

# Solution BMS EVPN Type5 Configuring

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# 1

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## BMS EVPN Type5

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# Solution BMS EVPN Type5 Configuring

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## Example: Configuring Data Center Interconnect with Bare Metal Server EVPN Type 5

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This example describes how to interconnect data centers with bare metal server (BMS) EVPN type 5 and the Juniper Networks QFX5100 and QFX10002 line of switches.

## Requirements

[Table 1 on page 2](#) lists the hardware and software components used in this example.

**Table 1: Solution Hardware and Software Requirements**

Device	Hardware	Software
Core Routers	MX480	Junos OS Release 14.2R2.8

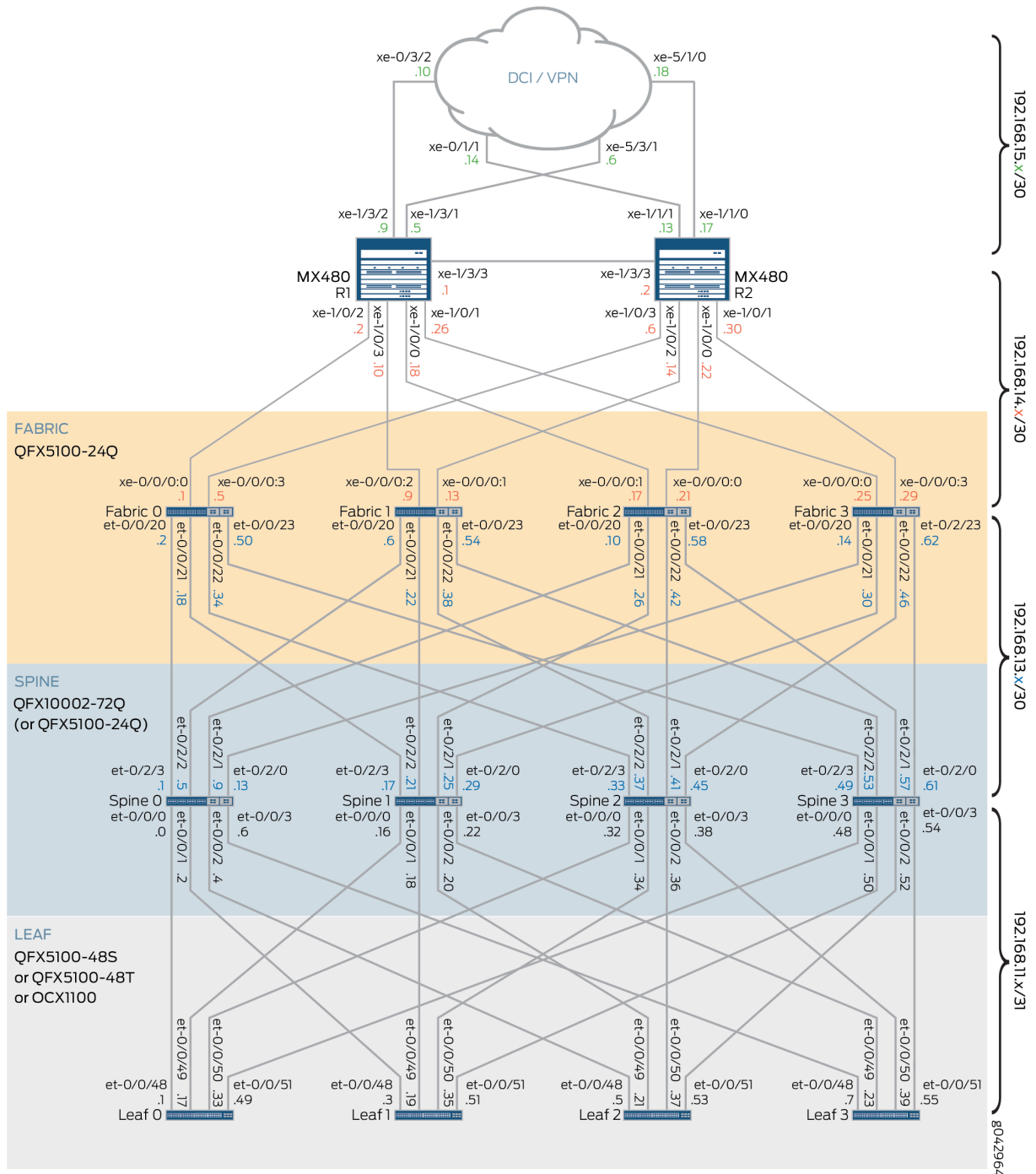
**Table 1: Solution Hardware and Software Requirements *(Continued)***

Device	Hardware	Software
Fabric Layer	QFX5100-24Q	Junos OS Release 14.1X53-D27.3
Spine Layer	QFX10002-78Q	Junos OS Release 14.1X53-D27.3
Leaf Devices	QFX5100-48S	Junos OS Release 14.1X53-D27.3
Route Server	QFX10002-78Q	Junos OS Release 14.1X53-D27.3
Servers	IBM Flex and IBMx3750	VMware ESXi 5.1

## Overview and Topology

The topology used in this example consists of two MX480 devices as core routers; a series of QFX5100 and QFX10002 devices at the fabric, spine, and leaf layers; a QFX10002-78Q device as a router server; and various bare metal servers (BMS) in the server racks as shown in [Figure 1 on page 4](#).

Figure 1: BMS EVPN Type 5 Solution Topology



In this example, the leaf layer uses four QFX5100-48S switches. The spine layer uses four QFX10002-78Q switches. The fabric layer uses four QFX5100-24Q switches. The core layer uses two MX480 routers. A series of servers are attached to the leaf layer to serve as typical data center end hosts.

Table 2 on page 5 and Table 3 on page 5 list the IP addressing used in this example.

**Table 2: IPv4 Addressing**

IPv4 Network Subnets	Network
Fabric to Spine point-to-point (PTP) links	110.100.1.0/24, 110.100.2.0/24, 110.100.3.0/24, 110.100.4.0/24
Spine to Leaf PTP links	101.1.0.0/16
Loopback IP range for all VRFs	101.1/16
Inet.0 for route-server	100.100.101.1/24
TOR-1 IRB	1.1.0.0/16
TOR-2 IRB	2.2.0.0/16
TOR-3 IRB	3.3.0.0/16
TOR-4 IRB	4.4.0.0/16
Route server IP addresses	100.100.250.1 and 100.100.250.2

**Table 3: IPv6 Addressing**

IPv6 Network Subnets	Network
Spine to Leaf PTP links	::ffff.101.1.../127
Loopback IP range for all VRFs	::ffff:100.100.../127
TOR-1 IRB	1001:0:1::1/64
TOR-2 IRB	2001:0:1::1/64



**Table 3: IPv6 Addressing (Continued)**

IPv6 Network Subnets	Network
TOR-3 IRB	3001:0:1::1/64
TOR-4 IRB	4001:0:1::1/64

[Table 4 on page 6](#) lists the AS numbering used in this example.

**Table 4: BGP AS Numbering**

Device	AS Number
TOR-1	65100
TOR-2	65100
TOR-3	65101
TOR-4	65101
Spine-1	65200
Spine-2	65200
Spine-3	65201
Spine-4	65201
Fabric-1	65300
Fabric-2	65300
Fabric-3	65300

Table 4: BGP AS Numbering (*Continued*)

Device	AS Number
Fabric-4	65300

## Configuration

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To configure data center interconnect with BMS EVPN type 5, perform these tasks:

### CLI Quick Configuration

#### Configuration Snippets of VRFs on Leaf Towards Spine

To quickly configure the additional elements for the leaf devices, enter the following configuration statements on each device:

**NOTE:** The configuration shown here applies to device Leaf-0.

#### Leaf-0 Global Configuration

```
[edit]
set routing-options router-id 100.100.255.100
set routing-options route-distinguisher-id 100.100.255.101
set routing-options autonomous-system 65410
set routing-options autonomous-system loops 2
```

```
set chassis fpc 0 pic 0 port 22 channel-speed 10g
set chassis fpc 0 pic 0 port 23 channel-speed 10g
set chassis forwarding-options 13-profile
```

## Leaf-0 ECMP Configuration

```
[edit]
set policy-options policy-statement LOAD_BALANCE term 1 then load-balance per-packet
set policy-options policy-statement LOAD_BALANCE term 1 then accept
set routing-options forwarding-table export LOAD_BALANCE
```

