	Link Policy	Route	Business Policy
192.168.100.225	8.8.8.8	Global Segment	UDP	57528	53	32	dns	Loadbalance	Cloud via Gateway	Network Service
192.168.100.225	8.8.8.8	Global Segment	UDP	61919	53	32	dns	Loadbalance	Cloud via Gateway	Network Service
192.168.100.225	8.8.8.8	Global Segment	UDP	59104	53	32	dns	Loadbalance	Cloud via Gateway	Network Service
192.168.100.225	8.8.8.8	Global Segment	UDP	59990	53	0	dns	Loadbalance	Cloud via Gateway	Network Service
192.168.100.225	8.8.8.8	Global Segment	UDP	56627	53	32	dns	Loadbalance	Cloud via Gateway	Network Service
192.168.100.225	74.125.88.27	Global Segment	TCP	61353	25	0	smtp	Loadbalance	Cloud via Gateway	Email bulk/DATA
192.168.100.225	142.250.77.96	Global Segment	TCP	59524	443	0	google_gen	Loadbalance	Direct to Cloud	Web
192.168.100.225	40.126.18.33	Global Segment	UDP	137	137	0	rtms	Loadbalance	Cloud via Gateway	Network Service

1. Verify if the traffic is hitting the correct business policy.
2. Verify if the traffic LINK policy and Route are taken as configured in business policy.
3. Verify if the application map is able to identify the traffic with correct application signature.
4. Try using flush flows if configuration changes of business policy is done prior to this.



**Note:** The output is limited to a maximum of 1000 entries.

## 5.23 Show BFD/BFDv6 Peer Status

### What is the Purpose of This Test

Run this test to determine BFDv6 status, with BFD peer. The status can be "UP" or "Down" or "Init".

### When Can You Run This Test

- If BFD is failing to come up (or) is down.
- To check the "Local and Remote" timers.
- To check the "Diagnostics" code if BFD is down.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-29: Show BFD/BFDv6 Peer Status Sample Output**

Troubleshoot BFD - Show BFD / BFDv6 Peer Status RUN

Use peer and local IPv4 or IPv6 address filters to show the status of specific BFD peers

Segment Global Segment ▾

Peer IP 172.16.2.9

Local IP 172.16.2.10

Json Format

Test Duration: 1.001 second

```

BFD Peer:
  peer 172.16.2.9 local-address 172.16.2.10 vrf [vc:0:1]
    ID: 1384770339
    Remote ID: 1015624290
    Status: up
    Uptime: 3 minute(s), 19 second(s)
    Diagnostics: ok
    Remote diagnostics: ok
    Local timers:
      Receive interval: 300ms
      Transmission interval: 300ms
      Echo transmission interval: 0ms
    Remote timers:
      Receive interval: 300ms
      Transmission interval: 300ms
      Echo transmission interval: 50ms

```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

The Remote Diagnostics output displays the following information:

**Table 5: Show BFD/BFDv6 Peer Status Field Descriptions**

Field	Description
Peer	Specifies the IP address of BFD peer.
local-address	Specifies the local IPv4 or IPv6 address of the Edge interface in BFD.
ID	Specifies the ID of the BFD peer.
Remote ID	Specifies the remote ID of the BFD peer.
Status	Specifies the status of BFD peer. The status can be "UP" or "Down" or "Init".
Uptime	Specifies the time in seconds, for how long the BFD is UP or Down.
Diagnostics/Remote Diagnostics	Specifies a reason if BFD is down.
Local timers/Remote timers	Indicates the configured Receive and Transmission interval values in milliseconds (ms). Also, displays the Echo transmission interval value in milliseconds (ms) if the Echo Transmission mode is activated on peer.



**Note:** The Echo Transmission mode is not supported on Edge.

## 5.24 Show BFD/BFDv6 Peer Counters

### What is the Purpose of This Test

Run this test to determine the BFD packet counters (Sent/Received).

### When Can You Run This Test

Run this test if BFD is failing to come Up (or) is Down. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-30: Show BFD/BFDv6 Peer Counters Sample Output**

Troubleshoot BFD - Show BFD / BFDv6 Peer counters RUN

Use peer and local IPv4 or IPv6 address filters to show the counters of specific BFD peers

Segment

Peer IP

Local IP

Json Format

Test Duration: 1.002 seconds

```
peer 172.16.2.9 local-address 172.16.2.10 vrf [vc:0:1]
Control packet input: 812 packets
Control packet output: 813 packets
Echo packet input: 0 packets
Echo packet output: 0 packets
Session up events: 1
Session down events: 0
Zebra notifications: 3
```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

The Remote Diagnostics output displays the following information:

- Count of BFD control Packets Sent/Received, if either only sent or only received counter is incrementing, it indicates a problem on non-incrementing side.
- Count of Echo packets Sent/Received. The Echo mode is not supported, so ideally should be deactivated on peer too.
- Count of Session Up/Down events, confirming how many UP/Down events are seen.
- Count of Zebra notifications.

## 5.25 Show BFD Settings

### What is the Purpose of This Test

To determine the BFD IPv4 settings and neighbor status.

### When Can You Run This Test

Run this test to determine the State of the BFD IPv4, along with interval values. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-31: Show BFD Settings Sample Output**

Seg ID	Peer Address	Local Address	State	Multihop	Detect Multiplier	Receive Interval	Transmit Interval
Global Segment	172.16.2.9	172.16.2.10	UP	false	3	300	300

## 5.26 Show BFDv6 Settings

### What is the Purpose of This Test

To determine the BFD IPv6 settings and neighbor status.

### When Can You Run This Test

Run this test to determine the State of the BFD IPv6, along with interval values. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-32: Show BFDv6 Settings Sample Output**

Seg ID	Peer Address	Local Address	State	Multihop	Detect Multiplier	Receive Interval	Transmit Interval
Global Segment	fd00:2:1:3::1	fd00:2:1:3::2	UP	false	3	300	300

## 5.27 List BGP Redistributed Routes

### What is the Purpose of This Test

Run this test to list the IPv4 routes redistributed by the Edge to the BGP peers.

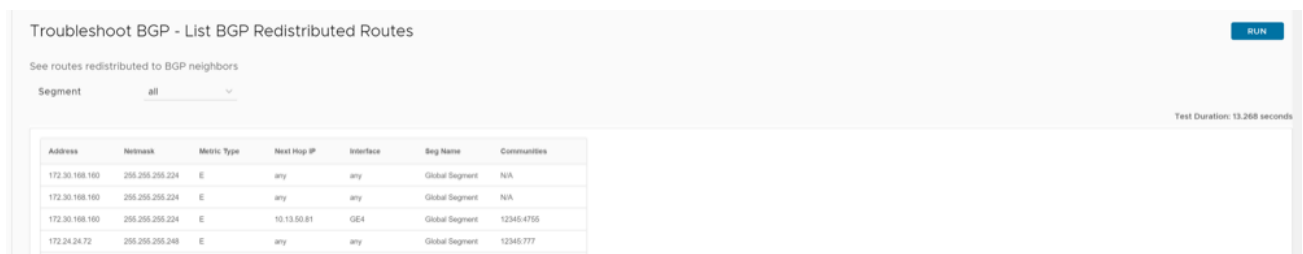
### When Can You Run This Test

Run this test to check and confirm if a prefix is redistributed by the Edge to its BGP neighbors. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **List BGP Redistributed Routes** test on the required Edge. Following is an example of the test output:

Figure 5-33: List BGP Redistributed Routes Sample Output



Address	Netmask	Metric Type	Next Hop IP	Interface	Seg Name	Communities
172.30.168.160	255.255.255.224	E	any	any	Global Segment	N/A
172.30.168.160	255.255.255.224	E	any	any	Global Segment	N/A
172.30.168.160	255.255.255.224	E	10.13.50.81	GE4	Global Segment	12345:4765
172.24.24.72	255.255.255.248	E	any	any	Global Segment	12345:777

The redistributed route, **Netmask** must be present in the **List BGP Redistributed** table. The redistributed route must be tagged with the expected **Metric Type**, **Next Hop IP** address, exit **Interface**, **Segment Name**, and **Community tag**.

## 5.28 List BGP Routes

### What is the Purpose of This Test

Run this test to list the entire BGP routes. Use **IPv4** or **IPv6** prefix to filter specific BGP routes or leave the prefix empty to see all the routes.

### When Can You Run This Test

Run this test to check and confirm:

- If a prefix is received in the BGP Table.
- If a BGP prefix is allowed to redistribute into the SD-WAN overlay route table.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **List BGP Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-34: List BGP Routes Sample Output**

Troubleshoot BGP - List BGP Routes RUN

Show the specific BGP routes from neighbors, leave prefix empty to see all

Segment

Prefix

Test Duration: 14.204 seconds

Address	Netmask	Metric Type	Next Hop IP	Advertise	Interface	Overlay Preference	Local Preference	AsPL	Communities	Reachable	Seg Name
10.8.45.76	255.255.255.252	E	10.13.50.81	true	GE4	64	100	2	12345:4755	yes	Global Segment
10.8.03.208	255.255.255.252	E	10.13.50.81	true	GE4	64	100	2	12345:4755	yes	Global Segment
10.8.03.212	255.255.255.252	E	10.13.50.81	true	GE4	64	100	2	12345:4755	yes	Global Segment
10.8.06.176	255.255.255.252	E	10.13.50.81	true	GE4	64	100	2	12345:4755	yes	Global Segment
10.8.06.16	255.255.255.252	E	10.13.50.81	true	GE4	64	100	2	12345:4755	yes	Global Segment

Verify the following in the output:

- BGP routes received from BGP neighbors must be present in the table.
- The BGP route must have the advertise flag set to **True**, and the reachable flag set to **Yes**, to redistribute the received prefix into the overlay route table.
- The BGP route must be tagged with the expected **Metric Type**, **Next Hop IP** address, exit **Interface**, **Segment Name**, and **Community Tag**.

## 5.29 List Routes per Prefix

### What is the Purpose of This Test

Run this test to list all the possible routes (Overlay and Underlay routes) available in the Edge for the specific destination prefix.

### When Can You Run This Test

Run this test to check and confirm:

- If the Edge has received both Overlay and Underlay routes (if available) for the specific destination prefix.
- The availability of the primary and secondary route paths (if available) for the specific destination prefix.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **List Routes per Prefix** test on the required Edge. Following is an example of the test output.

**Figure 5-35: List Routes per Prefix Sample Output**

Address	Netmask	Metric Type	Next Hop IP	AsPath	Communities	Dest Name	Flags	Interface	Local Preference	Next Host name	Overlay Preference	Seg Name	Route Type
172.31.216.0	255.255.252.0	E	any	651	N/A	HUB	DSBR	any	100	HUB	64	Global Segment	edge/edge
172.31.216.0	255.255.252.0	E	10.13.50.81	651 4751	12345:4755	N/A	SB	GE4	100	N/A	512	Global Segment	Underlay

The **List Routes per Prefix** command will display all the possible route entries for the specific destination prefix with the associated local or overlay preferences and community tags.

Based on the route order displayed in the Orchestrator UI, you could check the availability of the primary and backup route paths for the specific destination prefix in each segment. i.e., 1st Route Entry = Best path (Primary path), 2nd Route Entry = Second Best Path, 3rd Route Entry = Third Best Path, and so on.

The **Route Type** identifies the origin of the specific route entry (Overlay or Underlay route).

The **Next Hop IP** and **Dest Name** identify the next-hop device IP (for Underlay route types) or the Edge name (for Overlay route types), which advertised the specific route entry.

## 5.30 Show BGP Neighbor Advertised Routes

### What is the Purpose of This Test

Run this test to list the IPv4 routes advertised by the Edge to the specific BGP peer.

### When Can You Run This Test

Following are the scenarios when you can run this test:

- To check and confirm whether the Edge advertises the IPv4 prefixes to the specific BGP peer.
- If a prefix is denied by the BGP neighbor outbound filter configuration in the Orchestrator, then the Edge does not advertise the denied prefix to the specific BGP neighbor.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show BGP Neighbor Advertised Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-36: Show BGP Neighbor Advertised Routes Sample Output**

```

Troubleshoot BGP - Show BGP Neighbor Advertised Routes
Show the BGP routes advertised to a neighbor
Segment: Global Segment
Neighbor IP: 10.13.50.81
Json Format: 
Test Duration: 5.025 seconds

BGP table version is 37825, local router ID is 172.19.16.50, vrf id 1
Default local pref 100, local AS 6517
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Nexthop codes: @@@@ nexthop's vrf id, < announce-nh-self
Origin codes:  i - IGP, e - EGP, ? - incomplete

  Network      Next Hop      Metric LocPrf Weight Path
  *> 10.13.50.80/30  0.0.0.0          0      32768 i
  *> 172.18.40.96/29  0.0.0.0          1 4755 645 651 ?
  *> 172.18.40.112/29 0.0.0.0          1 4755 650 651 ?

```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The Edge must list all the advertised prefixes in the table. If a prefix is missed, verify the BGP neighbor status and the outbound filter configuration in the Orchestrator.
- A valid route is marked with the sign "\*" and the best route is marked with the sign ">".
- All the prefixes must be tagged respectively with **Metric** (only for self-originated routes), **Local Preference**, **Weight**, **Next Hop** IP Address, **AS-Path**, and **Route Origin** code attributes.

## 5.31 Show BGP Neighbor Learned Routes

### What is the Purpose of This Test

Run this test to list the IPv4 prefixes accepted by the Edge from the BGP peer after applying the BGP neighbor inbound filters configured in the Orchestrator.

### When Can You Run This Test

Following are the scenarios when you can run this test:

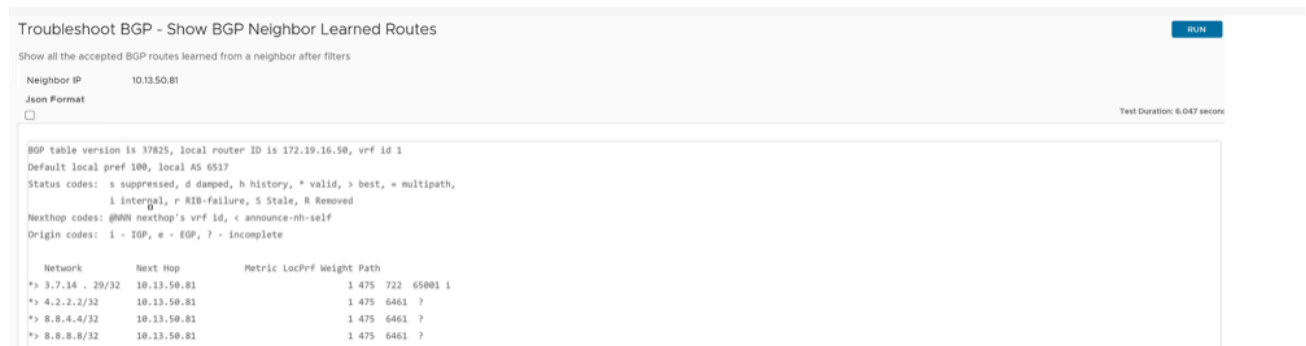
- To check and confirm if the Edge has accepted BGP routes learned from a neighbor.
- If a specific route is not present in the **Show BGP Neighbor Learned Routes** table, then we must verify the BGP neighbor inbound filter in the Orchestrator and run the diagnostic command **Show BGP Neighbor Received Routes** to list all the BGP routes advertised by the BGP Neighbor before applying the BGP inbound filters.

### What to Check in the Test Output

Run the **Show BGP Neighbor Learned Routes** test on the required Edge. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

Following is an example of the test output:

**Figure 5-37: Show BGP Neighbor Learned Routes Sample Output**



Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The prefix learned and accepted by the Edge from its BGP neighbor must be present.
- A valid BGP route is marked with the sign "\*" and the best route is marked with the sign ">".
- The output must display the total number of prefixes received and accepted by the Edge after applying the inbound filters.