## Leaf-0 BGP Policy Configuration

```
[edit]
set policy-options policy-statement DIST-IN term t1 then load-balance per-packet
set policy-options policy-statement DIST-IN-COSTOUT from policy DIST-IN
set policy-options policy-statement DIST-IN-COSTOUT then as-path-prepend 65001

set policy-options policy-statement EXPORT-CONNECTED term inet-loopback from family inet
set policy-options policy-statement EXPORT-CONNECTED term inet-loopback from protocol direct
set policy-options policy-statement EXPORT-CONNECTED term inet-loopback from route-filter
0.0.0.0/0 prefix-length-range /32-/32
set policy-options policy-statement EXPORT-CONNECTED term inet-loopback then accept
set policy-options policy-statement EXPORT-CONNECTED term inet6-loopback from family inet6
set policy-options policy-statement EXPORT-CONNECTED term inet6-loopback from protocol direct
set policy-options policy-statement EXPORT-CONNECTED term inet6-loopback from route-filter ::0/0
prefix-length-range /128-/128
set policy-options policy-statement EXPORT-CONNECTED term inet6-loopback then accept
set policy-options policy-statement EXPORT-CONNECTED term deny-em0 from protocol direct
set policy-options policy-statement EXPORT-CONNECTED term deny-em0 from interface em0.0
set policy-options policy-statement EXPORT-CONNECTED term deny-emo then reject
set policy-options policy-statement EXPORT-CONNECTED term inet-irb from family inet
set policy-options policy-statement EXPORT-CONNECTED term inet-irb from protocol direct
set policy-options policy-statement EXPORT-CONNECTED term inet-irb then accept
set policy-options policy-statement EXPORT-CONNECTED term iinet6-irb from family inet6
set policy-options policy-statement EXPORT-CONNECTED term inet6-irb from protocol direct
set policy-options policy-statement EXPORT-CONNECTED term inet6-irb then accept
set policy-options policy-statement EXPORT-CONNECTED term bgp-routes from protocol bgp
set policy-options policy-statement EXPORT-CONNECTED term bgp-routes then accept
set policy-options policy-statement EXPORT-CONNECTED-COSTOUT from policy EXPORT-CONNECTED
set policy-options policy-statement EXPORT-CONNECTED-COSTOUT then as-path-prepend 65100
```

```
set policy-options policy-statement export-RS term RS from route-filter 100.110.250.1/32 exact
set policy-options policy-statement export-RS term RS then accept
```

```
set policy-options policy-statement spine-lo term 1o from protocol bgp
set policy-options policy-statement spine-lo term 1o from route-filter 100.100.250.1/32 exact
set policy-options policy-statement spine-lo term 1o from route-filter 100.100.250.2/32 exact
set policy-options policy-statement spine-lo term 1o from route-filter 100.100.250.2/32 exact
set policy-options policy-statement spine-lo term 1o from route-filter 100.100.250.2/32 exact
set policy-options policy-statement spine-lo term 1o then accept
```

### Customer-1 Leaf-to-Spine

#### Uplink 40G Configuration for VRF-lite1 (6 x uplinks to Spine1 and Spine2)

```
[edit]
set interfaces et-0/0/0 flexible-vlan-tagging
set interfaces et-0/0/0 unit 1 vlan-id 1
set interfaces et-0/0/0 unit 1 family inet address 101.1.101.1/31
set interfaces et-0/0/0 unit 1 family inet6 address ::ffff:101.1.101.1/127
```

```
set interfaces et-0/0/1 flexible-vlan-tagging
set interfaces et-0/0/1 unit 1 vlan-id 1
set interfaces et-0/0/1 unit 1 family inet address 101.1.101.3/31
set interfaces et-0/0/1 unit 1 family inet6 address ::ffff:101.1.101.3/127
```

```
set interfaces et-0/0/2 flexible-vlan-tagging
set interfaces et-0/0/2 unit 1 vlan-id 1
set interfaces et-0/0/2 unit 1 family inet address 101.1.101.13/31
set interfaces et-0/0/2 unit 1 family inet6 address ::ffff:101.1.101.13/127
```

```
set interfaces et-0/0/3 flexible-vlan-tagging
set interfaces et-0/0/3 unit 1 vlan-id 1
```

```
set interfaces et-0/0/3 unit 1 family inet address 101.1.101.15/31
set interfaces et-0/0/3 unit 1 family inet6 address ::ffff:101.1.101.15/127
```

```
set interfaces et-0/0/4 flexible-vlan-tagging
set interfaces et-0/0/4 unit 1 vlan-id 1
set interfaces et-0/0/4 unit 1 family inet address 101.1.101.5/31
set interfaces et-0/0/4 unit 1 family inet6 address ::ffff:101.1.101.5/127
```

```
set interfaces et-0/0/5 flexible-vlan-tagging
set interfaces et-0/0/5 unit 1 vlan-id 1
set interfaces et-0/0/5 unit 1 family inet address 101.1.101.7/31
set interfaces et-0/0/5 unit 1 family inet6 address ::ffff:101.1.101.7/127
```

```
set interfaces et-0/0/6 flexible-vlan-tagging
set interfaces et-0/0/6 unit 1 vlan-id 1
set interfaces et-0/0/6 unit 1 family inet address 101.1.101.17/31
set interfaces et-0/0/6 unit 1 family inet6 address ::ffff:101.1.101.17/127
```

```
set interfaces et-0/0/7 flexible-vlan-tagging
set interfaces et-0/0/7 unit 1 vlan-id 1
set interfaces et-0/0/7 unit 1 family inet address 101.1.101.19/31
set interfaces et-0/0/7 unit 1 family inet6 address ::ffff:101.1.101.19/127
```

```
set interfaces et-0/0/8 flexible-vlan-tagging
set interfaces et-0/0/8 unit 1 vlan-id 1
set interfaces et-0/0/8 unit 1 family inet address 101.1.101.9/31
set interfaces et-0/0/8 unit 1 family inet6 address ::ffff:101.1.101.9/127
```

```
set interfaces et-0/0/9 flexible-vlan-tagging
set interfaces et-0/0/9 unit 1 vlan-id 1
set interfaces et-0/0/9 unit 1 family inet address 101.1.101.11/31
set interfaces et-0/0/9 unit 1 family inet6 address ::ffff:101.1.101.11/127
```

```

set interfaces et-0/0/10 flexible-vlan-tagging
set interfaces et-0/0/10 unit 1 vlan-id 1
set interfaces et-0/0/10 unit 1 family inet address 101.1.101.21/31
set interfaces et-0/0/10 unit 1 family inet6 address ::ffff:101.1.101.21/127

```

```

set interfaces et-0/0/11 flexible-vlan-tagging
set interfaces et-0/0/11 unit 1 vlan-id 1
set interfaces et-0/0/11 unit 1 family inet address 101.1.101.23/31
set interfaces et-0/0/11 unit 1 family inet6 address ::ffff:101.1.101.23/127

```

### Customer Routing Instance Configuration (VRF-1)

```

[edit]
set routing-instance VRF_lite1 instance-type vrf
set routing-instance VRF_lite1 interface et-0/0/0.1
set routing-instance VRF_lite1 interface et-0/0/1.1
set routing-instance VRF_lite1 interface et-0/0/2.1
set routing-instance VRF_lite1 interface et-0/0/3.1
set routing-instance VRF_lite1 interface et-0/0/4.1
set routing-instance VRF_lite1 interface et-0/0/5.1
set routing-instance VRF_lite1 interface et-0/0/6.1
set routing-instance VRF_lite1 interface et-0/0/7.1
set routing-instance VRF_lite1 interface et-0/0/8.1
set routing-instance VRF_lite1 interface et-0/0/9.1
set routing-instance VRF_lite1 interface et-0/0/10.1
set routing-instance VRF_lite1 interface et-0/0/11.1
set routing-instance VRF_lite1 interface irb.1
set routing-instance VRF_lite1 interface irb.2
set routing-instance VRF_lite1 interface irb.3
set routing-instance VRF_lite1 interface irb.4
set routing-instance VRF_lite1 interface irb.5
set routing-instance VRF_lite1 interface lo0.1
set routing-instance VRF_lite1 vrf-target target:65100:1
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 type external
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 advertise-peer-as
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 import DIST-IN
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 family inet unicast
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 family inet6 unicast
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 export EXPORT-CONNECTED

```

```
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 peer-as 65200
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 multipath
```

##### Spine-2 6 X BGP sessions for multipath #####

```
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.12
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.14
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.16
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.18
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.20
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.22
```

##### Spine-1 6 X BGP sessions for multipath #####

```
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.0
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.2
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.4
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.6
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.8
set routing-instance VRF_lite1 protocols bgp group dist-eBGPv4 neighbor 101.1.101.10
```

## VLAN Configuration for VRF-1 (5 VLANs per Customer VRF)

```
[edit]
set vlans VRF1 vlan-id 1
set vlans VRF1 l3-interface irb-1
set vlans VRF1 vlan-id 2
set vlans VRF1 l3-interface irb-2
set vlans VRF1 vlan-id 3
set vlans VRF1 l3-interface irb-3
set vlans VRF1 vlan-id 4
set vlans VRF1 l3-interface irb-4
set vlans VRF1 vlan-id 5
set vlans VRF1 l3-interface irb-5
```

## IRB Interface Configuration

```
[edit]
set interfaces irb unit 1 family inet address 1.1.1.1/24
set interfaces irb unit 1 family inet6 address 1001:0:1::1/64
```

```

set interfaces irb unit 2 family inet address 1.1.2.1/24
set interfaces irb unit 2 family inet6 address 1002:0:1::1/64
set interfaces irb unit 3 family inet address 1.1.3.1/24
set interfaces irb unit 3 family inet6 address 1003:0:1::1/64
set interfaces irb unit 4 family inet address 1.1.4.1/24
set interfaces irb unit 4 family inet6 address 1004:0:1::1/64
set interfaces irb unit 5 family inet address 1.1.5.1/24
set interfaces irb unit 5 family inet6 address 1005:0:1::1/64

```

## Customer-2 Leaf-to-Spine

### Uplink 40G Configuration for VRF-lite2 (6 x uplinks to Spine1 and Spine2)

```

[edit]
set interfaces et-0/0/0 unit 2 vlan-id 2
set interfaces et-0/0/0 unit 2 family inet address 101.2.101.1/31
set interfaces et-0/0/0 unit 2 family inet6 address ::ffff:101.2.101.1/127