## 5.32 Show BGP Neighbor Received Routes

### What is the Purpose of This Test

Run this test to list the IPv4 prefixes accepted by the Edge from the BGP peer before applying the BGP neighbor inbound filters configured in the Orchestrator.

### When Can You Run This Test

Run this test to check and confirm that all the prefixes are received by the Edge from a BGP neighbor. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show BGP Neighbor Received Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-38: Show BGP Neighbor Received Routes Sample Output**

```
Troubleshoot BGP - Show BGP Neighbor Received Routes

Show all the BGP routes received from a neighbor before filters
Segment      Global Segment
Neighbor IP   172.16.2.9
Json Format


BGP table version is 0, local router ID is 1.2.0.1, vrf id 1
Default local pref 100, local AS 2
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
*> 1.2.0.1/32      172.16.2.9        0             1 21 i
*> 1.3.0.1/32      172.16.2.9        0             1 21 2 ?
*> 10.0.1.0/24     172.16.2.9        0             1 21 2 ?
*> 10.0.2.0/24     172.16.2.9        0             1 21 2 ?
*> 10.0.3.0/24     172.16.2.9        0             1 21 2 ?
*> 169.254.129.1/32 172.16.2.9        0             1 21 2 ?
*> 172.16.2.8/29   172.16.2.9        0             1 21 i
*> 172.16.2.16/29  172.16.2.9        0             1 21 i
```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The output must display the total number of prefixes received by the Edge.
- The output must list the number of BGP prefixes filtered by the inbound filters.
- The Edge must list all the received prefixes.
- If a BGP prefix is not present in the table, check the BGP neighborhood status and the list of BGP prefixes advertised by the BGP neighbor device to the Edge.

## 5.33 Show BGP Neighbor Details

### What is the Purpose of This Test

Run this test to check the BGP neighbor status and the BGP neighborhood uptime.

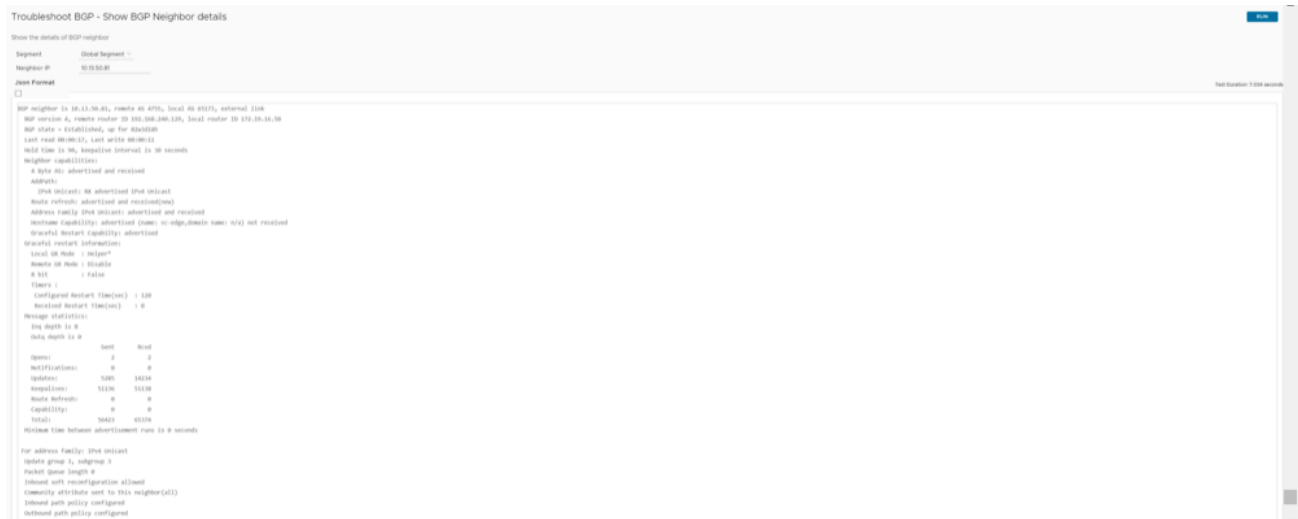
### When Can You Run This Test

Run this test to check the details about a neighbor. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show BGP Neighbor Details** test on the required Edge. Following is an example of the test output:

**Figure 5-39: Show BGP Neighbor Details Sample Output**



```
Troubleshoot BGP - Show BGP Neighbor details
Show the details of BGP neighbor
Segment: Global Segment
Neighbor ID: 10.10.10.10
Json Format: 
[ ]
BGP neighbor is 10.10.10.10, remote AS 4779, local AS 4779, external link
BGP version 4, router id 10.10.10.10, local router ID 10.10.10.10
BGP state = Established, up for 50:43:58
Last read 00:00:17, last write 00:00:11
Hold time is 90, keepalive interval is 30 seconds
Neighbor capabilities:
  A type (s): advertised and received
  address
  IPv4 unicast: advertised and received
  Multicast: advertised and received
  address family ipv4 unicast: advertised and received
  Multicast Capability: advertised (name: m-edges, domain name: N/A) not received
  graceful restart capability: advertised
  graceful restart information:
    local AS Mode: 1 neighbor*
    Mode: 0 Mode: 1: enable
    A type: 1: false
  Timers:
    Configured Restart Time(sec): 120
    Restart Restart Time(sec): 0
Message statistics:
  Inq depth is 0
  Outq depth is 0
  Open: 0 0
  Notifications: 0 0
  Updates: 7385 14216
  Withdrawals: 10306 10306
  Route Refresh: 0 0
  Capabilities: 0 0
  Hold: 3400 6076
  Holdown time between advertisement runs is 0 seconds
For address family: IPv4 unicast
  Update group 1, subgroup 1
  Packets queue length 0
  Inbound soft reconfiguration allowed
  Community attribute sent to this neighbor(s)
  Inbound path policy configured
  Outbound path policy configured
```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

You can check the following parameters in the output:

- BGP neighborhood status
- BGP neighborhood uptime
- Local AS
- Remote AS
- Edge BGP Router ID
- Peer device BGP Router ID
- BGP Hold and Keep-alive Timers
- Neighbor capabilities

Verify the following in the output:

- Message statistics should display the number of BGP packets sent and received by the Edge.
- Check and confirm if any inbound/outbound filters are attached to the specific BGP neighbor and the list of prefixes accepted by the Edge from the BGP neighbor after applying the inbound filters.
- Verify the source IP address/port number and the destination IP address/port number used by the Edge to establish BGP neighborhood. This can be done by looking into the local host/port and foreign host/port details.

## 5.34 Show BGP Routes per Prefix

### What is the Purpose of This Test

Run this test to verify a particular route detail in BGP.

### When Can You Run This Test

Run this test to verify how the best path route is selected using BGP attributes. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show BGP Routes per Prefix** test on the required Edge. Following is an example of the test output:

**Figure 5-40: Show BGP Routes per Prefix Sample Output**

```

Troubleshoot BGP - Show BGP Routes per Prefix
Show all the BGP routes for the prefix and their attributes
Prefix: 8.8.8.8
Json Format: 
SegmentID:
BGP routing table entry for 8.8.8.8/32
Paths: (1 available, best #1, table [v:0:1])
Not advertised to any peer
4755 64613
10.11.50.81 from 10.11.50.81 (192.168.240.129)
  origin incomplete, default local pref 100, weight 1, valid, external, best
  community: 12345:4755
  Last update: Sat May  7 08:06:19 2022
  
```

The output provides the following details:

- Best path to the routes along with all other paths.
- BGP attributes to compare and check how best path is chosen.

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

## 5.35 Show BGP Summary

### What is the Purpose of This Test

This test displays the BGP neighbors associated with the device.

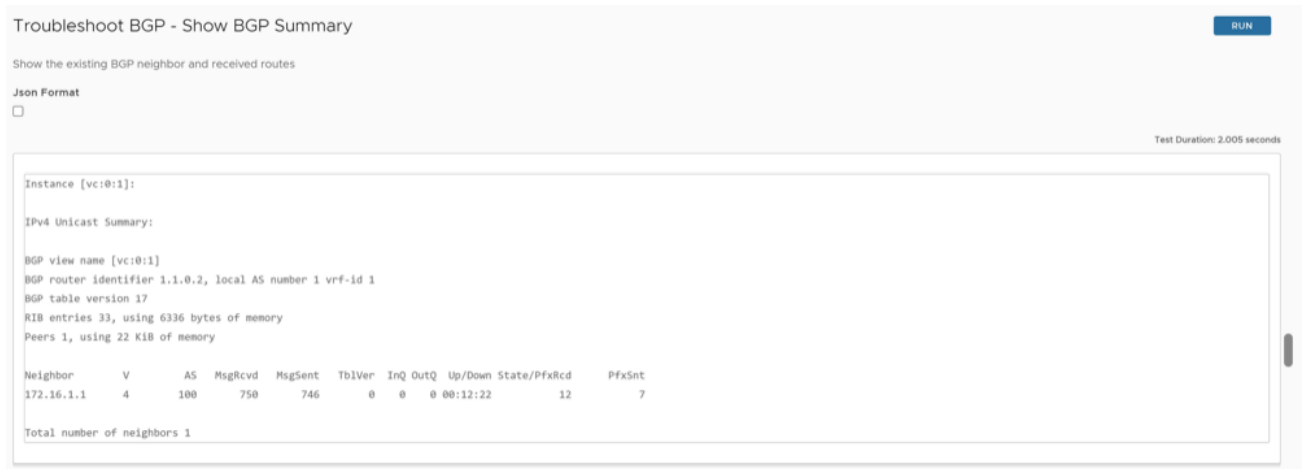
### When Can You Run This Test

Run this test to understand if the BGP neighbor is up or not with neighbor details. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show BGP Summary** test on the required Edge. Following is an example of the test output in string format:

**Figure 5-41: Show BGP Summary Sample Output**



The screenshot shows a web interface for a test titled "Troubleshoot BGP - Show BGP Summary". A "RUN" button is in the top right. Below the title, there is a description "Show the existing BGP neighbor and received routes" and a "Json Format" checkbox which is currently unchecked. The test output is displayed in a large text area, showing the following text:

```
Instance [vc:0:1]:

IPv4 Unicast Summary:

BGP view name [vc:0:1]
BGP router identifier 1.1.0.2, local AS number 1 vrf-id 1
BGP table version 17
RIB entries 33, using 6336 bytes of memory
Peers 1, using 22 KiB of memory

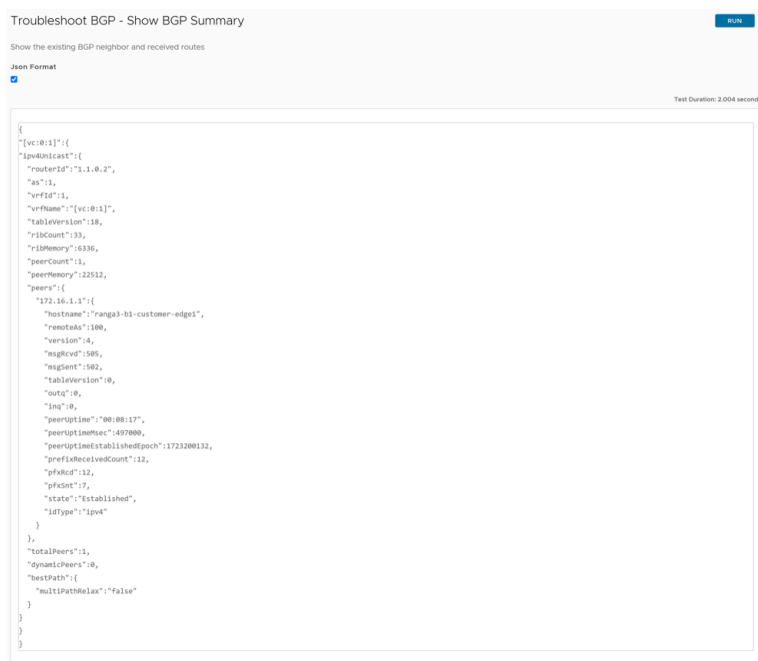
Neighbor      V      AS  MsgRcvd  MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd  PfxSnt
172.16.1.1    4      100    750      746      0      0      0 00:12:22    12           7

Total number of neighbors 1
```

Test Duration: 2.005 seconds

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

**Figure 5-42: Show BGP Summary JSON Output**



The screenshot shows the same web interface as Figure 5-41, but the "Json Format" checkbox is now checked. The test output is displayed in a large text area, showing the following JSON:

```
{
  "vc:0:1": {
    "ipv4unicast": {
      "routerId": "1.1.0.2",
      "as": 1,
      "vrfId": 1,
      "vrfName": "[vc:0:1]",
      "tblVersion": 17,
      "ribCount": 33,
      "ribMemory": 6336,
      "peerCount": 1,
      "peerMemory": 22512,
      "peers": [
        {
          "172.16.1.1": {
            "hostname": "ranga3-b1-customer-edge1",
            "remoteAs": 100,
            "version": 4,
            "msgRcvd": 750,
            "msgSent": 746,
            "tblVersion": 0,
            "outq": 0,
            "inq": 0,
            "peerUpTime": "00:00:17",
            "peerUpTimeSec": 107960,
            "peerTimeEstablishedEpoch": 1723200132,
            "prefixReceivedCount": 12,
            "pfxRcd": 12,
            "pfxSnt": 7,
            "state": "established",
            "idType": "ipv4"
          }
        }
      ],
      "totalPeers": 1,
      "dynamicPeers": 0,
      "bestPath": {
        "multiPathRelax": "false"
      }
    }
  }
}
```

Test Duration: 2.004 seconds

Verify the following in the output:

- **Neighbor:** Provides IP of peer which we used to peer in configuration
- **V:** Indicates the version of BGP running in device.
- **AS:** Provides the remote peer AS path
- **MsgRcd:** Number of packets BGP has received from its peer

- **Msg Sent:** Number of packets BGP has sent to its peer
- **TblVer:** Provides the detail of current BGP table version changes if any
- **Inq:** Number of packets in queue to be received from its peer
- **outq:** Number of packets in out queue to be sent to its peer
- **State/Pfx rcd:** Indicates the state and prefix count of the BGP peers.

**Table 6: Show BGP Summary Field Descriptions**

State	Description
Idle	BGP resources are initialized by the router. BGP inbound connection attempts are refused. BGP initiates a TCP connection to the peer.
Connect	BGP waits for the 3WHS to complete. If successful, the OPEN message is sent to the peer and BGP moves to the OpenSent state. If unsuccessful, BGP continues to the Active state. However, if the ConnectRetry expires, BGP remains in this state, with the timer being reset and a new 3WHS being initiated.
Active	The ConnectRetry timer is reset, and BGP returns to the Connect state.
OpenSent	BGP waits for an OPEN message from its peer. Once received, BGP moves to the OpenConfirm state.
OpenConfirm	BGP waits for a keepalive message from its peer. If the message is received before the timeout expires, BGP moves to the Established state. Otherwise, BGP transitions to Idle.
Established	Both peers exchange UPDATE messages. If there is an error within any of the UPDATE messages, the BGP peer sends a NOTIFICATION message and enters the Idle state.



**Note:** Any other state with a number represents the number of subnets received by the BGP from its peer.

## 5.36 Show BGP Table

### What is the Purpose of This Test

To view complete BGP table.

### When Can You Run This Test

To verify whether the list of subnets and the next hop are as expected. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show BGP Table** test on the required Edge. Following is an example of the test output:

**Figure 5-43: Show BGP Table Sample Output**

```
Instance [vc:0:1]:
BGP table version is 17, local router ID is 1.1.0.2, vrf id 1
Default local pref 100, local AS 1
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
* 1.1.0.1/32    172.16.1.1      0       1 100 i
*> 1.1.0.2/32   0.0.0.0         0       32768 ?
*> 1.1.0.2/32   0.0.0.0         0       32768 ?
* 1.2.0.1/32    172.16.1.1      90      1 100 i
*> 1.2.0.1/32   0.0.0.0         90      32768 ?
*> 1.3.0.1/32   0.0.0.0         90      32768 ?
*> 10.0.1.0/24  0.0.0.0         0       32768 ?
*> 10.0.2.0/24  0.0.0.0         90      32768 ?
*> 10.0.3.0/24  0.0.0.0         90      32768 ?
*> 172.16.1.0/29 172.16.1.1      0       1 100 i
*> 172.16.1.24/29 172.16.1.1      0       1 100 i
*> 172.16.1.32/29 172.16.1.1      0       1 100 i
*> 172.16.2.0/29 172.16.1.1      0       1 100 i
*> 172.16.2.24/29 172.16.1.1      0       1 100 i
*> 172.16.2.32/29 172.16.1.1      0       1 100 i
```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- **Network:** \*> is the best path to IP prefix. If there is no ">" before the prefix, then it is not injected to the forwarding table.
- **Nexthop:** Provide the next hop IP to which IP subnet must be sent.
- **Metric:** BGP metric is displayed.
- **Local pref:** BGP local preference, if present for a route, is displayed.
- **Weight:** BGP weight attribute of the route is displayed.
- **Path:** BGP AS path of the route is displayed.

## 5.37 Show BGPv6 Neighbor Advertised Routes

### What is the Purpose of This Test

Run this test to list the IPv6 routes advertised by the Edge to the specific BGPv6 neighbor.

### When Can You Run This Test

Following are the scenarios when you can run this test:

- To check and confirm whether the Edge advertises the IPv6 prefixes to the specific BGPv6 neighbor.

- If a prefix is denied by the BGPv6 neighbor outbound filter configuration in the Orchestrator, then the edge does not advertise the denied prefix to the specific BGPv6 neighbor.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show BGPv6 Neighbor Advertised Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-44: Show BGPv6 Neighbor Advertised Routes Sample Output**

```

Troubleshoot BGPv6 - Show BGPv6 Neighbor Advertised Routes

Show the BGPv6 routes advertised to a neighbor

Segment      Global Segment
Neighbor IP   fd00:2:1:3:1

Json Format


BGP table version is 5, local router ID is 1.2.0.1, vrf id 1
Default local pref 100, local AS 2
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Next hop codes: @NNN next hop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network      Next Hop      Metric LocPrf Weight Path
*> fd00:2:1::/64  ::              0      32768 ?
*> fd00:2:1:3::/64 fd00:2:1:3::1  1 21 i
*> fd00:2:1:a003::/64
                    fd00:2:1:3::1  1 21 i
*> fd00:3:1::/64  ::              4      32768 ?
*> fd00:ffff:ffff:7::1/128
                    fd00:2:1:3::1  1 21 i

Total number of prefixes 5

```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The Edge must list all the advertised prefixes in the table. If a prefix is missed, verify the BGPv6 neighbor status and the outbound filter configuration in the Orchestrator.
- A valid route is marked with the sign "\*" and the best route is marked with the sign ">".
- All the prefixes must be tagged with **Metric** (only for self-originated routes), **Local Preference**, **Weight**, **Next Hop** IP Address, **AS-Path**, and **Route Origin** code attributes.

## 5.38 Show BGPv6 Neighbor Learned Routes

### What is the Purpose of This Test

Run this test to list the IPv6 prefixes accepted by the Edge from the BGP neighbor after applying the BGP neighbor inbound filters configured in the Orchestrator.

## When Can You Run This Test

Following are the scenarios when you can run this test:

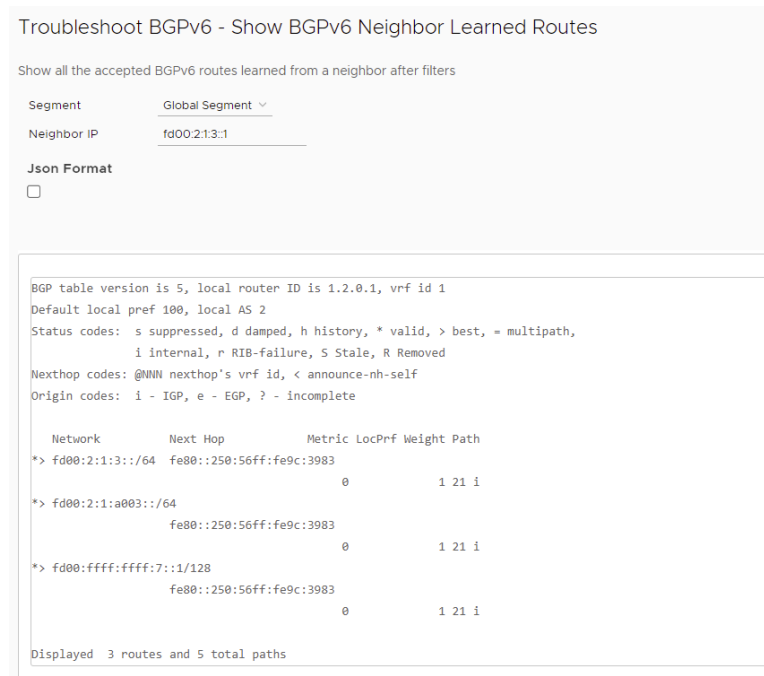
- To check and confirm if the Edge has accepted BGP routes learned from a neighbor.
- If a specific route is not present in the **Show BGPv6 Neighbor Learned Routes** table, then we must verify the BGPv6 neighbor inbound filter in the Orchestrator and run the diagnostic command **Show BGPv6 Neighbor Received Routes** to list all the BGP routes advertised by the BGP Neighbor before applying the BGP inbound filters.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show BGPv6 Neighbor Learned Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-45: Show BGPv6 Neighbor Learned Routes Sample Output**



```
BGP table version is 5, local router ID is 1.2.0.1, vrf id 1
Default local pref 100, local AS 2
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Next-hop codes: @NNN next-hop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete

  Network          Next Hop          Metric LocPrf Weight Path
* > fd00:2:1:3::/64  fe80::250:56ff:fe9c:3983
                               0           1 21 i
* > fd00:2:1:a003::/64
                               fe80::250:56ff:fe9c:3983
                               0           1 21 i
* > fd00:ffff:ffff:7::1/128
                               fe80::250:56ff:fe9c:3983
                               0           1 21 i

Displayed 3 routes and 5 total paths
```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The prefix learned and accepted by the Edge from its BGP neighbor must be present.
- A valid BGP route is marked with the sign "\*" and the best route is marked with the sign ">".
- The prefix accepted by the Edge must hold the correct next-hop IP address, Metric, Local preference, Weight, and AS-path.
- The output must display the total number of prefixes received and accepted by the Edge after applying the inbound filters.

## 5.39 Show BGPv6 Neighbor Received Routes

### What is the Purpose of This Test

Run this test to list the IPv6 prefixes received by the Edge from the BGPv6 neighbor before applying the BGPv6 neighbor inbound filters configured in the Orchestrator.

### When Can You Run This Test

Run this test to check and confirm that all the prefixes are received by the Edge from a BGPv6 neighbor. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show BGPv6 Neighbor Received Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-46: Show BGPv6 Neighbor Received Routes Sample Output**

```

Troubleshoot BGPv6 - Show BGPv6 Neighbor Received Routes

Show all the BGPv6 routes received from a neighbor before filters

Segment          Global Segment ▾
Neighbor IP      fd00:2:1:3:1
Json Format


BGP table version is 0, local router ID is 1.2.0.1, vrf id 1
Default local pref 100, local AS 2
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
*> fd00:2:1::/64   fd00:2:1:3::1    0          1 21 2 ?
*> fd00:2:1:3::/64 fd00:2:1:3::1    0          1 21 i
*> fd00:2:1:a003::/64
                    fd00:2:1:3::1    0          1 21 i
*> fd00:3:1::/64   fd00:2:1:3::1    0          1 21 2 ?
*> fd00:ffff:ffff:7::1/128
                    fd00:2:1:3::1    0          1 21 i

Total number of prefixes 5

```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The output must display the total number of prefixes received by the Edge.
- The output must list the number of BGPv6 prefixes filtered by the inbound filters.
- The Edge must list all the received prefixes.
- If a BGPv6 prefix is not present in the table, check the BGPv6 neighborhood status and also check the list of BGPv6 prefixes advertised by the peer BGP on the neighbor device.

## 5.40 Show BGPv6 Neighbor Details

### What is the Purpose of This Test

Run this test to check the BGPv6 neighbor status and the BGPv6 neighborship uptime.

### When Can You Run This Test

To confirm the current status of the BGPv6 neighborship and list the BGPv6 neighborship attributes. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show BGPv6 Neighbor Details** test on the required Edge. Following is an example of the test output:

**Figure 5-47: Show BGPv6 Neighbor Details Sample Output**

```
Troubleshoot BGPv6 - Show BGPv6 Neighbor details

Show the details of BGPv6 neighbor

Segment      Global Segment v
Neighbor IP   fd00:213:1

BGP neighbor is fd00:213::1, remote AS 21, local AS 2, external link
Hostname: 21-3site-b2-13switch1
BGP version 4, remote router ID 2.2.2.2, local router ID 1.2.0.1
BGP state = Established, up for 00:12:49
Last read 00:00:01, Last write 00:00:01
Hold time is 3, keepalive interval is 1 seconds
Neighbor capabilities:
 4 Byte AS: advertised and received
AddPath:
 IPv6 Unicast: RX advertised IPv6 Unicast and received
Route refresh: advertised and received(old & new)
Address Family IPv6 Unicast: advertised and received
Hostname Capability: advertised (name: vc-edge,domain name: n/a) received (name: 21-3site-b2-13switch1,domain name: n/a)
Graceful Restart Capability: advertised and received
  Remote Restart timer is 120 seconds
  Address families by peer:
    none
Graceful restart information:
End-of-RIB send: IPv6 Unicast
```

Figure 5-48: Output Continued

```

End-of-RIB send: IPv6 Unicast
End-of-RIB received: IPv6 Unicast
Local GR Mode : Helper*
Remote GR Mode : Helper
R bit : False
Timers :
Configured Restart Time(sec) : 120
Received Restart Time(sec) : 120
IPv6 Unicast :
F bit : False
End-of-RIB Received : Yes
End-of-RIB Send : Yes
EoRSentAfterUpdate : Yes
Timers:
Configured Stale Path Time(sec) : 360
Message statistics:
Inq depth is 0
Outq depth is 0

```

	Sent	Rcvd
Opens:	1	1
Notifications:	0	0
Updates:	4	4
Keepalives:	769	769
Route Refresh:	0	0
Capability:	0	0
Total:	774	774

```

Minimum time between advertisement runs is 0 seconds

For address family: IPv6 Unicast
Update group 1, subgroup 1

```

Figure 5-49: Output Continued

```

For address family: IPv6 Unicast
Update group 1, subgroup 1
Packet Queue length 0
Inbound soft reconfiguration allowed
Community attribute sent to this neighbor(all)
3 accepted prefixes

Connections established 1; dropped 0
Last reset never
Local host: fd00:2:1:3::2, Local port: 59592
Foreign host: fd00:2:1:3::1, Foreign port: 179
Nexthop: 172.16.2.10
Nexthop global: fd00:2:1:3::2
Nexthop local: fe80::cf17:b49:ee02:2fe1
BGP connection: shared network
BGP Connect Retry Timer in Seconds: 120
Read thread: on Write thread: on

```

Verify the following in the output:

- Check the following parameters in the "BGPv6 neighbor table":
  - BGPv6 neighborship status
  - BGPv6 neighborship uptime
  - Local AS
  - Remote AS
  - Edge BGP Router ID
  - Peer device BGP Router ID
  - BGP Hold and Keep-alive Timers
  - Neighbor capabilities
- The number of BGP packets (i.e., Open, Notifications, Updates, Keepalives, Route Refresh, and Capability) sent and received by the Edge.

- Any inbound or outbound filters attached to the specific BGP neighbor.
- List of prefixes accepted by the Edge from the BGP neighbor after applying the inbound filters.
- The source IP address and port number and the destination IP address/port number used by the Edge to establish BGPv6 neighborship.

## 5.41 Show BGPv6 Routes per Prefix

### What is the Purpose of This Test

Run this test to list all the possible Overlay and Underlay routes available in the Edge for the specific destination prefix.

### When Can You Run This Test

Following are the scenarios when you can run this test:

- To check and confirm if the Edge is received for both Overlay and Underlay routes (if available) for the specific destination prefix.
- To check and confirm the availability of the primary and secondary route paths (if available) for the specific destination prefix.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show BGPv6 Routes per Prefix** test on the required Edge. Following is an example of the test output:

**Figure 5-50: Show BGPv6 Routes per Prefix Sample Output**

```

Troubleshoot BGPv6 - Show BGPv6 Routes per Prefix

Show all the BGPv6 routes for the prefix and their attributes

Prefix          fd00:2:1:3::
Json Format


Segment0:
BGP routing table entry for fd00:2:1:3::/64
Paths: (1 available, best #1, table [vc:0:1])
  Advertised to non peer-group peers:
    fd00:2:1:3::1
    21
    fd00:2:1:3::1 from fd00:2:1:3::1 (2.2.2.2)
    (fe80::250:56ff:fe9c:3983) (used)
    Origin IGP, metric 0, Default local pref 100, weight 1, valid, external, best
    Last update: Wed May 25 07:43:35 2022
  
```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- The output must display all the possible route entries for the specific destination prefix with the associated local or overlay preferences and community tags.
- Based on the route order displayed in the Orchestrator, check the availability of the primary and backup route paths for the specific destination prefix in each segment.
- The **Route Type** flag must help us to identify the origin of the specific route entry ( i.e., Overlay or Underlay route).
- The **Next Hop IP** and **Dest Name** flags must help us identify the next-hop device IP (for Underlay route types) or the Edge name (for Overlay route types), which advertised the specific route entry.

## 5.42 Show BGPv6 Summary

### What is the Purpose of This Test

Run this test to view the BGPv6 neighbors associated with the device.

### When Can You Run This Test

Run this test to understand if the BGPv6 neighbor is up or not with neighbor details. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

## What to Check in the Test Output

Run the **Show BGPv6 Summary** test on the required Edge. Following is an example of the test output:

**Figure 5-51: Show BGPv6 Summary Sample Output**

Troubleshoot BGPv6 - Show BGPv6 Summary

Show the existing BGPv6 neighbor and received routes

Json Format

```
Instance [vc:0:1]:

IPv6 Unicast Summary:

BGP view name [vc:0:1]
BGP router identifier 1.2.0.1, local AS number 2 vrf-id 1
BGP table version 5
RIB entries 9, using 1512 bytes of memory
Peers 1, using 22 KiB of memory

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ OutQ  Up/Down State/PfxRcd
fd00:2:1:3::1 4       21   893    893     0      0   0 00:14:47      3

Total number of neighbors 1
```

## 5.43 Show BGPv6 Table

### What is the Purpose of This Test

Run this test to view the completed BGPv6 table.

### When Can You Run This Test

Run this test to verify the list of subnets and the next hop. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

## What to Check in the Test Output

Run the **Show BGPv6 Table** test on the required Edge. Following is an example of the test output:

**Figure 5-52: Show BGPv6 Table Sample Output**

```
Troubleshoot BGPv6 - Show BGPv6 Table

Show the BGPv6 table

Segment      all

Json Format


Instance [vc:0:1]:
BGP table version is 5, local router ID is 1.2.0.1, vrf id 1
Default local pref 100, local AS 2
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
*> fd00:2:1::/64    ::                0           32768 ?
*> fd00:2:1:3::/64  fe80::250:56ff:fe9c:3983
                                0           1 21 i
*> fd00:2:1:a003::/64
                                fe80::250:56ff:fe9c:3983
                                0           1 21 i
*> fd00:3:1::/64    ::                4           32768 ?
*> fd00:ffff:ffff:7::1/128
                                fe80::250:56ff:fe9c:3983
                                0           1 21 i

Displayed 5 routes and 5 total paths
```

## 5.44 List OSPF Redistributed Routes

### What is the Purpose of This Test

Run this test on all or selected segments to confirm if the Overlay routes and Underlay routes (Dynamic/Static/Connected) are redistributed to the Edge with correct route metric.