```

```

set interfaces et-0/0/1 unit 2 vlan-id 2
set interfaces et-0/0/1 unit 2 family inet address 101.2.101.3/31
set interfaces et-0/0/1 unit 2 family inet6 address ::ffff:101.2.101.3/127

```

```

set interfaces et-0/0/2 unit 2 vlan-id 2
set interfaces et-0/0/2 unit 2 family inet address 101.2.101.13/31
set interfaces et-0/0/2 unit 2 family inet6 address ::ffff:101.2.101.13/127

```

```

set interfaces et-0/0/3 unit 2 vlan-id 2
set interfaces et-0/0/3 unit 2 family inet address 101.2.101.15/31
set interfaces et-0/0/3 unit 2 family inet6 address ::ffff:101.2.101.15/127

```

```

set interfaces et-0/0/4 unit 2 vlan-id 2
set interfaces et-0/0/4 unit 2 family inet address 101.2.101.5/31
set interfaces et-0/0/4 unit 2 family inet6 address ::ffff:101.2.101.5/127

```



```
set interfaces et-0/0/5 unit 2 vlan-id 2
set interfaces et-0/0/5 unit 2 family inet address 101.2.101.7/31
set interfaces et-0/0/5 unit 2 family inet6 address ::ffff:101.2.101.7/127
```

```
set interfaces et-0/0/6 unit 2 vlan-id 2
set interfaces et-0/0/6 unit 2 family inet address 101.2.101.17/31
set interfaces et-0/0/6 unit 2 family inet6 address ::ffff:101.2.101.17/127
```

```
set interfaces et-0/0/7 unit 2 vlan-id 2
set interfaces et-0/0/7 unit 2 family inet address 101.2.101.19/31
set interfaces et-0/0/7 unit 2 family inet6 address ::ffff:101.2.101.19/127
```

```
set interfaces et-0/0/8 unit 2 vlan-id 2
set interfaces et-0/0/8 unit 2 family inet address 101.2.101.9/31
set interfaces et-0/0/8 unit 2 family inet6 address ::ffff:101.2.101.9/127
```

```
set interfaces et-0/0/9 unit 2 vlan-id 2
set interfaces et-0/0/9 unit 2 family inet address 101.2.101.11/31
set interfaces et-0/0/9 unit 2 family inet6 address ::ffff:101.2.101.11/127
```

```
set interfaces et-0/0/10 unit 2 vlan-id 2
set interfaces et-0/0/10 unit 2 family inet address 101.2.101.21/31
set interfaces et-0/0/10 unit 2 family inet6 address ::ffff:101.2.101.21/127
```

```
set interfaces et-0/0/11 unit 2 vlan-id 2
set interfaces et-0/0/11 unit 2 family inet address 101.2.101.23/31
set interfaces et-0/0/11 unit 2 family inet6 address ::ffff:101.2.101.23/127
```

## Customer Routing Instance Configuration (VRF-2)

```
[edit]
set routing-instance VRF_lite2 instance-type vrf
set routing-instance VRF_lite2 interface et-0/0/0.2
set routing-instance VRF_lite2 interface et-0/0/1.2
set routing-instance VRF_lite2 interface et-0/0/2.2
set routing-instance VRF_lite2 interface et-0/0/3.2
set routing-instance VRF_lite2 interface et-0/0/4.2
set routing-instance VRF_lite2 interface et-0/0/5.2
set routing-instance VRF_lite2 interface et-0/0/6.2
set routing-instance VRF_lite2 interface et-0/0/7.2
set routing-instance VRF_lite2 interface et-0/0/8.2
set routing-instance VRF_lite2 interface et-0/0/9.2
set routing-instance VRF_lite2 interface et-0/0/10.2
set routing-instance VRF_lite2 interface et-0/0/11.2
set routing-instance VRF_lite2 interface irb.6
set routing-instance VRF_lite2 interface irb.7
set routing-instance VRF_lite2 interface irb.8
set routing-instance VRF_lite2 interface irb.9
set routing-instance VRF_lite2 interface irb.10
set routing-instance VRF_lite2 interface lo0.1
set routing-instance VRF_lite2 vrf-target target:65100:21
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 type external
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 advertise-peer-as
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 import DIST-IN
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 family inet unicast
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 family inet6 unicast
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 export EXPORT-CONNECTED
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 peer-as 65200
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 multipath
```

##### Spine-1 6 X BGP sessions for multipath #####

```
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.12
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.14
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.16
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.18
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.20
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.22
```

##### Spine-2 6 X BGP sessions for multipath #####

```
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.0
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.2
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.4
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.6
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.8
set routing-instance VRF_lite2 protocols bgp group dist-eBGPv4 neighbor 101.2.101.10
```

### VLAN Configuration for VRF-2 (5 VLANs per Customer VRF)

```
[edit]
set vlans VRF1 vlan-id 6
set vlans VRF1 l3-interface irb-6
set vlans VRF1 vlan-id 7
set vlans VRF1 l3-interface irb-7
set vlans VRF1 vlan-id 8
set vlans VRF1 l3-interface irb-8
set vlans VRF1 vlan-id 9
set vlans VRF1 l3-interface irb-9
set vlans VRF1 vlan-id 10
set vlans VRF1 l3-interface irb-10
```

### IRB Interface Configuration (VRF-2)

```
[edit]
set interfaces irb unit 6 family inet address 1.1.6.1/24
set interfaces irb unit 6 family inet6 address 1006:0:1::1/64
set interfaces irb unit 7 family inet address 1.1.7.1/24
set interfaces irb unit 7 family inet6 address 1007:0:1::1/64
set interfaces irb unit 8 family inet address 1.1.8.1/24
set interfaces irb unit 8 family inet6 address 1008:0:1::1/64
set interfaces irb unit 9 family inet address 1.1.9.1/24
set interfaces irb unit 9 family inet6 address 1009:0:1::1/64
set interfaces irb unit 10 family inet address 1.1.10.1/24
set interfaces irb unit 10 family inet6 address 100a:0:1::1/64
```

## Leaf-0 Port Configuration for VRF\_lite1 and VRF\_lite2

```
[edit]
set interfaces xe-0/0/22:3 mtu 9192
set interfaces xe-0/0/22:3 unit 0 family ethernet-switching interface-mode trunk
set interfaces xe-0/0/22:3 unit 0 family ethernet-switching vlan members VRF1
set interfaces xe-0/0/22:3 unit 0 family ethernet-switching vlan members VRF2
```

## Configure Interfaces Toward Fabric: Two Links to each of Four Fabrics

```
[edit]
set interfaces et-0/0/36 description Fabric-1:et-0/0/4
set interfaces et-0/0/36 unit 0 family inet address 110.100.1.1/31
set interfaces et-0/0/36 unit 0 family inet6 address ::ffff:110.100.1.1/127
```

```
set interfaces et-0/0/40 description Fabric-1:et-0/0/5
set interfaces et-0/0/40 unit 0 family inet address 110.100.1.3/31
set interfaces et-0/0/40 unit 0 family inet6 address ::ffff:110.100.1.3/127
```

```
set interfaces et-0/0/37 description Fabric-2:et-0/0/4
set interfaces et-0/0/37 unit 0 family inet address 110.100.1.5/31
set interfaces et-0/0/37 unit 0 family inet6 address ::ffff:110.100.1.5/127
```

```
set interfaces et-0/0/41 description Fabric-2:et-0/0/5
set interfaces et-0/0/41 unit 0 family inet address 110.100.1.7/31
set interfaces et-0/0/41 unit 0 family inet6 address ::ffff:110.100.1.7/127
```

```
set interfaces et-0/0/38 description Fabric-3:et-0/0/4
set interfaces et-0/0/38 unit 0 family inet address 110.100.1.9/31
set interfaces et-0/0/38 unit 0 family inet6 address ::ffff:110.100.1.9/127
```

```
set interfaces et-0/0/42 description Fabric-3:et-0/0/5
set interfaces et-0/0/42 unit 0 family inet address 110.100.1.13/31
set interfaces et-0/0/42 unit 0 family inet6 address ::ffff:110.100.1.13/127
```

```
set interfaces et-0/0/39 description Fabric-4:et-0/0/4
set interfaces et-0/0/39 unit 0 family inet address 110.100.1.13/31
set interfaces et-0/0/39 unit 0 family inet6 address ::ffff:110.100.1.13/127
```

```
set interfaces et-0/0/43 description Fabric-4:et-0/0/5
set interfaces et-0/0/43 unit 0 family inet address 110.100.1.15/31
set interfaces et-0/0/43 unit 0 family inet6 address ::ffff:110.100.1.15/127
```

### Configure eBGP Underlay Toward Fabric: Two Links to each of Four Fabrics

```
[edit]
set protocols bgp group Fabric-eBGPv4 type external
set protocols bgp group Fabric-eBGPv4 import BGP-INBOUND
set protocols bgp group Fabric-eBGPv4 family inet unicast
set protocols bgp group Fabric-eBGPv4 family inet6 unicast
set protocols bgp group Fabric-eBGPv4 export Fabric-ROUTES
set protocols bgp group Fabric-eBGPv4 peer-as 65300
set protocols bgp group Fabric-eBGPv4 bfd-liveness-detection minimum-interval 2000
set protocols bgp group Fabric-eBGPv4 multipath
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.0 description Fabric-1
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.2 description Fabric-1
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.4 description Fabric-2
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.6 description Fabric-2
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.8 description Fabric-3
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.10 description Fabric-3
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.12 description Fabric-4
set protocols bgp group Fabric-eBGPv4 neighbor 110.100.1.14 description Fabric-4
```

### Configure eBGP Underlay for Reachability of the Route Servers

```
[edit]
set protocols bgp group access-eBGPv4 type external
```

```

set protocols bgp group access-eBGPv4 advertise-peer-as
set protocols bgp group access-eBGPv4 import ACCESS-in
set protocols bgp group access-eBGPv4 family inet unicast
set protocols bgp group access-eBGPv4 family inet6 unicast
set protocols bgp group access-eBGPv4 export Spines-1o
set protocols bgp group access-eBGPv4 peer-as 65100
set protocols bgp group access-eBGPv4 multipath
set protocols bgp group access-eBGPv4 neighbor 100.100.101.1 description TOR-1
set protocols bgp group access-eBGPv4 neighbor 100.100.101.3 description TOR-1
set protocols bgp group access-eBGPv4 neighbor 100.100.102.1 description TOR-2
set protocols bgp group access-eBGPv4 neighbor 100.100.102.3 description TOR-2

```

### Configure EVPN Type-5 Route Server Peering

```

[edit]
set protocols bgp group Inter-POD-EVPN type external
set protocols bgp group Inter-POD-EVPN multihop
set protocols bgp group Inter-POD-EVPN local-address 100.100.255.1
set protocols bgp group Inter-POD-EVPN family evpn signaling loops 2
set protocols bgp group Inter-POD-EVPN peer-as-65500
set protocols bgp group Inter-POD-EVPN bfd-liveness-detection minimum-interval 2000
set protocols bgp group Inter-POD-EVPN bfd-liveness-detection session-mode multihop
set protocols bgp group Inter-POD-EVPN neighbor 100.100.255.3
deactivate protocols bgp group Inter-POD-EVPN neighbor 100.100.255.3
set protocols bgp group Inter-POD-EVPN neighbor 100.100.255.4
deactivate protocols bgp group Inter-POD-EVPN neighbor 100.100.255.4
set protocols bgp group Inter-POD-EVPN neighbor 100.100.250.1
set protocols bgp group Inter-POD-EVPN neighbor 100.100.250.2

```

### Configure Global BGP Policies

```

[edit]
set policy-options policy-statement ACCESS-ROUTES term ANNOUNCE-DEFAULT-V4 from route-filter 0.0.0.0/0 exact
set policy-options policy-statement ACCESS-ROUTES term ANNOUNCE-DEFAULT-V4 then accept
set policy-options policy-statement ACCESS-ROUTES term ANNOUNCE-DEFAULT-V6 from route-filter ::0/0 exact
set policy-options policy-statement ACCESS-ROUTES term ANNOUNCE-DEFAULT-V6 then accept
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V4 from family inet
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V4 from protocol direct
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V4 from route-filter

```

```

0.0.0.0/0 prefix-length-range /32-/32
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V4 then accept
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V6 from family inet6
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V6 from protocol direct
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V6 from route-filter ::0/0
prefix-length-range /128-/128
set policy-options policy-statement ACCESS-ROUTES term LOCAL-LOOPBACK-V6 then accept
set policy-options policy-statement ACCESS-ROUTES term BUBBLE-ROUTES from as-path tor_routes
set policy-options policy-statement ACCESS-ROUTES term BUBBLE-ROUTES then accept
deactivate policy-options policy-statement ACCESS-ROUTES term BUBBLE-ROUTES
set policy-options policy-statement ACCESS-ROUTES term evpn from protocol evpn
set policy-options policy-statement ACCESS-ROUTES term evpn then accept
set policy-options policy-statement ACCESS-ROUTES term DENY-ALL then reject
deactivate policy-options policy-statement ACCESS-ROUTES term DENY-ALL
set policy-options policy-statement ACCESS-ROUTES-COSTOUT from policy ACCESS-ROUTES
set policy-options policy-statement ACCESS-ROUTES-COSTOUT then as-path-prepend 65200
set policy-options policy-statement ACCESS-in term t1 then accept
set policy-options policy-statement Fabric-ROUTES term SUMMARIZE-LOCAL from protocol aggregate
set policy-options policy-statement Fabric-ROUTES term SUMMARIZE-LOCAL then accept
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V4 from family inet
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V4 from protocol direct
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V4 from route-filter
0.0.0.0/0 prefix-length-range /32-/32
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V4 then accept
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V6 from family inet6
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V6 from protocol direct
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V6 from route-filter ::0/0
prefix-length-range /128-/128
set policy-options policy-statement Fabric-ROUTES term LOCAL-LOOPBACK-V6 then accept
set policy-options policy-statement Fabric-ROUTES term DENY-ALL then reject
set policy-options policy-statement Fabric-ROUTES-COSTOUT from policy Fabric-ROUTES
set policy-options policy-statement Fabric-ROUTES-COSTOUT then as-path-prepend 65200
set policy-options policy-statement LOAD_BALANCE term 1 then load-balance per-packet
set policy-options policy-statement LOAD_BALANCE term 1 then accept
set policy-options policy-statement Spines-lo term lo from route-filter 100.100.255.2/32 exact
set policy-options policy-statement Spines-lo term lo from route-filter 100.100.255.1/32 exact
set policy-options policy-statement Spines-lo term lo from route-filter 100.100.255.3/32 exact
set policy-options policy-statement Spines-lo term lo from route-filter 100.100.255.4/32 exact
set policy-options policy-statement Spines-lo term lo then accept
set policy-options policy-statement aggregate-route from protocol direct
set policy-options policy-statement aggregate-route from route-filter 100.100.0.0/16 orlonger
set policy-options policy-statement aggregate-route then accept
set policy-options community drop-route members 65000:65535

```

```

set policy-options community setcomm-100 members 65000:100
set policy-options community setcomm-150 members 65000:150
set policy-options community setcomm-200 members 65000:200
set policy-options community setcomm-250 members 65000:250
set policy-options community setcomm-50 members 65000:50
set policy-options as-path tor_routes "^65300_*"

```

### Configure EVPN Type-5 Import and Export VRF Policies

```

[edit]
set policy-options policy-statement EVPN-TYPE5-EXPORT-VRF-1 term 1 from protocol bgp
set policy-options policy-statement EVPN-TYPE5-EXPORT-VRF-1 term 1 from route-filter 0.0.0.0/0
orlonger
set policy-options policy-statement EVPN-TYPE5-EXPORT-VRF-1 term 1 then accept
set policy-options policy-statement EVPN-TYPE5-EXPORT-VRF-2 term 1 from protocol bgp
set policy-options policy-statement EVPN-TYPE5-EXPORT-VRF-2 term 1 from route-filter 0.0.0.0/0
orlonger
set policy-options policy-statement EVPN-TYPE5-EXPORT-VRF-2 term 1 then accept

```

### Configure EVPN Auto-RD and ECMP Load Balancing

```

[edit]
set routing-options router-id 100.100.255.1
set routing-options route-distinguisher-id 100.100.255.1
set routing-options autonomous-system 65200
set routing-options autonomous-system loops 2
set routing-options forwarding-table export LOAD_BALANCE
set routing-options forwarding-table ecmp-fast-reroute

```

### Configure Interfaces Toward TORs for VRF\_lite1

```

[edit]

```

```

### Toward TOR-1 ###

```

```

set interfaces et-0/0/0 flexible-vlan-tagging
set interfaces et-0/0/0 unit 1 vlan-id 1
set interfaces et-0/0/0 unit 1 family inet address 101.1.101.0/31
set interfaces et-0/0/0 unit 1 family inet6 address ::ffff:101.1.101.0/127
set interfaces et-0/0/1 unit 1 vlan-id 1

```



```
set interfaces et-0/0/1 unit 1 family inet address 101.1.101.2/31
set interfaces et-0/0/1 unit 1 family inet6 address ::ffff:101.1.101.2/127
```

```
set interfaces et-0/0/4 flexible-vlan-tagging
set interfaces et-0/0/4 unit 1 vlan-id 1
set interfaces et-0/0/4 unit 1 family inet address 101.1.101.4/31
set interfaces et-0/0/4 unit 1 family inet6 address ::ffff:101.1.101.4/127
```

```
set interfaces et-0/0/5 flexible-vlan-tagging
set interfaces et-0/0/5 unit 1 vlan-id 1
set interfaces et-0/0/5 unit 1 family inet address 101.1.101.6/31
set interfaces et-0/0/5 unit 1 family inet6 address ::ffff:101.1.101.6/127
```

```
set interfaces et-0/0/6 flexible-vlan-tagging
set interfaces et-0/0/6 unit 1 vlan-id 1
set interfaces et-0/0/6 unit 1 family inet address 101.1.101.8/31
set interfaces et-0/0/6 unit 1 family inet6 address ::ffff:101.1.101.8/127
```

```
set interfaces et-0/0/7 flexible-vlan-tagging
set interfaces et-0/0/7 unit 1 vlan-id 1
set interfaces et-0/0/7 unit 1 family inet address 101.1.101.10/31
set interfaces et-0/0/7 unit 1 family inet6 address ::ffff:101.1.101.10/127
```