### When Can You Run This Test

Run this test in the following scenarios:

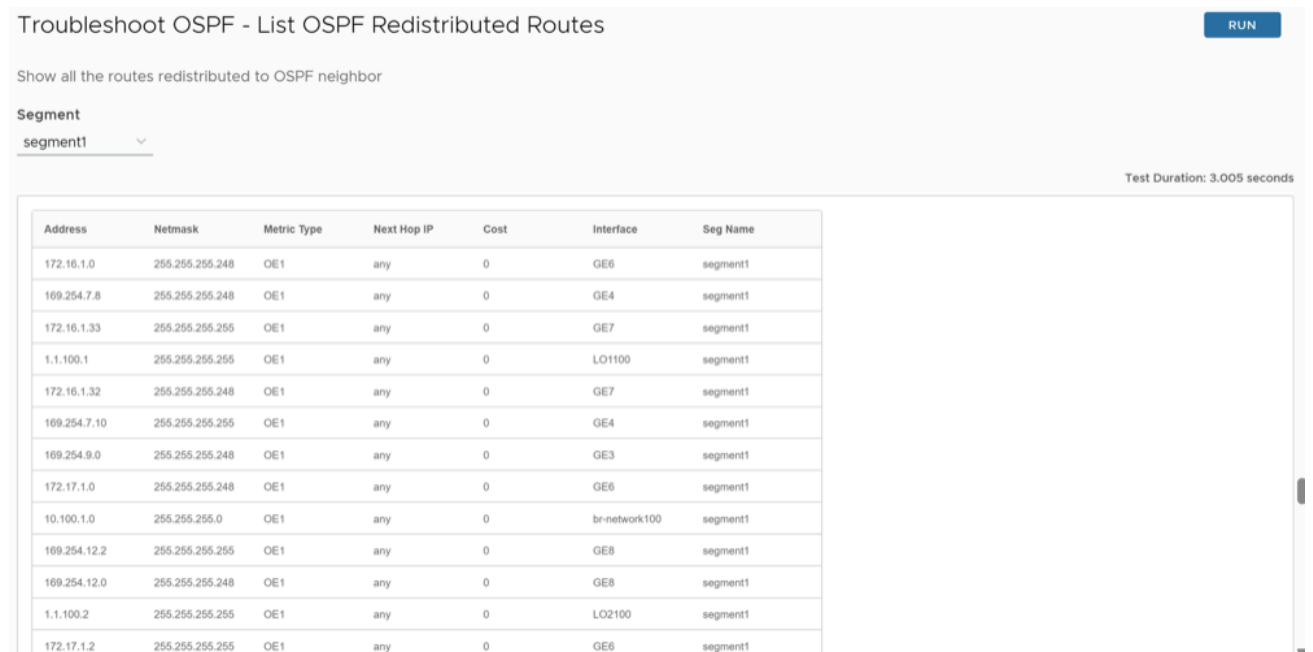
- There is an issue in route redistribution.
- LAN is not able to communicate with specific subnets over overlay VPN.
- OSPF is configured.
- LAN router is not able to see the routes in its routing table that is received from overlay.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **List OSPF Redistributed Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-53: List OSPF Redistributed Routes Sample Output**



Address	Netmask	Metric Type	Next Hop IP	Cost	Interface	Seg Name
172.16.1.0	255.255.255.248	OE1	any	0	GE6	segment1
169.254.7.8	255.255.255.248	OE1	any	0	GE4	segment1
172.16.1.33	255.255.255.255	OE1	any	0	GE7	segment1
1.1.100.1	255.255.255.255	OE1	any	0	LO1100	segment1
172.16.1.32	255.255.255.248	OE1	any	0	GE7	segment1
169.254.7.10	255.255.255.255	OE1	any	0	GE4	segment1
169.254.9.0	255.255.255.248	OE1	any	0	GE3	segment1
172.17.1.0	255.255.255.248	OE1	any	0	GE6	segment1
10.100.1.0	255.255.255.0	OE1	any	0	br-network100	segment1
169.254.12.2	255.255.255.255	OE1	any	0	GE8	segment1
169.254.12.0	255.255.255.248	OE1	any	0	GE8	segment1
1.1.100.2	255.255.255.255	OE1	any	0	LO2100	segment1
172.17.1.2	255.255.255.255	OE1	any	0	GE6	segment1

Verify the following in the output:

- The route must be present in the OSPF redistribute table.
- Lowest cost is preferred if it has multiple routes. If the same route with cost 0 and 1 is learned, then the route with cost 0 is preferred.
- Verify the route metric. The following is the order of route type preference:
  - External routes type 1, O E1
  - External routes type 2, O E2

## 5.45 List OSPF Routes

### What is the Purpose of This Test

Run this test on all or selected segments to show the routes received from peer LAN router.

### When Can You Run This Test

You can run this test if the peer Edges are not able to receive OSR or DOSR routes from this Edge. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **List OSPF Routes** test on the required Edge. Following is an example of the test output:

**Figure 5-54: List OSPF Routes Sample Output**

Troubleshoot OSPF - List OSPF Routes RUN

Show the specific OSPF routes from neighbors, leave prefix empty to see all

Segment  
all

Prefix  
e.g. 1.2.3.5

Test Duration: 3.005 seconds

Address	Netmask	Metric Type	Nbr ID	OSPF Cost	Overlay Preference	Advertise	Interface	Inbound	Reachable	Seg Name
172.16.1.16	255.255.255.248	O	1.1.1.2	11	64	true	GE5	learn	yes	Global Segment

Verify the following in the output:

- Verify the list of routes received from OSPF neighbors.
- Verify the cost attached to it. Lowest cost is preferred if it has multiple routes and the same would be advertised to neighbor Edges.
- Verify the route metric. The following is the order of route type preference:
  - intra-area routes, O
  - interarea routes, O IA
  - external routes type 1, O E1
  - external routes type 2, O E2

## 5.46 Show OSPF Database

### What is the Purpose of This Test

Run this test on all or selected segments to verify if the OSPF database is equivalent to **Show IP OSPF Database**.

### When Can You Run This Test

You can run this test when the OSPF database contains all LSAs that describe the network topology. The OSPF database output displays the content of the LSDB and verifies information about specific LSAs. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the **Show OSPF Database** test on the required Edge. Following is an example of the test output:

**Figure 5-55: Show OSPF Database Sample Output**

```

VRF Name: default

OSPF Router with ID (1.1.0.2)

Router Link States (Area 0.0.0.1)

Link ID      ADV Router   Age  Seq#      CkSum  Link count
1.1.0.2      1.1.0.2     1412 0x0000009e 0xb06c 1
1.1.1.2      1.1.1.2     1417 0x0000012a 0x8126 2

Net Link States (Area 0.0.0.1)

Link ID      ADV Router   Age  Seq#      CkSum
172.16.1.9   1.1.1.2     1418 0x00000099 0x767d

AS External Link States

Link ID      ADV Router   Age  Seq#      CkSum  Route
1.1.0.1      1.1.0.2     1415 0x0000009a 0xb0c6  E1 1.1.0.1/32 [0x0]
1.1.0.2      1.1.0.2     1415 0x0000009a 0xb1cf  E1 1.1.0.2/32 [0x0]
10.0.1.0     1.1.0.2     1415 0x0000009a 0xb129  E1 10.0.1.0/24 [0x0]
172.16.1.24  1.1.0.2     1415 0x0000009a 0xb997  E2 172.16.1.24/29 [0x0]
172.16.2.0   1.1.0.2     1415 0x0000009a 0xb9c8  E2 172.16.2.0/29 [0x0]
172.16.2.24  1.1.0.2     1415 0x0000009a 0xaea1  E2 172.16.2.24/29 [0x0]
172.16.2.32  1.1.0.2     1415 0x0000009a 0xaea9  E2 172.16.2.32/29 [0x0]
172.16.101.0 1.1.0.2     1415 0x0000009a 0xa5aa  E2 172.16.101.0/29 [0x0]
172.16.102.0 1.1.0.2     1415 0x0000009a 0xa4b4  E2 172.16.102.0/29 [0x0]
172.16.201.0 1.1.0.2     1415 0x0000009a 0xb096  E2 172.16.201.0/29 [0x0]
172.19.1.0   1.1.0.2     1415 0x0000009a 0xb6df  E2 172.19.1.0/29 [0x0]

```

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- Verify the subnet and its advertising router if there is any asymmetric routing issue or if a different path is taken than expected.
- Verify age if there are route flaps.
- Verify if Peer database and Edge database match, in case of any issues with DB of OSPF.

## 5.47 Show OSPF Database for E1 Self-Originate Routes

### What is the Purpose of This Test

This test provides the list of E1 self-originated routes.

### When Can You Run This Test

Run this test on all or selected segments to troubleshoot routing issues on E1 type self-originated routes. For instructions, see [Run Remote Diagnostic Tests on Edges](#).



## What to Check in the Test Output

Run the **Show OSPF Neighbors** test on the required Edge. Following is an example of the test output:

**Figure 5-57: Show OSPF Neighbors Sample Output**

Troubleshoot OSPF - Show OSPF Neighbors RUN

Show all the OSPF neighbors and associated info

Segment  
Global Segment ▾

Json Format

Test Duration: 2.003 seconds

```
VRF Name: default
```

Neighbor ID	Pri	State	UpTime	Dead Time	Address	Interface	RxmtL	RqstL	DBsmL
1.1.1.2	1	Full/DR	30m56s	38.754s	172.16.1.9	GE5:172.16.1.10	0	0	0

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Verify the following in the output:

- Verify if the state of neighbor is Full/(DR or BDR). If this state is not seen, then there is issue with OSPF neighbors' convergence.
- Down state, Attempt/Init state would be seen if you have sent/received OSPF hello packet. If the neighbor is in this state for too long, verify the Area ID, Neighbor ID, Router ID, and OSPF configuration.
- If it is stuck between 2-way state or Ext start state, verify the MTU issues.
- RxmtL is LSA retransmission list. This value is used when retransmitting Database Description and Link State Request packets. The default value is 5 seconds. If you see any values, then there is DBD packet exchange issue in transit. It should not be too high ideally. Verify transit path.
- DBsmL is database summary list for the neighbor.
- RqstL is Link State Request List.

## 5.49 Show OSPF Route Table

### What is the Purpose of This Test

Run this test on all or selected segments to verify routes and their view on OSPF protocol.

### When Can You Run This Test

Run this test to verify how routes are learned on OSPF table. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show OSPF Route Table** test on the required Edge.

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Following is an example of the test output:

**Figure 5-58: Show OSPF Route Table Sample Output**

```

Troubleshoot OSPF - Show OSPF Route Table
Show the existing OSPF route table
Segment: all
JSON Format: [ ]
Test Duration: 2.003 seconds

Codes: R - Router, B - BGP, D - Distant,
IA - Inter Area, E1 - Type1 external, E2 - Type2 external,
N3 - Type3 NSSA external, N2 - Type2 NSSA external,
ABR - Area Border Router, ASBR - Autonomous System Border Router

VNF Name: default
===== OSPF network routing table =====
N 172.16.1.8/29 [1] area: 0.0.0.1
   directly attached to GE5
N 172.16.1.16/29 [1] area: 0.0.0.1
   via 172.16.1.9, GE5

===== OSPF router routing table =====
===== OSPF external routing table =====

VNF Name: vc-1
===== OSPF network routing table =====
N 172.17.1.8/29 [1] area: 0.0.0.1
   directly attached to GE1/100
N 172.17.1.16/29 [1] area: 0.0.0.1
   via 172.17.1.9, GE1/100

===== OSPF router routing table =====
===== OSPF external routing table =====

```

## 5.50 Show OSPF Setting

### What is the Purpose of This Test

Run this test to verify if the OSPF configuration is pushed properly from Edge to Orchestrator.

### When Can You Run This Test

Run this test to verify Edge OSPF configuration. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the **Show OSPF Setting** test on the required Edge. Following is an example of the test output:

**Figure 5-59: Show OSPF Setting Sample Output**

```

Troubleshoot OSPF - Show OSPF Setting
Show OSPF setting and neighbor status
Test Duration: 1.001 seconds

```

Area	Network Info	Authentication	Cost	Hello Timer	Dead Timer	Interface	MD5	MTU	Nbr Addr	Nbr ID	NM Status	OSPF	Passive Interface
0	192.116.251.40	0	1	10	40	GE5	0	1500	192.116.251.42	172.25.112.252	Full	enabled	no
0	192.116.251.70	0	1	10	40	GE5	0	1500	92.116.251.78	172.25.112.253	Full	enabled	no

Verify the following in the output:

- Verify if the Edge has got the configuration like area ID, network, authentication cost, and hello timer pushed from the Orchestrator if you have customer OSPF settings.

## 5.51 List OSPFv3 Redistributed Routes

### What is the Purpose of This Test

Run this test on all or selected segments to view all the routes redistributed to the OSPFv3 neighbor.

### When Can You Run This Test

Run this test to verify OSPFv3 redistributed routes. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the List OSPFv3 Redistributed Routes on the required Edge. Following is an example of the test output:

Figure 5-60: List OSPFv3 Redistributed Routes Sample Output

Troubleshoot OSPFv3 - List OSPFv3 Redistributed Routes RUN

Show all the routes redistributed to OSPFv3 neighbor

Segment  
segment1

Test Duration: 3.006 seconds

Address	Netmask	Metric Type	Next Hop IP	Cost	Interface	Seg Name
8000:1:1:2	8000:1:1:2::/128	OE1	any	0	GE7	segment1
8000:1:2:4	8000:1:2:4::/128	OE1	any	0	GE8	segment1
8000:1:2:3	8000:1:2:3::/128	OE1	any	0	GE5	segment1
8000:1:1:2-2	8000:1:1:2-2::/128	OE1	any	0	GE4	segment1
8000:1:1:2	8000:1:1:2::/128	OE1	any	0	LO1100	segment1
8000:1:1:6-2	8000:1:1:6-2::/128	OE1	any	0	GE8	segment1
8000:1:1:1-2	8000:1:1:1-2::/128	OE1	any	0	GE3	segment1
8000:1:2:5-2	8000:1:2:5-2::/128	OE1	any	0	GE7	segment1
8000:1:2:2	8000:1:2:2::/128	OE1	any	0	LO2100	segment1
8000:1:1:4	8000:1:1:4::/128	OE1	any	0	GE6	segment1
8000:1:2	8000:1:2::/128	OE1	any	0	br-network100	segment1
8000:1:2:5	8000:1:2:5::/128	OE1	any	0	GE7	segment1
8000:1:1:1	8000:1:1:1::/128	OE1	any	0	GE3	segment1
8000:1:1:4-2	8000:1:1:4-2::/128	OE1	any	0	GE5	segment1
8000:1:1:6	8000:1:1:6::/128	OE1	any	0	GE8	segment1
8000:1:2:3-2	8000:1:2:3-2::/128	OE1	any	0	GE5	segment1
8000:1:1:2	8000:1:1:2::/128	OE1	any	0	GE4	segment1
8000:1:1:5	8000:1:1:5::/128	OE1	any	0	GE7	segment1
8000:1:2:a003	8000:1:2:a003::/128	OE2	8000:250:508:507:440e	11	GE5	segment1
8000:1:2:4-2	8000:1:2:4-2::/128	OE1	any	0	GE6	segment1

## 5.52 List OSPFv3 Routes

### What is the Purpose of This Test

Run this test on all or selected segments to view the OSPFv3 routes learned from OSPFv3 neighbors for the specified Prefix. Displays all the OSPFv3 routes from the neighbors if the Prefix is not specified. This test displays OSPFv3 routes with actions such as an inbound filter with Overlay Flow Control from Orchestrator applied.