### Toward TOR-2 ###

```
set interfaces et-0/0/2 flexible-vlan-tagging
set interfaces et-0/0/2 unit 1 vlan-id 1
set interfaces et-0/0/2 unit 1 family inet address 101.1.102.0/31
set interfaces et-0/0/2 unit 1 family inet6 address ::ffff:101.1.102.0/127
```

```
set interfaces et-0/0/3 flexible-vlan-tagging
set interfaces et-0/0/3 unit 1 vlan-id 1
```

```
set interfaces et-0/0/3 unit 1 family inet address 101.1.102.2/31
set interfaces et-0/0/3 unit 1 family inet6 address ::ffff:101.1.102.2/127
```

```
set interfaces lo0 unit 1 family inet address 101.1.255.1/32
set interfaces lo0 unit 1 family inet6 address ::ffff:101.1.255.1/128
```

## Configure Interfaces Toward TORs for VRF\_lite2

[edit]

### Toward TOR-1 ###

```
set interfaces et-0/0/0 unit 2 vlan-id 2
set interfaces et-0/0/0 unit 2 family inet address 101.2.101.0/31
set interfaces et-0/0/0 unit 2 family inet6 address ::ffff:101.2.101.0/127
```

```
set interfaces et-0/0/1 flexible-vlan-tagging
set interfaces et-0/0/1 unit 2 vlan-id 2
set interfaces et-0/0/1 unit 2 family inet address 101.2.101.2/31
set interfaces et-0/0/1 unit 2 family inet6 address ::ffff:101.2.101.2/127
```

```
set interfaces et-0/0/4 unit 2 vlan-id 2
set interfaces et-0/0/4 unit 2 family inet address 101.2.101.4/31
set interfaces et-0/0/4 unit 2 family inet6 address ::ffff:101.2.101.4/127
```

```
set interfaces et-0/0/5 unit 2 vlan-id 2
set interfaces et-0/0/5 unit 2 family inet address 101.2.101.6/31
set interfaces et-0/0/5 unit 2 family inet6 address ::ffff:101.2.101.6/127
```

```
set interfaces et-0/0/6 unit 2 vlan-id 2
set interfaces et-0/0/6 unit 2 family inet address 101.2.101.8/31
set interfaces et-0/0/6 unit 2 family inet6 address ::ffff:101.2.101.8/127
```

```

set interfaces et-0/0/7 unit 2 vlan-id 2
set interfaces et-0/0/7 unit 2 family inet address 101.2.101.10/31
set interfaces et-0/0/7 unit 2 family inet6 address ::ffff:101.2.101.10/127

```

### Toward TOR-2 ###

```

set interfaces et-0/0/2 unit 2 vlan-id 2
set interfaces et-0/0/2 unit 2 family inet address 101.2.102.0/31
set interfaces et-0/0/2 unit 2 family inet6 address ::ffff:101.2.102.0/127

```

```

set interfaces et-0/0/3 unit 2 vlan-id 2
set interfaces et-0/0/3 unit 2 family inet address 101.2.102.2/31
set interfaces et-0/0/3 unit 2 family inet6 address ::ffff:101.2.102.2/127

```

```

set interfaces lo0 unit 2 family inet address 101.2.255.1/32
set interfaces lo0 unit 2 family inet6 address ::ffff:101.2.255.1/128

```

### Configure VRF\_lite1 Routing Instances

```

[edit]
set routing-instances VRF_lite1 instance-type vrf
set routing-instances VRF_lite1 interface et-0/0/0.1
set routing-instances VRF_lite1 interface et-0/0/1.1
set routing-instances VRF_lite1 interface et-0/0/2.1
set routing-instances VRF_lite1 interface et-0/0/3.1
set routing-instances VRF_lite1 interface et-0/0/4.1
set routing-instances VRF_lite1 interface et-0/0/5.1
set routing-instances VRF_lite1 interface et-0/0/6.1
set routing-instances VRF_lite1 interface et-0/0/7.1
set routing-instances VRF_lite1 interface lo0.1
set routing-instances VRF_lite1 vrf-target target:65100:1
set routing-instances VRF_lite1 routing-options rib VRF_lite1.inet6.0 aggregate
route ::ffff:101.1.0.0/112
set routing-instances VRF_lite1 routing-options aggregate route 101.1.0.0/16
set routing-instances VRF_lite1 routing-options multipath

```

```

set routing-instances VRF_lite1 protocols bgp export ACCESS-in
set routing-instances VRF_lite1 protocols bgp export ACCESS-ROUTES
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 type external
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 advertise-peer-as
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 import ACCESS-in
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 family inet unicast
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 family inet6 unicast
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 export ACCESS-ROUTES
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 peer-as 65100
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 multipath

```

```

set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.101.1
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.101.3
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.101.5
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.101.7
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.101.9
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.101.11
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.102.1
set routing-instances VRF_lite1 protocols bgp group access-eBGPv4 neighbor 101.1.102.3

```

##### EVPN Type-5-specific Configuration to Enable Type-5 ###

```

set routing-instances VRF_lite1 protocols evpn ip-prefix-support forwarding-mode symmetric
set routing-instances VRF_lite1 protocols evpn ip-prefix-support encapsulation vxlan
set routing-instances VRF_lite1 protocols evpn ip-prefix-support vni 1
set routing-instances VRF_lite1 protocols evpn ip-prefix-support export EVPN-TYPE5-EXPORT-
VRF_lite1

```

### Configure VRF\_lite1 Routing Instances

```

[edit]
set routing-instances VRF_lite2 instance-type vrf
set routing-instances VRF_lite2 interface et-0/0/0.2
set routing-instances VRF_lite2 interface et-0/0/1.2
set routing-instances VRF_lite2 interface et-0/0/2.2
set routing-instances VRF_lite2 interface et-0/0/3.2
set routing-instances VRF_lite2 interface et-0/0/4.2
set routing-instances VRF_lite2 interface et-0/0/5.2

```

```

set routing-instances VRF_lite2 interface et-0/0/6.2
set routing-instances VRF_lite2 interface et-0/0/7.2
set routing-instances VRF_lite2 interface lo0.2
set routing-instances VRF_lite2 vrf-target target:65100:2
set routing-instances VRF_lite2 routing-options rib VRF_lite2.inet6.0 aggregate
route ::ffff:101.2.0.0/112
set routing-instances VRF_lite2 routing-options aggregate route 101.2.0.0/16
set routing-instances VRF_lite2 routing-options multipath

```

```

set routing-instances VRF_lite2 protocols bgp export ACCESS-in
set routing-instances VRF_lite2 protocols bgp export ACCESS-ROUTES
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 type external
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 advertise-peer-as
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 import ACCESS-in
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 family inet unicast
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 family inet6 unicast
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 export ACCESS-ROUTES
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 peer-as 65100
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 multipath

```

```

set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.101.1
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.101.3
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.101.5
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.101.7
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.101.9
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.101.11
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.102.1
set routing-instances VRF_lite2 protocols bgp group access-eBGPv4 neighbor 101.2.102.3

```

##### EVPN Type-5-specific Configuration to Enable Type-5 ###

```

set routing-instances VRF_lite2 protocols evpn ip-prefix-support forwarding-mode symmetric
set routing-instances VRF_lite2 protocols evpn ip-prefix-support encapsulation vxlan
set routing-instances VRF_lite2 protocols evpn ip-prefix-support vni 2
set routing-instances VRF_lite2 protocols evpn ip-prefix-support export EVPN-TYPE5-EXPORT-
VRF_lite2

```

## Configure Interfaces for Fabric Toward Spine

[edit]

```
set interfaces et-0/0/4 description Spine-1:et-0/0/36
set interfaces et-0/0/4 unit 0 family inet address 110.100.1.0/31
set interfaces et-0/0/4 unit 0 family inet6 address ::ffff:110.100.1.0/127
```

```
set interfaces et-0/0/5 description Spine-1:et-0/0/40
set interfaces et-0/0/5 unit 0 family inet address 110.100.1.2/31
set interfaces et-0/0/5 unit 0 family inet6 address ::ffff:110.100.1.2/127
```

```
set interfaces et-0/0/6 description Spine-2:et-0/0/36
set interfaces et-0/0/6 unit 0 family inet address 110.100.2.0/31
set interfaces et-0/0/6 unit 0 family inet6 address ::ffff:110.100.2.0/127
```

```
set interfaces et-0/0/7 description Spine-2:et-0/0/40
set interfaces et-0/0/7 unit 0 family inet address 110.100.2.2/31
set interfaces et-0/0/7 unit 0 family inet6 address ::ffff:110.100.2.2/127
```

```
set interfaces et-0/0/8 description Spine-3:et-0/0/36
set interfaces et-0/0/8 unit 0 family inet address 110.100.3.0/31
set interfaces et-0/0/8 unit 0 family inet6 address ::ffff:110.100.3.0/127
```

```
set interfaces et-0/0/9 description Spine-3:et-0/0/40
set interfaces et-0/0/9 unit 0 family inet address 110.100.3.2/31
set interfaces et-0/0/9 unit 0 family inet6 address ::ffff:110.100.3.2/127
```

```
set interfaces et-0/0/10 description Spine-4:et-0/0/36
set interfaces et-0/0/10 unit 0 family inet address 110.100.4.0/31
set interfaces et-0/0/10 unit 0 family inet6 address ::ffff:110.100.4.0/127
```

```

set interfaces et-0/0/11 description Spine-4:et-0/0/40
set interfaces et-0/0/11 unit 0 family inet address 110.100.4.2/31
set interfaces et-0/0/11 unit 0 family inet6 address ::ffff:110.100.4.2/127

```

### Configure ECMP and Fast Reroute

```

[edit]
set routing-options autonomous-system 65200
set routing-options forwarding-table export pbib
set routing-options forwarding-table export LOAD_BALANCE
set routing-options forwarding-table ecmp-fast-reroute

```

### Configure eBGP Underlay Toward POD1 Spines

```

[edit]
set protocols bgp group SPINE-eBGPv4-POD1 type external
set protocols bgp group SPINE-eBGPv4-POD1 advertise-peer-as
set protocols bgp group SPINE-eBGPv4-POD1 family inet unicast
set protocols bgp group SPINE-eBGPv4-POD1 family inet6 unicast
set protocols bgp group SPINE-eBGPv4-POD1 export SPINE-ROUTES
set protocols bgp group SPINE-eBGPv4-POD1 peer-as 65200
set protocols bgp group SPINE-eBGPv4-POD1 multipath
set protocols bgp group SPINE-eBGPv4-POD1 neighbor 110.100.1.1 description Spine-1
set protocols bgp group SPINE-eBGPv4-POD1 neighbor 110.100.1.3 description Spine-1
set protocols bgp group SPINE-eBGPv4-POD1 neighbor 110.100.2.1 description Spine-2
set protocols bgp group SPINE-eBGPv4-POD1 neighbor 110.100.2.3 description Spine-2

```

### Configure eBGP Underlay Toward POD2 Spines

```

[edit]
set protocols bgp group SPINE-eBGPv4-POD2 type external
set protocols bgp group SPINE-eBGPv4-POD2 advertise-peer-as
set protocols bgp group SPINE-eBGPv4-POD2 family inet unicast
set protocols bgp group SPINE-eBGPv4-POD2 family inet6 unicast
set protocols bgp group SPINE-eBGPv4-POD2 export SPINE-ROUTES
set protocols bgp group SPINE-eBGPv4-POD2 peer-as 65201
set protocols bgp group SPINE-eBGPv4-POD2 multipath
set protocols bgp group SPINE-eBGPv4-POD2 neighbor 110.100.3.1 description Spine-3
set protocols bgp group SPINE-eBGPv4-POD2 neighbor 110.100.3.3 description Spine-3

```

```
set protocols bgp group SPINE-eBGPv4-POD2 neighbor 110.100.4.1 description Spine-4
set protocols bgp group SPINE-eBGPv4-POD2 neighbor 110.100.4.3 description Spine-4
```

## Verification

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## Verifying eBGP Sessions to Spine-1 and Spine-2 for VRF\_lite1

### Purpose

The top of rack (TOR) switches establish eBGP sessions to Spine-1 and Spine-2 devices using VRF\_lite1. This verifies that the sessions are active.

### Action

Verify sessions for VRF\_lite1:

```
user@TOR-1> show bgp summary exact-instance VRF_lite1
```

```
Groups: 1 Peers: 12 Down peers: 0
```

Table	Tot Paths	Act Paths	Suppressed	History	Damp	State	Pending
-------	-----------	-----------	------------	---------	------	-------	---------

VRF_lite1.inet.0	5662	5532	0	0	0	0
------------------	------	------	---	---	---	---

VRF_lite1.inet6.0	384	264	0	0	0	0
-------------------	-----	-----	---	---	---	---

VRF_lite1.mdt.0	0	0	0	0	0	0
-----------------	---	---	---	---	---	---

Peer	AS	InPkt	OutPkt	OutQ	Flaps	Last Up/Dwn
------	----	-------	--------	------	-------	-------------

State #Active/Received/Accepted/Damped...
---

101.1.101.0	65200	58	55	0	2	14:19 Establ
-------------	-------	----	----	---	---	--------------

VRF\_lite1.inet.0: 461/461/461/0

VRF\_lite1.inet6.0: 22/22/22/0

101.1.101.2	65200	45	53	0	2	14:22 Establ
-------------	-------	----	----	---	---	--------------

VRF\_lite1.inet.0: 461/474/474/0

VRF\_lite1.inet6.0: 22/34/34/0

101.1.101.4	65200	52	49	0	2	14:23 Establ
-------------	-------	----	----	---	---	--------------

VRF\_lite1.inet.0: 461/474/474/0

VRF\_lite1.inet6.0: 22/34/34/0

101.1.101.6	65200	71	53	0	2	14:23 Establ
-------------	-------	----	----	---	---	--------------

VRF\_lite1.inet.0: 461/474/474/0

VRF\_lite1.inet6.0: 22/34/34/0

```

101.1.101.8          65200      46      53      0      2      14:22 Establ
VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0
101.1.101.10         65200      45      53      0      2      14:22 Establ
  VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0
101.1.101.12         65200      28543    28041    0      1 1w2d 6:49:30 Establ
  VRF_lite1.inet.0: 461/461/461/0
  VRF_lite1.inet6.0: 22/22/22/0
101.1.101.14         65200      28504    28125    0      1 1w2d 6:49:26 Establ
  VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0
101.1.101.16         65200      28561    28165    0      1 1w2d 6:49:28 Establ
  VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0
101.1.101.18         65200      28568    28168    0      1 1w2d 6:49:30 Establ
  VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0
101.1.101.20         65200      28568    28168    0      1 1w2d 6:49:29 Establ
  VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0
101.1.101.22         65200      28567    28160    0      1 1w2d 6:49:20 Establ
  VRF_lite1.inet.0: 461/474/474/0
  VRF_lite1.inet6.0: 22/34/34/0

```

## Meaning

The eBGP sessions for VRF\_lite1 are all established and functioning correctly.

## Verifying eBGP Sessions to Spine-1 and Spine-2 for VRF\_lite2

### Purpose

The top of rack (TOR) switches establish eBGP sessions to Spine-1 and Spine-2 devices using VRF\_lite2. This verifies that the sessions are active.

## Action

Verify sessions for VRF\_lite2:

```
user@TOR-1> show bgp summary exact-instance VRF_lite2
```

Groups: 1 Peers: 12 Down peers: 0

Table	Tot Paths	Act Paths	Suppressed	History	Damp	State	Pending
VRF_lite2.inet.0	5640	5520	0	0	0	0	
VRF_lite2.inet6.0	384	264	0	0	0	0	
VRF_lite2.mdt.0	0	0	0	0	0	0	

Peer	AS	InPkt	OutPkt	OutQ	Flaps	Last Up/Dwn
101.2.101.0	65200	115	87	0	2	15:50 Establ
VRF_lite2.inet.0: 460/460/460/0						
VRF_lite2.inet6.0: 22/22/22/0						
101.2.101.2	65200	135	85	0	2	15:51 Establ
VRF_lite2.inet.0: 460/472/472/0						
VRF_lite2.inet6.0: 22/34/34/0						
101.2.101.4	65200	134	85	0	2	15:49 Establ
VRF_lite2.inet.0: 460/472/472/0						
VRF_lite2.inet6.0: 22/34/34/0						
101.2.101.6	65200	114	85	0	2	15:41 Establ
VRF_lite2.inet.0: 460/472/472/0						
VRF_lite2.inet6.0: 22/34/34/0						
101.2.101.8	65200	133	85	0	2	15:48 Establ
VRF_lite2.inet.0: 460/472/472/0						
VRF_lite2.inet6.0: 22/34/34/0						
101.2.101.10	65200	133	85	0	2	15:47 Establ
VRF_lite2.inet.0: 460/472/472/0						
VRF_lite2.inet6.0: 22/34/34/0						
101.2.101.12	65200	28755	28271	0	1 1w2d	6:50:41 Establ
VRF_lite2.inet.0: 460/460/460/0						
VRF_lite2.inet6.0: 22/22/22/0						
101.2.101.14	65200	28770	28387	0	1 1w2d	6:50:58 Establ
VRF_lite2.inet.0: 460/472/472/0						
VRF_lite2.inet6.0: 22/34/34/0						
101.2.101.16	65200	28838	28410	0	1 1w2d	6:50:55 Establ
VRF_lite2.inet.0: 460/472/472/0						

```

VRF_lite2.inet6.0: 22/34/34/0
101.2.101.18      65200      28838      28415      0      1 1w2d 6:50:51 Establ
VRF_lite2.inet.0: 460/472/472/0
VRF_lite2.inet6.0: 22/34/34/0
101.2.101.20      65200      28837      28413      0      1 1w2d 6:50:47 Establ
VRF_lite2.inet.0: 460/472/472/0
VRF_lite2.inet6.0: 22/34/34/0
101.2.101.22      65200      28838      28394      0      1 1w2d 6:50:56 Establ
VRF_lite2.inet.0: 460/472/472/0
VRF_lite2.inet6.0: 22/34/34/0

```

## Meaning

The eBGP sessions for VRF\_lite2 are all established and functioning correctly.

## Verify the Type-5 Inter-pod Routes Received from TOR-3 on TOR-1 for VRF-lite1

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod route information for VRF\_lite1. This verifies that the information is present.