### When Can You Run This Test

Run this test to verify OSPFv3 Routes. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Run the OSPFv3 Routes on the required Edge. Following is an example of the test output:

**Figure 5-61: List OSPFv3 Routes Sample Output**

Troubleshoot OSPFv3 - List OSPFv3 Routes RUN

Show the specific OSPFv3 routes from neighbors, leave prefix empty to see all

Segment  
all

Prefix  
e.g. fd00:11:a003:1

Test Duration: 3.005 seconds

Address	Netmask	Metric Type	Nbr ID	OSPF Cost	Overlay Preference	Advertise	Interface	Inbound	Reachable	Seg Name
fd00:11:a003::	ffff:ffff::	O	0.0.0.0	11	1001	true	GE5	learn	yes	Global Segment
fd00:12:a003::	ffff:ffff::	O	0.0.0.0	11	1001	true	GE5/100	learn	yes	segment1

## 5.53 Show OSPFv3 Database

### What is the Purpose of This Test

Run this test on all or selected segments to view the OSPFv3 link state database summary.

### When Can You Run This Test

Run this test to verify the OSPFv3 link state database. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the OSPFv3 link state database on the required Edge.

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Following is an example of the test output:

**Figure 5-62: Show OSPFv3 Database Sample Output**

Troubleshoot OSPFv3 - Show OSPFv3 Database RUN

Show the OSPFv3 link state database summary

Segment  
segment1

Json Format

Test Duration: 2.005 seconds

```
Area Scoped Link State Database (Area 1)
Type LSId      AdvRouter  Age  SeqNum      Payload
Rtr 0.0.0.0    1.1.1.2    819  8000011a   1.1.1.2/0.0.0.8
Rtr 0.0.0.0    1.1.100.2  818  80000097   1.1.1.2/0.0.0.8
Net 0.0.0.8    1.1.1.2    819  80000002   1.1.1.2
Net 0.0.0.8    1.1.1.2    819  80000002   1.1.100.2
INP 0.0.0.0    1.1.1.2    819  80000119   fd00:1:2:a003::/64
INP 0.0.0.8    1.1.1.2    819  80000002   fd00:1:2:3::/64

I/F Scoped Link State Database (I/F GE5:100 in Area 1)
Type LSId      AdvRouter  Age  SeqNum      Payload
Lnk 0.0.0.8    1.1.1.2    1691 80000115   fe80::250:56ff:fe97:44ee
Lnk 0.0.0.8    1.1.1.2    1691 80000115   fd00:1:2:3::
Lnk 0.0.0.21   1.1.100.2  818  80000092   fe80::90c3:b92e:aa57:1bf9
Lnk 0.0.0.21   1.1.100.2  818  80000092   fd00:1:2:3::

AS Scoped Link State Database
Type LSId      AdvRouter  Age  SeqNum      Payload
ASE 0.0.0.1    1.1.100.2  818  80000093   fd00:1:2::/64
ASE 0.0.0.2    1.1.100.2  818  80000093   fd00:ffff:ffff:1:2/128
ASE 0.0.0.3    1.1.100.2  818  80000093   fd00:ffff:ffff:2:2/128
```

## 5.54 Show OSPFv3 Database for E1 Self-Originate Routes

### What is the Purpose of This Test

Run this test on all or selected segments to view the E1 LSA's self-originated routes that are advertised to OSPFv3 router by the Edge.

### When Can You Run This Test

Run the E1 LSA's self-originated routes that are advertised to OSPFv3 router by the Edge.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Following is an example of the test output:

**Figure 5-63: Show OSPFv3 Database for E1 Self-Originate Routes Sample Output**

Troubleshoot OSPFv3 - Show OSPFv3 Database for external Self-Originated Routes RUN

Show the external LSAs self-originated by the VCE that are advertised to OSPFv3

Segment  
segment1

Json Format

Test Duration: 2.004 seconds

```

AS Scoped Link State Database
Type LSId      AdvRouter    Age  SeqNum      Payload
ASE 0.0.0.1    1.1.100.2   974  80000093    fd00:1:2::/64
ASE 0.0.0.2    1.1.100.2   974  80000093    fd00:ffff:ffff:1::2/128
ASE 0.0.0.3    1.1.100.2   974  80000093    fd00:ffff:ffff:2::2/128

```

## 5.55 Show OSPFv3 Neighbors

### What is the Purpose of This Test

Run this test on all or selected segments to view all the OSPFv3 neighbors and associated information.

### When Can You Run This Test

Run OSPFv3 neighbors on the required Edge.

For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Following is an example of the test output:

**Figure 5-64: Show OSPFv3 Neighbors Sample Output**

Troubleshoot OSPFv3 - Show OSPFv3 Neighbors RUN

Show all the OSPFv3 neighbors and associated info

Segment  
all

Json Format

Test Duration: 3.005 seconds

```

Neighbor ID  Pri  DeadTime  State/IfState  Duration I/F[State]
1.1.1.2     1    00:00:37  Full/DR        00:48:43 GE5[BDR]
Neighbor ID  Pri  DeadTime  State/IfState  Duration I/F[State]
1.1.1.2     1    00:00:37  Full/DR        00:48:43 GE5:100[BDR]

```

## 5.56 Show OSPFv3 Route Table

### What is the Purpose of This Test

Run this test on all or selected segments to view the existing OSPFv3 route table, which displays OSPFv3 information from both learned and redistributed routes.

### When Can You Run This Test

Run this test to view the existing OSPFv3 route table. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the OSPFv3 route table on the required Edge.

Select the **Json Format** check box if you want the test output in JSON format for automation validation.

Following is an example of the test output:

**Figure 5-65: Show OSPFv3 Route Table Sample Output**

Troubleshoot OSPFv3 - Show OSPFv3 Route Table RUN

Show the existing OSPFv3 route table

Segment  
all

Json Format

Test Duration: 2.002 seconds

```
*N IA fd00:1:1:3::/64      ::          GE5 00:50:45
*N IA fd00:1:1:a003::/64  fe80::250:56ff:fe97:44ee GE5 00:50:45
*N IA fd00:1:2:3::/64    ::          GE5:100 00:49:58
*N IA fd00:1:2:a003::/64  fe80::250:56ff:fe97:44ee GE5:100 00:50:45
```

## 5.57 Show OSPFv3 Setting

### What is the Purpose of This Test

Run this test to view the OSPFv3 setting and neighbor status.

### When Can You Run This Test

To view OSPFv3 setting and neighbor status on the required Edge. For instructions, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Run the OSPFv3 setting and neighbor status on the required Edge. Following is an example of the test output:

**Figure 5-66: Show OSPFv3 Setting Sample Output**

Troubleshoot OSPFv3 - Show OSPFv3 Setting

Show OSPFv3 setting and neighbor status

Area	Cost	Hello Timer	Dead Timer	Interface	MTU	Nbr Id	NSM Status	OSPF	Passive Interface
1	1	10	40	GE5	1380	1.1.1.2	Full	enabled	no

## 5.58 Dump Context Logging Information

### What is the Purpose of This Test

Context logging is per Linux thread logging infrastructure. This test lists the threads which use context logging.



**Note:** Context Logging is only integrated for the Routing feature in 5.1.0.0 release.

### When Can You Run This Test

Run this test to dump the threads which used context logging. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

The test will dump the Thread Name, Thread ID, and Context Log Status (On or Off) for the thread which uses Context Logging.

- Context Log Status 'On' means context logging is activated for the given thread.
- Context Log Status 'Off' means context logging is deactivated for the given thread.

Following is an example of the test output:

**Figure 5-67: Dump Context Logging Information Sample Output**

Dump Context Logging Information RUN


Context Logging information for threads and its enabled/disabled status Test Duration: 1.001 seconds

Thread Name	Thread ID	Context Log Status
edged	10879	On
edged_ev_thr	11882	On
link_fm	11481	On
path_state_fm	11479	On
vcomp_cnf_0	14308	On
vcomp_cnf_1	14309	On
MgtEventReceive	14273	On

## 5.59 Enable or Disable Context Logging

### What is the Purpose of This Test

Context logging is per Linux thread logging infrastructure. This can be used to activate or deactivate context logging.

 **Note:** Context Logging is only integrated for the Routing feature in 5.1.0.0 release.

### When Can You Run This Test

Run this test to activate or deactivate context logging for specific thread or all threads. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Specify a thread ID if you want to activate or deactivate context logging for a specific thread, or else specify the **All** option. Once the test is run, the action will be applied. You can validate the changes using the "Dump Context Logging Information" test command.

Following is an example of the test output:

**Figure 5-68: Enable or Disable Context Logging Sample Output**

Enable/Disable Context Logging RUN

Enable/Disable Context Logging for given thread or all threads

Thread ID

Context Log Enabled

Context Log action applied Test Duration: 1.001 seconds

## 5.60 Gateway

### What is the Purpose of This Test

To change the traffic path of cloud (Internet) traffic.

### When Can You Run This Test

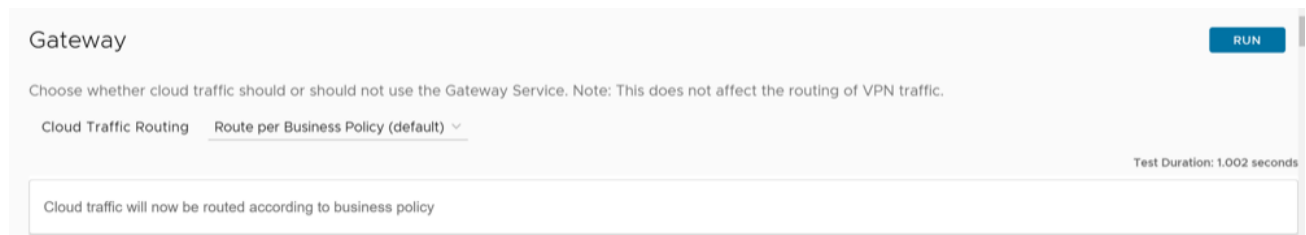
Run this test if you want to change the path of data traffic either to use Business policy, or to use Gateway Path (Multi-Path), or to go direct on WAN Interface.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-69: Gateway Sample Output**



## 5.61 HA Info

### What is the Purpose of This Test

To know more about the HA device, IP, Link, Status, and connection information.

### When Can You Run This Test

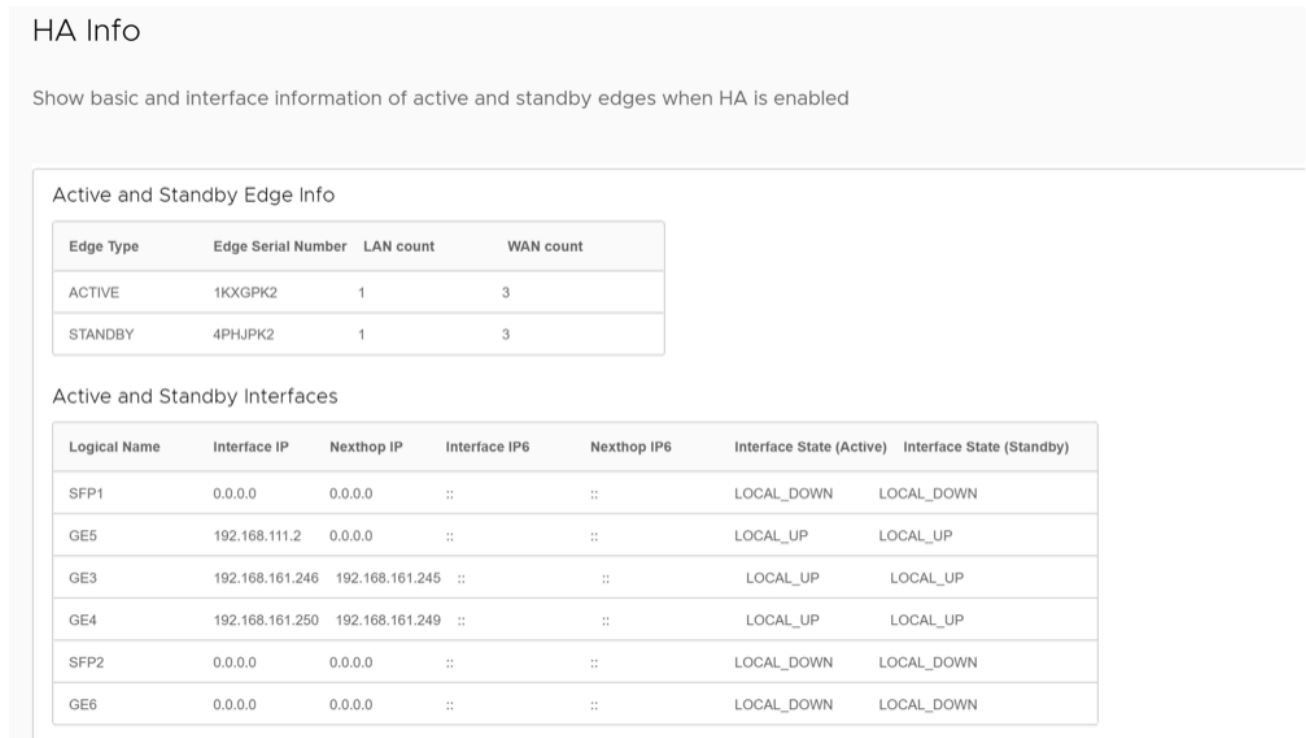
Run this test to view the basic and interface information of active and standby Edges when HA is activated.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

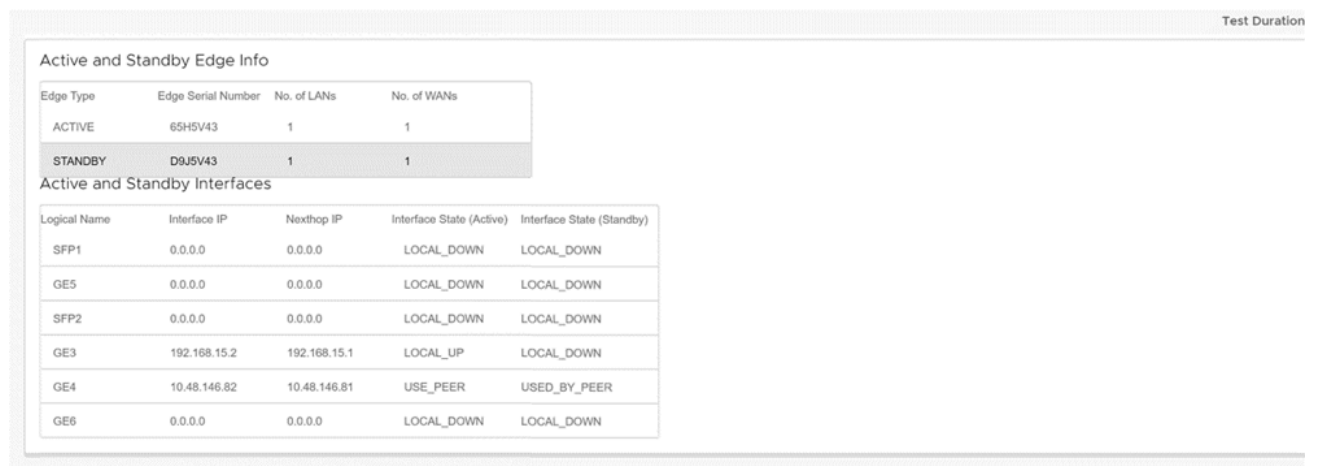
## What to Check in the Test Output

Following is an example of the test outputs:

**Figure 5-70: Standard HA Sample Output**



**Figure 5-71: Enhanced HA Sample Output**



## 5.62 List Clients

### What is the Purpose of This Test

Run this test to display DHCP lease expiry and interfaces through which client is connected to Edge.