### Action

Verify route information from TOR-3 for VRF\_lite1:

```

user@TOR-1> show route 3.3.1.1 table VRF_lite1
VRF_lite1.inet.0: 499 destinations, 5697 routes (499 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

3.3.1.0/24      *[BGP/170] 03:28:22, localpref 100
                 AS path: 65200 I, validation-state: unverified
                 to 101.1.101.0 via et-0/0/0.1
                 to 101.1.101.2 via et-0/0/1.1
                 > to 101.1.101.12 via et-0/0/2.1
                 to 101.1.101.14 via et-0/0/3.1
                 to 101.1.101.4 via et-0/0/4.1
                 to 101.1.101.6 via et-0/0/5.1
                 to 101.1.101.16 via et-0/0/6.1
                 to 101.1.101.18 via et-0/0/7.1
                 to 101.1.101.8 via et-0/0/8.1

```

```

    to 101.1.101.10 via et-0/0/9.1
    to 101.1.101.20 via et-0/0/10.1
    to 101.1.101.22 via et-0/0/11.1
[BGP/170] 02:44:44, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.0 via et-0/0/0.1
[BGP/170] 02:44:49, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.2 via et-0/0/1.1
[BGP/170] 02:44:53, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.4 via et-0/0/4.1
[BGP/170] 02:44:51, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.6 via et-0/0/5.1
[BGP/170] 02:44:49, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.8 via et-0/0/8.1
[BGP/170] 02:44:49, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.10 via et-0/0/9.1
[BGP/170] 03:28:22, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.14 via et-0/0/3.1
[BGP/170] 03:28:22, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.16 via et-0/0/6.1
[BGP/170] 03:28:22, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.18 via et-0/0/7.1
[BGP/170] 03:28:22, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.20 via et-0/0/10.1
[BGP/170] 03:28:22, localpref 100
    AS path: 65200 I, validation-state: unverified
> to 101.1.101.22 via et-0/0/11.1

```

## Verify the Type-5 Inter-pod Forwarding Table Information Received from TOR-3 on TOR-1 for VRF-lite1

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod forwarding table information for VRF\_lite1. This verifies that the information is present.

### Action

Verify forwarding table information from TOR-3 for VRF\_lite1:

```
user@TOR-1> show route forwarding-table destination 3.3.1.1 table VRF_lite1
```

Routing table: VRF\_lite1.inet

Internet:

Destination	Type	RtRef	Next hop	Type	Index	NhRef	Netif
3.3.1.0/24	user	0		ulst	131170	459	
			101.1.101.0	ucst	5098	4	et-0/0/0.1
			101.1.101.2	ucst	5202	4	et-0/0/1.1
			101.1.101.12	ucst	5414	4	et-0/0/2.1
			101.1.101.14	ucst	5267	5	et-0/0/3.1
			101.1.101.4	ucst	5174	5	et-0/0/4.1
			101.1.101.6	ucst	5191	4	et-0/0/5.1
			101.1.101.16	ucst	5334	4	et-0/0/6.1
			101.1.101.18	ucst	5365	4	et-0/0/7.1
			101.1.101.8	ucst	4991	4	et-0/0/8.1
			101.1.101.10	ucst	5101	4	et-0/0/9.1
			101.1.101.20	ucst	5425	4	et-0/0/10.1
			101.1.101.22	ucst	5477	4	et-0/0/11.1

## Verify the Type-5 Inter-pod Routes Received from TOR-2 on TOR-1 for VRF-lite1

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod route information for VRF\_lite1. This verifies that the information is present.

## Action

Verify route information from TOR-2 for VRF\_lite1:

```

user@TOR-1> show route 2.2.1.1 table VRF_lite1
VRF_lite1.inet.0: 499 destinations, 5697 routes (499 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2.2.1.0/24      *[BGP/170] 03:29:12, localpref 100, from 101.1.101.12
                AS path: 65200 65100 I, validation-state: unverified
                to 101.1.101.0 via et-0/0/0.1
                to 101.1.101.2 via et-0/0/1.1
                to 101.1.101.12 via et-0/0/2.1
                to 101.1.101.14 via et-0/0/3.1
                to 101.1.101.4 via et-0/0/4.1
                to 101.1.101.6 via et-0/0/5.1
                to 101.1.101.16 via et-0/0/6.1
                > to 101.1.101.18 via et-0/0/7.1
                to 101.1.101.8 via et-0/0/8.1
                to 101.1.101.10 via et-0/0/9.1
                to 101.1.101.20 via et-0/0/10.1
                to 101.1.101.22 via et-0/0/11.1
                [BGP/170] 02:48:00, localpref 100
                AS path: 65200 65100 I, validation-state: unverified
                > to 101.1.101.0 via et-0/0/0.1
                [BGP/170] 02:48:01, localpref 100
                AS path: 65200 65100 I, validation-state: unverified
                > to 101.1.101.2 via et-0/0/1.1
                [BGP/170] 02:48:04, localpref 100
                AS path: 65200 65100 I, validation-state: unverified
                > to 101.1.101.4 via et-0/0/4.1
                [BGP/170] 02:48:03, localpref 100
                AS path: 65200 65100 I, validation-state: unverified
                > to 101.1.101.6 via et-0/0/5.1
                [BGP/170] 02:48:01, localpref 100
                AS path: 65200 65100 I, validation-state: unverified
                > to 101.1.101.8 via et-0/0/8.1
                [BGP/170] 02:48:01, localpref 100
                AS path: 65200 65100 I, validation-state: unverified
                > to 101.1.101.10 via et-0/0/9.1
                [BGP/170] 03:29:12, localpref 100
                AS path: 65200 65100 I, validation-state: unverified

```

```

> to 101.1.101.14 via et-0/0/3.1
[BGP/170] 03:29:12, localpref 100
AS path: 65200 65100 I, validation-state: unverified
> to 101.1.101.16 via et-0/0/6.1
[BGP/170] 03:29:12, localpref 100
AS path: 65200 65100 I, validation-state: unverified
> to 101.1.101.18 via et-0/0/7.1
[BGP/170] 03:29:12, localpref 100
AS path: 65200 65100 I, validation-state: unverified
> to 101.1.101.20 via et-0/0/10.1
[BGP/170] 03:29:12, localpref 100
AS path: 65200 65100 I, validation-state: unverified
> to 101.1.101.22 via et-0/0/11.1

```

```
{master:0}
```

## Verify the Type-5 Inter-pod Forwarding Table Information Received from TOR-2 on TOR-1 for VRF-lite1

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod forwarding table information for VRF\_lite1. This verifies that the information is present.

### Action

Verify forwarding table information from TOR-2 for VRF\_lite1:

```
user@TOR-1> show route forwarding-table destination 2.2.1.1 table VRF_lite1
```

```
Routing table: VRF_lite1.inet
```

```
Internet:
```

Destination	Type	RtRef	Next hop	Type	Index	NhRef	Netif
2.2.1.0/24	user	0		ulst	131170	459	
			101.1.101.0	ucst	5098	4	et-0/0/0.1
			101.1.101.2	ucst	5202	4	et-0/0/1.1
			101.1.101.12	ucst	5414	4	et-0/0/2.1
			101.1.101.14	ucst	5267	5	et-0/0/3.1
			101.1.101.4	ucst	5174	5	et-0/0/4.1
			101.1.101.6	ucst	5191	4	et-0/0/5.1
			101.1.101.16	ucst	5334	4	et-0/0/6.1



101.1.101.18	ucst	5365	4 et-0/0/7.1
101.1.101.8	ucst	4991	4 et-0/0/8.1
101.1.101.10	ucst	5101	4 et-0/0/9.1
101.1.101.20	ucst	5425	4 et-0/0/10.1
101.1.101.22	ucst	5477	4 et-0/0/11.1

```
{master:0}
```

## Verify the Type-5 Inter-pod Routes Received from TOR-3 on TOR-1 for VRF-lite2

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod route information for VRF\_lite2. This verifies that the information is present.

### Action

Verify route information from TOR-3 for VRF\_lite2:

```
user@TOR-1> show route 3.3.6.1 table VRF_lite2
VRF_lite2.inet.0: 497 destinations, 5674 routes (497 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

3.3.6.0/24      *[BGP/170] 02:56:46, localpref 100, from 101.2.101.12
                AS path: 65200 I, validation-state: unverified
                to 101.2.101.0 via et-0/0/0.2
                to 101.2.101.2 via et-0/0/1.2
                to 101.2.101.12 via et-0/0/2.2
                to 101.2.101.14 via et-0/0/3.2
                to 101.2.101.4 via et-0/0/4.2
                to 101.2.101.6 via et-0/0/5.2
                to 101.2.101.16 via et-0/0/6.2
                to 101.2.101.18 via et-0/0/7.2
                to 101.2.101.8 via et-0/0/8.2
                > to 101.2.101.10 via et-0/0/9.2
                to 101.2.101.20 via et-0/0/10.2
                to 101.2.101.22 via et-0/0/11.2
                [BGP/170] 02:56:47, localpref 100
                AS path: 65200 I, validation-state: unverified
                > to 101.2.101.0 via et-0/0/0.2
                [BGP/170] 02:56:47, localpref 100
```

```

AS path: 65200 I, validation-state: unverified
> to 101.2.101.2 via et-0/0/1.2
[BGP/170] 02:56:47, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.4 via et-0/0/4.2
[BGP/170] 02:56:47, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.6 via et-0/0/5.2
[BGP/170] 02:56:47, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.8 via et-0/0/8.2
[BGP/170] 02:56:47, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.10 via et-0/0/9.2
[BGP/170] 02:56:47, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.14 via et-0/0/3.2
[BGP/170] 02:56:46, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.16 via et-0/0/6.2
[BGP/170] 02:56:45, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.18 via et-0/0/7.2
[BGP/170] 02:56:48, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.20 via et-0/0/10.2
[BGP/170] 02:56:48, localpref 100
AS path: 65200 I, validation-state: unverified
> to 101.2.101.22 via et-0/0/11.2

```

## Verify the Type-5 Inter-pod Forwarding Table Information Received from TOR-3 on TOR-1 for VRF-lite2

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod forwarding table information for VRF\_lite2. This verifies that the information is present.