### When Can You Run This Test

To verify if the clients are getting the correct DHCP address. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-72: List Clients Sample Output**

Address	MAC Address	Hostname	Lease Expiry (UTC)	Wireless Connection
LAN VLAN1				
10.0.2.25	00:50:56:9c:5a:1f			
LAN VLAN100				
10.100.2.100	00:50:56:9c:5a:1f			
LAN VLAN101				
10.101.2.100	00:50:56:9c:5a:1f			

1. Verify if the LAN client IP and MAC are seen on this for DHCP. If it is not listed, try running the same by restarting the DHCP service.
2. Use this test to verify bogus devices in LAN device.

## 5.63 List Paths

### What is the Purpose of This Test

To check the active tunnel paths between local WAN links and each peer, and gateway status.

### When Can You Run This Test

Whenever you face site-to-site communication issues or Gateway traffic issues, run this test to check if the tunnel is UP for destination.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-73: List Paths Sample Output**

List Paths RUN

View the list of active paths between local WAN links and each peer.

Peer b3-edge1

Include Sub Paths

Test Duration: 1.002 seconds

WAN Link	Local IP	Remote IP	State	VPN	Bandwidth (tx/rx)	Latency (tx/rx)	Jitter (tx/rx)	Loss (tx/rx)	Bytes (tx/rx)	Uptime	Mode
169.254.9.9	169.254.9.9	169.254.6.65	STABLE	UP	255.83 Mbps	0 ms	0.0 ms	0.0%	9.95 MB	22h48m46s	STATIC
					268.36 Mbps	0 ms	0.0 ms	0.0%	9.95 MB		
8000.2.1.1:2	8000.2.1.1:2	8000.3.1.2:2	STABLE	UP	257.06 Mbps	0 ms	0.0 ms	0.0%	13.37 MB	22h48m46s	STATIC
					265.71 Mbps	0 ms	0.0 ms	0.0%	13.38 MB		
8000.2.1.1:2	8000.2.1.1:2	8000.3.1.1:2	STABLE	UP	257.06 Mbps	0 ms	0.0 ms	0.0%	13.38 MB	22h48m46s	STATIC
					265.71 Mbps	0 ms	0.0 ms	0.0%	13.38 MB		
169.254.9.9	169.254.9.9	169.254.6.57	STABLE	UP	255.83 Mbps	0 ms	0.0 ms	0.0%	19.24 MB	22h48m46s	STATIC
					268.36 Mbps	0 ms	0.0 ms	0.0%	18.78 MB		

The Remote Diagnostics output displays the following information:

**Table 7: List Paths- Options and Descriptions**

Option	Description
WAN Link	Specifies the WAN link IP used to form tunnel.
Local IP	Specifies the Physical Interface IP for the WAN link.
Remote IP	Specifies the Peer IP to which tunnel is formed.
State	<p>Specifies the tunnel state. The state can be any of the following:</p> <ul style="list-style-type: none"> <li>Stable- Tunnel is up and stable.</li> <li>Unstable- Tunnel is having packet loss, jitter, or latency. You can check the outputs to find what is the cause for the unstable tunnel.</li> <li>BW_Measurement- In this state both peers negotiate tunnel between them.</li> <li>Quiet- No traffic is seen across the tunnel.</li> </ul> <p>Anything other than "Stable" state confirms that the issue with WAN link.</p>
VPN	Specifies the VPN state and it should be UP for good tunnel.
Bandwidth (tx/rx)	Indicates the bandwidth of the tunnel.
Latency (tx/rx)	Indicates the latency of the tunnel.
Jitter (tx/rx)	Indicates the jitterness of the tunnel.
Loss (tx/rx)	Indicates the packet loss of the tunnel.
Bytes (tx/rx)	Indicates the bytes of the tunnel in MB.
Uptime	Indicates the duration of tunnel uptime.
Mode	<p>Specifies the mode of the tunnel:</p> <ul style="list-style-type: none"> <li>Static- Static tunnels are UP always.</li> <li>Dynamic- Dynamic tunnels are usually seen for b2b tunnel and it will be formed on requirement basis.</li> </ul>

## 5.64 MIBs for Edge

### What is the Purpose

To gather the SD-WAN and Edge MIB's supported by the specific Edge.

### When Can You Run MIBs for Edge

Select the **MIBs for Edge** button to download MIB dump file. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-74: MIBs for Edge Sample Output**

```

MIBs for Edge

Dump Edge MIBs.
VELOCITYCLOUD-MIB: the root MIB of all VeloCloud specified MIBs and required for installing VELOCITYCLOUD-EDGE-MIB.
VELOCITYCLOUD-MIB-EDGE: the MIB specified for Edge device.

MIB VELOCITYCLOUD-MIB

-----
-- VMware SD-WAN MIB Definitions --
--
-- Contains:
--   .velocloud(45346)
--   .orchestrator(1)
--   .edge(2)
--   .gateway(3)
-----

VELOCITYCLOUD-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, enterprises FROM SNMPv2-SMI
;

velocloud MODULE-IDENTITY
    LAST-UPDATED "202105110000Z"

```

Copy the entire output to a notepad and save it as a.mib file which could further be used on SNMP server to poll the Edge.

## 5.65 NTP Dump

### What is the Purpose of This Test

Run this test to verify the date, time, and NTP server details used by the Edge.

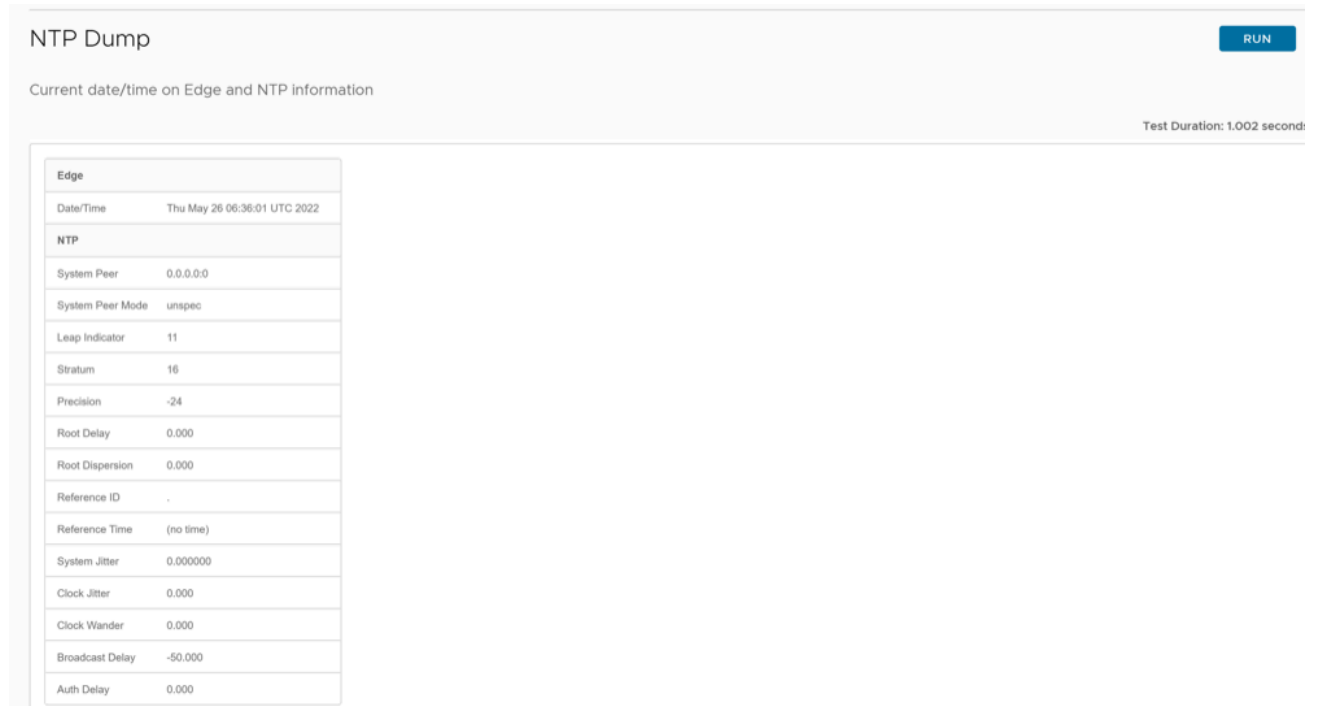
### When Can You Run This Test

Run this test if you have an issue with date and time for logs and system time. The time is denoted in UTC time format. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-75: NTP Dump Sample Output**



Edge	
Date/Time	Thu May 26 06:36:01 UTC 2022
NTP	
System Peer	0.0.0.0
System Peer Mode	unspec
Leap Indicator	11
Stratum	16
Precision	-24
Root Delay	0.000
Root Dispersion	0.000
Reference ID	-
Reference Time	(no time)
System Jitter	0.000000
Clock Jitter	0.000
Clock Wander	0.000
Broadcast Delay	-50.000
Auth Delay	0.000

In the output, check the following:

1. Verify if the date and time is correct in the UTC time format.
2. Verify if the system peer is as mentioned in NTP configuration.
3. The Leap Indicator indicates if an impending leap second is to be inserted or deleted in the last minute of the current day. Therefore, if the leap second occurs, the NTP client that is running is one second faster or faster than the seconds mentioned in leap indicator than the actual time.
4. Stratum is the distance between Edge and NTP server. Lesser the Stratum number closer the server is. If the Stratum number is above 16 then it is considered to be unsynchronized.
5. If clock is unsynchronized, change the NTP server or PCAP's to determine if the response is received by the Edge for NTP sync request.

## 5.66 Reset USB Modem

### What is the Purpose of This Test

Run this test to reset the USB and CELL interface.

### When Can You Run This Test

Run this test when USB is not detected by the device or if the USB has issues with forming tunnels. For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-76: Reset USB Modem Sample Output**



Verify the following:

1. Check if the Restart command has been issued.
2. Navigate to **Monitor > Edges > Device** configuration page for checking USB carrier and tunnel information for the respective port.

## 5.67 System Information

### What is the Purpose of This Test

System Information command is used to view the system load and WAN stability statistics of the Edge.

### When Can You Run This Test

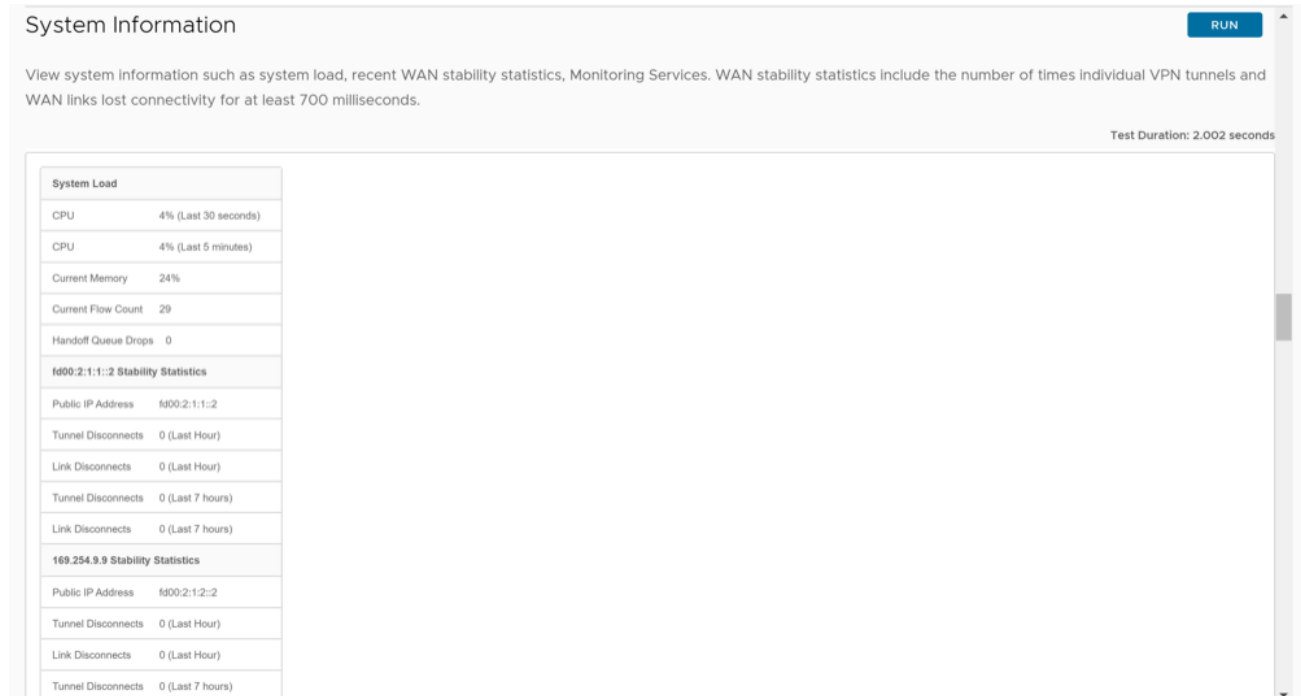
Run this test to view system information such as system load, recent WAN stability statistics, monitoring services details, and so on. The tunnel disconnects do not include the count of direct IPsec connections. WAN stability statistics include the number of times individual VPN tunnels and WAN links lost connectivity for at least 700 milliseconds.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-77: System Information Sample Output**



## 5.68 Route Table Dump

### What is the Purpose of This Test

Route Table Dump command lists the complete Routing table in IPv4.

### When Can You Run This Test

Run this test to verify the Route in the FIB table of IPv4. You can run the test by specifying any of the following options:

- **Segment-** Select the segment for which routes must be displayed. Select "all" for all segments.
- **Prefix-** Specify a particular prefix for which routes must be displayed.
- **Routes-** Select any of the following options from the drop-down menu:
  - **all-** Display all the routes for every prefix.
  - **preferred-** Display the most preferred route alone for every prefix (this is the route being used for data forwarding).

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).



**Note:** The Route Table Dump command output has a limit of 16000 routes.

## What to Check in the Test Output

Following is an example of the test output:

**Figure 5-78: Route Table Dump Sample Output**

The Remote Diagnostics output displays the following information:

**Table 8: Route Table Dump- Options and Descriptions**

Option	Description
Address	Specifies the IPv4 routes available in the table.
Segment	Specifies the segment in which the routes are available and handled by the Edge.
Netmask	Specifies the range of addresses in IPv4.
Type	Specifies the route type, such as Cloud, Edge2Edge, any (Underlay or Connected), and so on.
Cost	Specifies the route cost or metric used in selection of route criteria.
Preference	Specifies the route preference.
Order	Specifies the order of the route.
Reachable	Specifies the status of the route whether it is True for Reachable or False for Not Reachable.
Next Hop	Indicates the local exit interface in case of local routes. In case of overlay/remote routes, it indicates the type of next hop. For example, "Cloud gateway" in case of cloud routes, "Cloud VPN" in case of datacenter, or "edge to edge" routes etc,
Next Hop Name	Specifies the name of the next hop device.
Destination Name	Specifies the name of the destination device.
Lost Reason	Specifies the code for the reason why a route loses the routing preference calculation logic to the next preferred route, on both Edges and Gateways.
(Not) Reachable Reason	Specifies the reason for the route being reachable or not reachable.



**Note:** An unresolved route, learned over multi-hop BGP, might point to an intermediate interface.

The following table lists the reason codes for an Edge and the corresponding descriptions:

**Table 9: Reason Codes for an Edge**

Reason Code	Description
PR_UNREACHABLE	In case of overlay routes, the remote peer, which is either Gateway or Edge, is not reachable.
IF_DOWN	Egress Interface is down.
INVALID_IFIDX	Egress Interface if-index for this route is invalid.
SLA_STATE_DOWN	State given by IP SLA tracking is down.
HA_STANDBY	When the local Edge is a Standby, all routes synced from the active are marked as reachable for operational convenience.
LOCAL_MGMT	Management routes are always reachable.
LOOPBACK	Loopback IP address is always reachable.
SELF_ROUTE	Self IP routes are always reachable.
RECUR_UNRES	Recursive routes are marked as reachable so that recursive resolution can be done for operational convenience.
VPN_VIA_NAT	vpnViaNat routes are always reachable.
SLA_STATE_UP	State given by IP SLA tracking is up.
IF_RESOLVED	Egress interface is up and resolved.
PR_REACHABLE	In case of overlay routes, the remote peer, which is either Gateway or Edge, is reachable.
LR_NO_ELECTION	Best route.
LR_NP_SWAN_VS_VELO	Predecessor is selected because it is a non-preferred static WAN route (route configured with preferred flag set to false) when compared to the current route which is a via VeloCloud route.
LR_NP_SWAN_VS_DEFRT	Predecessor is selected because it is a non-preferred static WAN route when compared to the current route which is default route.
LR_NP_ROUTE_TYPE	Predecessor is selected because its route type is better when compared to the current route. Also, one of the routes being compared is a non-preferred route in this case.
LR_BGP_LOCAL_PREF	Both routes are learned using BGP. The predecessor is selected because it has a higher local preference than the current route.
LR_BGP_ASPATH_LEN	Both routes are learned using BGP. Predecessor is selected because it has a lower AS path value than the current route.
LR_BGP_METRIC	Both routes are learned using BGP. Predecessor is selected because it has a lower metric value than the current route.
LR_EXT_OSPF_INTER	Predecessor is selected because it is a route learned from OSPF with an inter or intra area metric when compared to the current route which is learned from BGP.
LR_EXT_BGP_RT	Predecessor is selected because it is a route learned from BGP when compared to the current route which is a route learned from OSPF with metric type OE1 or OE2.
LR_EXT_METRIC_TYPE	Both routes are OSPF routes. The predecessor is selected because it has a better metric type than the current route.  Order of preference for OSPF metric types: OSPF_TYPE_INTRA, OSPF_TYPE_INTER, OSPF_TYPE_OE1, OSPF_TYPE_OE2.
LR_EXT_METRIC_VAL	Both routes are OSPF routes. The predecessor is selected because it has a lesser metric than the current route.
LR_EXT_NH_IP	Both routes are OSPF ECMP routes. The current route is lost to the predecessor since it was learned later.

Reason Code	Description
LR_PG_BGP_ORDER	Both are remote BGP routes with same BGP parameters. The current route is selected because it is a Partner Gateway (PG) route and has a lesser "order" value when compared to the current route.
LR_NON_PG_BGP_ORDER	Both are remote BGP routes with same BGP parameters. The current route is selected because it is a non-PG route and has a lesser "order" value when compared to the current route.
LR_EXT_ORDER	Both are remote OSPF routes with same metric. The predecessor is selected because it has a lesser order value than the current route.
LR_PREFERENCE	Both are either BGP or OSPF routes. The predecessor is selected because it has a lesser preference value than the current route.
LR_DCE_NSD_STATIC_PREF DCE- Data center, NSD- Non-SD-WAN site	Both are local NSD static routes. The predecessor is selected because it is a preferred route (preferred flag set to true) when compared to the current which is non-preferred.
LR_DCE_NSD_STATIC_METRIC	Both are NSD static routes. The predecessor is selected because it has a lesser metric value than the current route.
LR_DCE_NON_REMOTE	Both are NSD static routes. The predecessor is selected because it is a local route (non-remote), and the current route is a remote route.
LR_DCE_NSD_STATIC_REMOTE_ORDER	Both are remote NSD static routes. The predecessor is selected because it has a lesser order value when compared to the current route.
LR_DCE_DC_DIRECT	Both are NSD static routes. The predecessor is selected because its DC_DIRECT flag is set, and the current route does not have this flag set. This is the route with "n - nonVelocloud" flag set in the debug.py --routes output. These are routes learned from an NVS from Edge.
LR_DCE_LOGICAL_ID	Both are NSD static routes. The predecessor is selected because it has a better logical ID than the current route.
LR_NETMASK	The predecessor is selected because it has a higher netmask than the current.  This will not hit since the netmask is different, it is a separate network/route entry of its own.
LR_NETADDR	The predecessor is selected because it has a higher network address than the current.  This will not hit since the network address is different, it is a separate network/route entry of its own.
LR_CONN_FLAG	The predecessor is selected because it is a connected route, and the current route is not a connected route.
LR_SELF_FLAG	The predecessor is selected because it is a self route, and the current route is not a self-route.
LR_SLAN_FLAG	The predecessor is selected because it is a static LAN route, and the current route is not a static LAN route.
LR_SWAN_FLAG	The predecessor is selected because it is a static WAN route, and the current route is not a static WAN route.
LR_NSD_STATIC_LOCAL	The predecessor is selected because it is a local NSD static route, and the current route is an NSD BGP route.
LR_NSD_BGP_VS_NON_PREF_STATIC	The predecessor is selected because it is a NDS BGP route, and the current route is a local NSD static non-preferred route.
LR_NSD_STATIC_PREF_VS_NSD_STATIC	The predecessor is selected because it is an NSD static preferred route, and the current route is not an NSD static route.

Reason Code	Description
LR_CONN_STATIC_VS_NSD_BGP	The predecessor is selected because it is a remote connected/ static route, and the current route is an NSD BGP route.
LR_OPG_SECURE_STATIC	The predecessor is selected because it is a PG secure static route, and the current is not.
LR_ROUTED_VS_VELO	The predecessor is selected because it is a route learned from routing protocols when compared the current route which is a "v - ViaVeloCloud" route.
LR_INTF_DEF_VS_ROUTED	The predecessor is selected because it is an interface default cloud route when compared to the current route which is a route learned using routing protocols (local or remote).
LR_ROUTE_TYPE	The predecessor is selected because it has a better route than the current.
LR_E2DC_REMOTE	The predecessor is selected because it is a, Edge2DC route, and it is a local route and the current route is a remote route.
LR_CONNECTED_LAN	Both are connected routes. The predecessor is selected because it is a connected LAN route, and the current route is not a connected LAN route.
LR_VELO_REMOTE_FLAG	Both are cloud routes. The predecessor is selected because it is a remote route when compared to the current which is a local cloud route.
LR_VELO_EdgeD_ROUTED	Both are cloud routes. The predecessor is selected because it is a route learned via routing protocol, and the current route is not learned via routing protocol.
LR_VELO_PG_ROUTE	Both are cloud routes. The predecessor is selected because it is a PG route, and the current route is not a PG route.
LR_VIA_VELO_ROUTE	Both are cloud routes. The predecessor is selected because it is a via VeloCloud route, and the current is not a via-velocloud route.
LR_REMOTE_NON_ROUTED	Both are remote (overlay) routes. The predecessor is selected because it is a route not learned via routing protocol (static/ connected), and the current route is a route learned via routing protocol.
LR_REMOTE_DCE_FLAG	Both are remote (overlay) routes. The predecessor is selected because it is a data center Edge route ("D - DCE" is set in the debug.py --routes output), and the current is not a data center Edge route.
LR_METRIC	The predecessor is selected because it has a lesser metric than the current route.
LR_ORDER	The predecessor is selected because it has a lesser order than the current route.
LR_LOGICAL_ID	The predecessor is selected because it has a better logical ID than the current route.
LR_EXT_BGP_VIA_PRIMGW	Both are BGP routes. The predecessor is selected because it is an NSD BGP route learned from the primary NSD Gateway. The current route might have been learned from the redundant NDS Gateway.

The following table lists the reason codes for a Gateway and the corresponding descriptions:

**Table 10: Reason Codes for a Gateway**

<b>Reason Code</b>	<b>Description</b>
LR_NO_ELECTION	Best route.
LR_NVS_STATIC_PREF	The predecessor is selected because it is an NVS static route, and the current route is not.
LR_EXT_BGP_VS_OSPF	Predecessor is selected because it is a BGP route, and the current route is an OSPF route with metric type OE1/OE2.
LR_EXT_BGP_ROUTE	Both are cloud routes. The predecessor is selected because it is a BGP learned cloud route, and the current route is not (it is static).
LR_CLOUD_ROUTE_VS_ANY	The predecessor is selected because it is an Edge2Edge or Edge2Datacenter route, and the current route is a cloud static route.  Edge2Edge/Edge2Datacenter > Cloud static.
LR_BGP_LOCAL_PREF	Both are either Edge2Edge or Edge2Datacenter routes learned via BGP. The predecessor is selected because it has a greater local preference value than that of the current route.
LR_BGP_ASPATH_LEN	Both are either Edge2Edge or Edge2Datacenter routes learned via BGP. The predecessor is selected because it has a lesser AS path value than that of the current route.
LR_BGP_METRIC	Both are either Edge2Edge or Edge2Datacenter routes learned via BGP. The predecessor is selected because it has a lesser metric value than that of the current route.
LR_DCE_NSD_STATIC_PREF	Both are Edge2Datacenter routes. Predecessor is selected because it is an NSD static route, and the current route is not.
LR_DCE_NSD_STATIC_METRIC	Both are Edge2Datacenter static routes. Predecessor is selected because it has lesser metric value than that of the current route.
LR_DCE_NSD_STATIC_GW_NON_REMOTE	Both are Edge2Datacenter static routes. Predecessor is selected because it is a local route, and the current is a remote route.
LR_DCE_LOGICAL_ID	Both are Edge2Datacenter static routes. Predecessor is selected because it has better logical ID than that of the current route.
LR_E2DC_METRIC	Both are Edge2Datacenter routes. The predecessor is selected because its metric is lesser than that of the current route.
LR_DC_IPADDR	Both are Edge2Datacenter routes. The predecessor is selected because its datacenter IP address is lesser than that of the current route.
LR_E2DC_NETADDR	Both are Edge2Datacenter routes. The predecessor is selected because its network address is lesser than the current.
LR_E2E_PREFERENCE	Both are Edge2Edge routes. The predecessor is selected because its preference value is lesser than the current route.
LR_E2E_METRIC	Both are Edge2Edge routes. The predecessor is selected because its metric value is lesser than the current route.
LR_E2E_LOGICAL_ID	Both are Edge2Edge routes. The predecessor is selected because it has better logical ID than the current route.
LR_E2E_NETADDR	Both are Edge2Edge routes. The predecessor is selected because its network address is lesser than the current.
LR_OPG_SECURE_STATIC	The predecessor is selected because it is a PG secure static route, and the current route is not a PG secure static.
LR_ROUTE_TYPE	The predecessor is selected because it has a better route type than the current route.
LR_NETMASK	The predecessor is selected because it has a higher netmask than the current.

Reason Code	Description
LR_METRIC	The predecessor is selected because it has a lesser metric value than the current route.
LR_PREFERENCE	Both are routes learned from routing protocols. The predecessor is selected because it has a lesser preference value than the current route.
LR_NETADDR	The predecessor is selected because its network address is lesser than that of the current route.
LR_LOGICAL_ID	The predecessor is selected because its logical ID is better than the current route.

## 5.69 VPN Test

### What is the Purpose of This Test

VPN Test command is used to view the VPN Branch to Branch Connectivity between the Edges.

### When Can You Run This Test

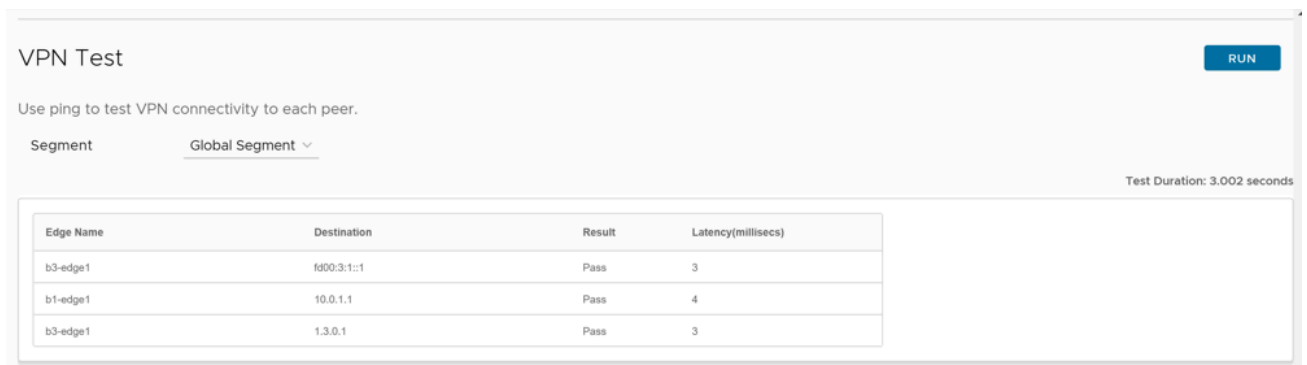
Run this test if the data traffic between the Branches or between Hub and Spoke are not bi-directional.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-79: VPN Test Sample Output**



The screenshot shows a web interface for running a VPN Test. At the top right is a blue 'RUN' button. Below it, the text 'Use ping to test VPN connectivity to each peer.' is displayed. A 'Segment' dropdown menu is set to 'Global Segment'. In the bottom right corner, it says 'Test Duration: 3.002 seconds'. The main content is a table with the following data:

Edge Name	Destination	Result	Latency(millisecs)
b3-edge1	fd00:3:1::1	Pass	3
b1-edge1	10.0.1.1	Pass	4
b3-edge1	1.3.0.1	Pass	3

This Remote Diagnostics test will perform the VPN test by confirming the tunnel status between the Edges, and the output displays the following information:

**Table 11: VPN Test- Options and Descriptions**

Option	Description
Edge Name	Specifies the name of the peer Edge.
Destination	Specifies the logical ID of the destination device.
Result	The result displays one of the following: <ul style="list-style-type: none"><li>• Pass- Tunnels and traffic between the Edges are up and running.</li><li>• Fail- Tunnels and traffic between the Edges are down.</li></ul>
Latency (milliseconds)	Specifies the latency in milli seconds.

## 5.70 WAN Link Bandwidth Test

### What is the Purpose of This Test

WAN Link Bandwidth Test command is used to measure the Bandwidth on the specific link.

### When Can You Run This Test

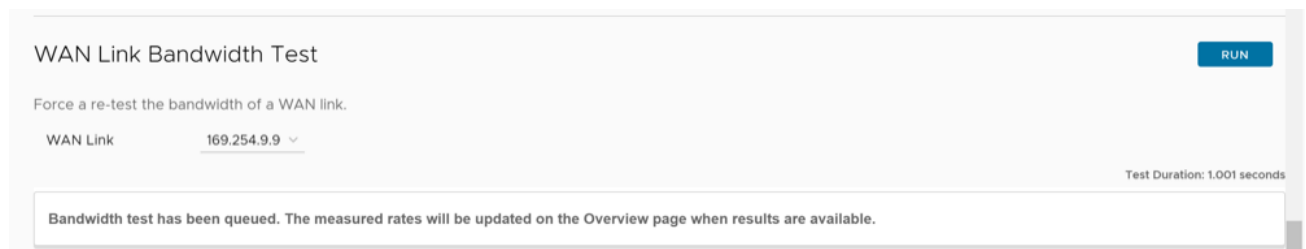
Run this test if you want to verify the bandwidth of the WAN Link. If the link measured wrong or inaccurate bandwidth, then you can perform this test to measure the bandwidth again.

For instructions on how to run a remote diagnostic test on Edges, see [Run Remote Diagnostic Tests on Edges](#).

### What to Check in the Test Output

Following is an example of the test output:

**Figure 5-80: WAN Link Bandwidth Test Sample Output**



## Perform Remote Actions with New Orchestrator UI

You can perform actions like Restarting services, Rebooting, or deactivating an Edge remotely, from the Enterprise portal.



**Note:** You can perform the remote actions only on Edge that are in **Connected** state.

1. In the **SD-WAN** service of the **Enterprise** portal, you can perform remote actions from the **Diagnostics > Remote Actions > Edges** navigation path.

**Figure 6-1: Remote Actions**

Name	Status	Model	Software version	Build Number	Created	Software Updated
b1-edge1	Connected	Edge VwCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b2-edge1	Connected	Edge VwCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b3-edge1	Connected	Edge VwCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b4-edge1	Connected	Edge VwCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	
b5-edge1	Connected	Edge VwCloud	5.2.0.0	R5200-20221027-MN-95delea022	Oct 27, 2022, 7:47:00 PM	

2. Select an Edge and perform any of the following remote actions:

**Table 12: Remote Actions- Options and Descriptions**

Action	Description
Restart Service	Restarts the SD-WAN services on the selected Edge.
Reboot	Reboots the selected Edge.
Identify	Randomly flashlights on the selected Edge to identify the device.
Shutdown	Powers off the selected Edge. To restore the Edge, you must remove the power cable, and then plug it back into the Edge.
Deactivate	Resets the device configuration to its factory default state.
Force HA Failover	Forces HA Failover. This option is available only when the Edge is configured with High Availability and the state is HA ready.

3. Alternatively, you can also perform the remote actions for an Edge using the **Shortcuts** option available in the **Configure > Edges** or **Monitor > Edges** pages.
4. Select the **Shortcuts > Remote Actions** and perform any of the actions listed in the above table.



**Note:** The actions may take up to a minute to run on the device.

## Diagnostic Bundles for Edges

---

Diagnostic bundles allow Operator users to collect all the configuration files and log files into a consolidated Zipped file. The data available in the diagnostic bundles can be used for debugging purposes.

To generate and download Diagnostic Bundles:

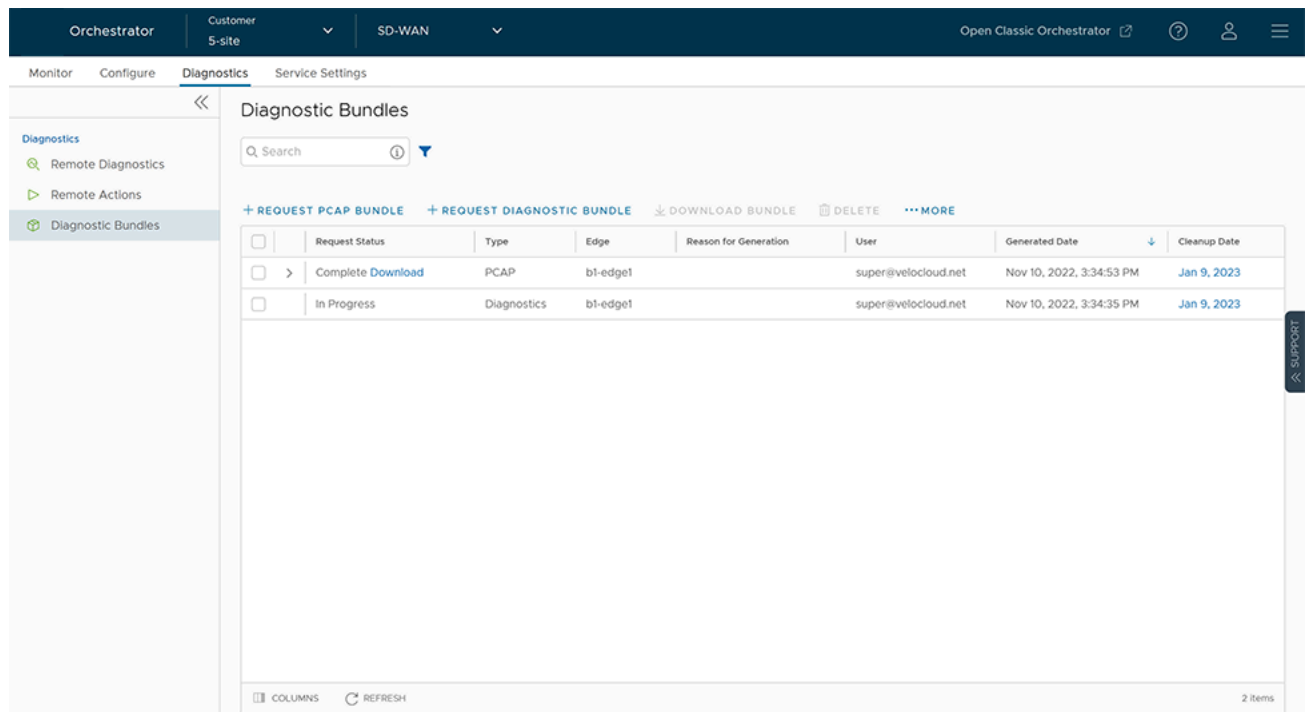
1. In the **SD-WAN** service of the Enterprise portal, select the **Diagnostics** tab.
2. Select **Diagnostic Bundles** to request the following bundles:
  - **Request PCAP Bundle** – The Packet Capture bundle is a collection of the packet data of the network. Operators, Standard Admins and Customer Support can request PCAP bundles. For additional information, see [Request Packet Capture Bundle](#).
  - **Request Diagnostic Bundle** – The Diagnostic bundle is a collection of all the configuration and logs from a specific Edge. Only Operators can request Diagnostic bundles. For additional information, see [Request Diagnostic Bundle](#).



**Note:** The **Request Diagnostic Bundle** option is available only for an Operator user. If you are a Partner user or an Enterprise user, you can request for a PCAP Bundle.

The generated bundles are displayed in the **Diagnostic Bundles** window.

**Figure 7-1: Diagnostic Bundles**



To download the details of generated bundles, select **More > Download CSV**. The details are downloaded in a CSV file.

## 7.1 Request Packet Capture Bundle

The Packet Capture bundle collects the packets data of a network. These files are used in analyzing the network characteristics. You can use the data for debugging an Edge device.

To generate a PCAP bundle:

1. In the **SD-WAN** Service of the **Enterprise** portal, select the **Diagnostics** tab.
2. Select **Diagnostic Bundles > Request PCAP Bundle**.

3. In the **Request PCAP Bundle** window that appears, configure the following:

**Figure 7-2: Request Packet Capture Configuration**

The screenshot shows a window titled "Request PCAP Bundle" with a close button (X) in the top right corner. The window contains the following configuration options:

- Target:** A dropdown menu with "b1-edge1" selected.
- Interface:** A dropdown menu with "GE5" selected.
- Duration:** A dropdown menu with "5 seconds" selected.
- Reason for Generation:** A text input field containing "For troubleshooting".

At the bottom right of the window, there are two buttons: "CLOSE" and "SUBMIT".

**Table 13: Request Packet Capture Options**

Option	Description
Target	Choose the target Edge from the drop-down list. The packets are collected from the selected Edge.
Interface	Choose an Interface or a VLAN from the drop-down list. The packets are collected on the selected Interface.
Duration	Choose the time in seconds. The packets are collected for the selected duration.
Reason for Generation	Optionally, you can enter your reason for generating the bundle.

The window displays the details of the bundle being generated, along with the status.

## Packet Capture for Edges Configured for High Availability

In Release 5.2.0 and later, a user can request a packet capture for the Standby Edge's HA interface, the interface that connects the Standby Edge to the Active Edge. This option appears at the bottom of the menu and reads: **Standby Edge**, and then lists the HA interface.

**Figure 7-3: HA Configuration**

Request PCAP Bundle

Target: B2 - 610

Interface: GE1 - HA

Duration:

Reason for Generation:

Interfaced

- GE1 - HA
- CELL1
- CELL2
- GE3
- GE4
- GE5
- GE6
- SFP1
- SFP2
- USB1
- USB2

VLANs

- 1 - Corporate
- 100 - VLAN-100
- 101 - VLAN-101

Standby Edge

- GE1 - HA

the Standby Edge's HA

CLOSE SUBMIT

## 7.2 Request Diagnostic Bundle

A Diagnostic bundle is a collection of configuration files, logs, and related events from a specific Edge.

To generate a Diagnostic bundle:

1. In the **SD-WAN** Service of the **Enterprise** portal, select the **Diagnostics** tab.
2. Select **Diagnostic Bundles** > **Request Diagnostic Bundle**.

3. In the **Request Diagnostic Bundle** window, configure the following:

**Figure 7-4: Request Diagnostic Bundle**

**Table 14: Request Diagnostic Bundle Options**

Option	Description
Target	Select the target Edge from the drop-down list. The data is collected from the selected Edge.
Reason for Generation	Optionally, you can enter your reason for generating the bundle.
Core Limit	Select a Core Limit value from the drop-down, which is used to reduce the size of the uploaded bundle when the Internet connectivity is experiencing issues.

The **Diagnostic Bundles** window displays the details of the bundle being generated, along with the status.

### Download Diagnostic Bundle

To download the generated Diagnostic bundles:

1. In the **Diagnostic Bundles** window, select the **Complete** link or select the bundle and select **Download Bundle**. The bundle is downloaded as a ZIP file.
2. For troubleshooting purpose, you can send the downloaded bundle to an Arista Support representative for debugging the data.

### Delete Diagnostic Bundle

The completed bundles get deleted automatically on the date displayed in the **Cleanup Date** column.

1. To change the cleanup date, select the link to the cleanup date or choose the bundle and select **More > Update Cleanup Date**.
2. In the **Update Cleanup Date** window, choose the date on which the selected bundle should be deleted.

3. If you want to retain the bundle, select the **Keep Forever** option, so that the bundle does not get deleted automatically.
4. To delete a bundle manually, select the bundle and select **Delete**.

## Diagnostic Bundles for Gateways

---

Run diagnostics for Gateways to collect diagnostic bundles and packet capture files for troubleshooting purpose.

- [Request Diagnostic Bundles for Gateways](#)
- [Request Packet Capture Bundle for Gateways](#)

### 8.1 Request Diagnostic Bundles for Gateways

Diagnostic bundles allow users to collect all the configuration files and log files from a specific SD-WAN Gateway into a consolidated zipped file. The data available in the diagnostic bundles can be used for troubleshooting the SD-WAN Gateways.

As an Operator Super user and Operator Admin user, you can create, manage, download, and delete diagnostic bundles for Gateways created by both Operator and Partner users.



**Note:** Operator Business Specialist user and Operator IT support users can only view the generated Diagnostic bundles and download the CSV file.

Partner Super user and Admin with Gateway management access activated can create, manage, and delete diagnostic bundles only for Gateway created by a Partner or a Partner managed Gateway created by your Operator. The Partner IT support users can only view the generated Diagnostic bundles and download the CSV file.



**Note:** The Diagnostic bundles feature is not supported for Partner Business Specialist user.



**Note:** The **Request Diagnostic Bundle** and **Download Bundle** options are available only for Partners with Gateway management access activated. If the Gateway management access is deactivated for a Partner, then the Partner can only view the generated Diagnostic bundles and download only the CSV file but cannot request a new Diagnostic bundle or download the generated bundle. To request Gateway Management access, Partners should contact the Operator Super user.

#### Request Diagnostic Bundle

To generate a new Diagnostic bundle:

1. In the **Operator** portal, select the **Gateway Management** tab and select **Diagnostic Bundles** in the left navigation pane.  
The **Diagnostic Bundles** page appears with the existing diagnostic bundles.
2. To generate a new Diagnostic bundle, select **Request Diagnostic Bundle**.

3. In the **Request Diagnostic Bundle** dialog, configure the following details and select **Submit**.

**Figure 8-1: Request Diagnostic Bundle for Gateways**

Request Diagnostic Bundle

Target gateway-1

Reason for Generation For troubleshooting purpose

Core Limit No Limit

CLOSE SUBMIT

**Table 15: Request Diagnostic Bundle for Gateways Options**

Field	Description
Target	Select the target Gateway from the drop-down list. The data is collected from the selected Gateway.
Reason for Generation	Optionally, you can enter your reason for generating the bundle.
Core Limit	Select a Core Limit value from the drop-down, which is used to reduce the size of the uploaded bundle when the Internet connectivity is experiencing issues.

The **Diagnostic Bundles** page displays the details of the bundle being generated, along with the status.

To search a specific diagnostic bundle, enter a relevant search text in the **Search** box. For advanced search, select the **filter** icon next to the **Search** box to filter the results by specific criteria.

### Download Diagnostic Bundle

You can download the generated Diagnostic bundles to troubleshoot an Edge.

To download a generated bundle, select the link next to **Complete** in the **Request Status** column or select the bundle and select **Download Bundle**. The bundle is downloaded as a ZIP file.

You can send the downloaded bundle to a Support representative for debugging the data.

## Delete Diagnostic Bundle

The completed bundles get deleted automatically on the date displayed in the **Cleanup Date** column. You can select the link to the **Cleanup Date** or choose the bundle and select **More > Update Cleanup Date** to modify the Date.

**Figure 8-2: Update Cleanup Date**

Update Cleanup Date ×

Remove bundle on  
05/17/2022

Keep Forever

CANCEL SAVE

In the **Update Cleanup Date** dialog, choose the date on which the selected Bundle would be deleted.

If you want to retain the Bundle, select the **Keep Forever** checkbox, so that the Bundle does not get deleted automatically.

To delete a bundle manually, select the bundle and select **Delete**.

## 8.2 Request Packet Capture Bundle for Gateways

The Packet Capture bundle collects the packets data of a network. These files are used in analyzing the network characteristics. You can use the data for debugging the network traffic and determining network status.

To generate a PCAP bundle:

1. In the Operator portal, select the **Gateway Management** tab and select **Diagnostic Bundles** in the left navigation pane.  
The **Diagnostic Bundles** page appears with the existing diagnostic bundles.
2. To generate a new PCAP bundle, select **Request PCAP Bundle**.

3. In the **Request PCAP Bundle** dialog, configure the following details and select **Generate**.

**Figure 8-3: Request PCAP Bundle for Gateways**

**Table 16: Request PCAP Bundle for Gateways Options**

Field	Description
Target	Choose the target Gateway from the drop-down list. The packets are collected from the selected Gateway.
Connectivity	Choose an Interface or an Edge ID from the drop-down list. The packets are collected on the selected Interface or Edge associated to the Gateway.
Duration	Choose the time in seconds. The packets are collected for the selected duration. The default value is 5 seconds.
Reason for Generation	Optionally, you can enter your reason for generating the bundle.
PCAP Filters	<p>You can define PCAP filters by which you want to control the PCAP data to be generated by choosing the following options:</p> <ul style="list-style-type: none"> <li>• <b>IP1</b>- Enter an IPv4 address, or IPv6 address, or Subnet mask.</li> <li>• <b>IP2</b>- Enter an IPv4 address, or IPv6 address, or Subnet mask.</li> <li>• <b>IP1:Port1</b>- Enter a Port ID associated with IP1.</li> <li>• <b>IP2:Port2</b>- Enter a Port ID associated with IP2.</li> <li>• <b>Protocol</b>- Select a protocol from the list.</li> </ul> <div style="border: 1px solid #0070C0; padding: 5px; margin-top: 10px;"> <p><b>Note:</b> If you choose to use the PCAP filtering capability then you must define at least one filter.</p> </div>
Advanced Filters	You can define free form filters by which you want to control the PCAP data to be generated.

The **Diagnostic Bundles** page displays the details of the PCAP bundle being generated, along with the status.

4. To download a generated bundle, select the link next to **Complete** in the **Request Status** column or select the bundle and select **Download Bundle**. The bundle is downloaded as a ZIP file.
5. The completed bundles get deleted automatically on the date displayed in the **Cleanup Date** column. You can select the link to the **Cleanup Date** or choose the bundle and select **More > Update Cleanup Date** to modify the Date.
6. To delete a bundle manually, select the bundle and select **Delete**.

## References

---

### 9.1 Related Documents

The following documentation is available for **Arista VeloCloud SD-WAN**:

- *Arista VeloCloud SD-WAN Operator Guide*
- *Arista VeloCloud SD-WAN Administration Guide*
- *Arista VeloCloud SD-WAN Gateway Monitoring Guide*
- *Arista VeloCloud SD-WAN Orchestrator Deployment and Monitoring Guide*
- *Arista VeloCloud SD-WAN Partner Guide*
- *Arista VeloCloud SASE Global Settings Guide*
- *Arista VeloCloud SD-WAN Design Guide for Enhanced Firewall Services*
- *Arista VeloCloud SD-WAN API*
- *Arista VeloCloud Portal API*