## Action

Verify forwarding table information from TOR-3 for VRF\_lite2:

```
user@TOR-1> show route forwarding-table destination 3.3.6.1 table VRF_lite2
```

Routing table: VRF\_lite2.inet

Internet:

Destination	Type	RtRef	Next hop	Type	Index	NhRef	Netif
3.3.6.0/24	user	0		ulst	131178	458	
			101.2.101.0	ucst	5199	4	et-0/0/0.2
			101.2.101.2	ucst	5187	5	et-0/0/1.2
			101.2.101.12	ucst	5232	4	et-0/0/2.2
			101.2.101.14	ucst	5326	5	et-0/0/3.2
			101.2.101.4	ucst	5023	4	et-0/0/4.2
			101.2.101.6	ucst	5176	4	et-0/0/5.2
			101.2.101.16	ucst	5242	4	et-0/0/6.2
			101.2.101.18	ucst	5356	4	et-0/0/7.2
			101.2.101.8	ucst	5367	4	et-0/0/8.2
			101.2.101.10	ucst	5224	4	et-0/0/9.2
			101.2.101.20	ucst	5383	4	et-0/0/10.2
			101.2.101.22	ucst	5275	5	et-0/0/11.2

Verify the Type-5 Inter-pod Routes Received from TOR-2 on TOR-1 for VRF-lite2

## Purpose

Each TOR switch must receive EVPN Type-5 inter-pod route information for VRF\_lite2. This verifies that the information is present.

## Action

Verify route information from TOR-2 for VRF\_lite2:

```
user@TOR-1> show route 2.2.6.1 table VRF_lite2
```

VRF\_lite2.inet.0: 497 destinations, 5674 routes (497 active, 0 holddown, 0 hidden)

+ = Active Route, - = Last Active, \* = Both

2.2.6.0/24	*[BGP/170] 03:39:19, localpref 100, from 101.2.101.12
	AS path: 65200 65100 I, validation-state: unverified

```

> to 101.2.101.0 via et-0/0/0.2
  to 101.2.101.2 via et-0/0/1.2
  to 101.2.101.12 via et-0/0/2.2
  to 101.2.101.14 via et-0/0/3.2
  to 101.2.101.4 via et-0/0/4.2
  to 101.2.101.6 via et-0/0/5.2
  to 101.2.101.16 via et-0/0/6.2
  to 101.2.101.18 via et-0/0/7.2
  to 101.2.101.8 via et-0/0/8.2
  to 101.2.101.10 via et-0/0/9.2
  to 101.2.101.20 via et-0/0/10.2
  to 101.2.101.22 via et-0/0/11.2
[BGP/170] 02:58:03, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.0 via et-0/0/0.2
[BGP/170] 02:58:03, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.2 via et-0/0/1.2
[BGP/170] 02:58:05, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.4 via et-0/0/4.2
[BGP/170] 02:58:03, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.6 via et-0/0/5.2
[BGP/170] 02:58:05, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.8 via et-0/0/8.2
[BGP/170] 02:58:05, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.10 via et-0/0/9.2
[BGP/170] 03:39:19, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.14 via et-0/0/3.2
[BGP/170] 03:39:19, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.16 via et-0/0/6.2
[BGP/170] 03:39:19, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.18 via et-0/0/7.2
[BGP/170] 03:39:19, localpref 100
  AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.20 via et-0/0/10.2
[BGP/170] 03:39:19, localpref 100

```

```
AS path: 65200 65100 I, validation-state: unverified
> to 101.2.101.22 via et-0/0/11.2
```

```
[master:0]
```

## Verify the Type-5 Inter-pod Forwarding Table Information Received from TOR-2 on TOR-1 for VRF-lite2

### Purpose

Each TOR switch must receive EVPN Type-5 inter-pod forwarding table information for VRF\_lite2. This verifies that the information is present.

### Action

Verify forwarding table information from TOR-2 for VRF\_lite2:

```
user@TOR-1> show route forwarding-table destination 2.2.6.1 table VRF_lite2
```

```
Routing table: VRF_lite2.inet
```

```
Internet:
```

Destination	Type	RtRef	Next hop	Type	Index	NhRef	Netif
2.2.6.0/24	user	0		ulst	131178	458	
			101.2.101.0	ucst	5199	4	et-0/0/0.2
			101.2.101.2	ucst	5187	5	et-0/0/1.2
			101.2.101.12	ucst	5232	4	et-0/0/2.2
			101.2.101.14	ucst	5326	5	et-0/0/3.2
			101.2.101.4	ucst	5023	4	et-0/0/4.2
			101.2.101.6	ucst	5176	4	et-0/0/5.2
			101.2.101.16	ucst	5242	4	et-0/0/6.2
			101.2.101.18	ucst	5356	4	et-0/0/7.2
			101.2.101.8	ucst	5367	4	et-0/0/8.2
			101.2.101.10	ucst	5224	4	et-0/0/9.2
			101.2.101.20	ucst	5383	4	et-0/0/10.2
			101.2.101.22	ucst	5275	5	et-0/0/11.2

## Verify Traffic Load Balancing

### Purpose

Multiple paths exist between devices and it is most efficient to load balance among the operational links. This step verifies the process.

### Action

Verify forwarding table information from TOR-2 for VRF\_lite2:

```
user@TOR-1> ***COMMAND ABSENT FROM PAGE 24 OF STR***
```

```
TOR-1                               Seconds: 0                               Time: 01:51:51
```

Interface	Link	Input packets	(pps)	Output packets	(pps)
et-0/0/0	Up	579662562	(4815)	595534289	(4970)
gr-0/0/0	Up	0	(0)	0	(0)
pfh-0/0/0	Up	0		0	
et-0/0/1	Up	594957343	(4926)	598188009	(4983)
et-0/0/2	Up	592697357	(5060)	622877588	(4993)
et-0/0/3	Up	627680700	(4837)	660697862	(5045)
et-0/0/4	Up	599781410	(5145)	607069362	(5088)
et-0/0/5	Up	586896362	(5009)	600024296	(5021)
et-0/0/6	Up	666184267	(5092)	666575768	(5171)
et-0/0/7	Up	667281541	(4970)	625305955	(4992)
et-0/0/8	Up	596158194	(4949)	589452792	(4934)
et-0/0/9	Up	593055123	(4990)	578589887	(4873)
et-0/0/10	Up	630547537	(5062)	653776901	(4969)
et-0/0/11	Up	660275615	(5139)	620683157	(4981)
et-0/0/16	Up	663003	(0)	764318	(1)
et-0/0/17	Up	724533	(1)	645813	(0)
et-0/0/18	Up	983144	(0)	1002551	(0)
et-0/0/19	Up	1001141	(0)	981832	(0)
xe-0/0/22:0	Down	0	(0)	0	(0)
xe-0/0/22:1	Down	0	(0)	0	(0)
xe-0/0/22:2	Down	0	(0)	0	(0)
xe-0/0/22:3	Up	49189	(0)	135214	(0)
xe-0/0/23:0	Up	7119144176	(59998)	7054539062	(59995) <<< SPirent
xe-0/0/23:1	Up	0	(0)	0	(0)
xe-0/0/23:2	Down	0	(0)	0	(0)

```
xe-0/0/23:3 Down          0          (0)          0          (0)
```

## Verify SPINE-1 eBGP Session Toward the Route Server

### Purpose

The eBGP underlay must establish sessions to the route server. This step verifies the process.

### Action

Verify eBGP Toward Route Server:

```
user@SPINE-1> show bgp summary | find 100.100

100.100.101.1      65100      3361      3316      0      0 1d 3:11:25 Establ
  inet.0: 6/8/8/0
  inet6.0: 0/0/0/0
100.100.101.3      65100      3361      3319      0      0 1d 3:11:26 Establ
  inet.0: 6/8/8/0
  inet6.0: 0/0/0/0
100.100.102.1      65100      3414      3314      0      0 1d 3:11:25 Establ
  inet.0: 5/7/7/0
  inet6.0: 0/0/0/0
100.100.102.3      65100      3414      3317      0      0 1d 3:11:25 Establ
  inet.0: 5/7/7/0
```

## Verify SPINE-1 eBGP Session Toward the Route Server

### Purpose

The eBGP underlay must establish sessions to the route server. This step verifies the process.

### Action

Verify eBGP Toward Route Server:

```
user@SPINE-1> show bgp summary | find 100.100.250.1
```

```

100.100.250.1      65500      4943      3938      0      0  1d 3:10:33 Establ
bgp.evpn.0: 19770/19770/19770/0
  VRF_lite1.evpn.0: 926/926/926/0
  VRF_lite2.evpn.0: 924/924/924/0

```

## Verify SPINE-1 eBGP Session Toward Fabric Devices with IPv6 Tunneling over IPv4

### Purpose

The eBGP underlay must establish sessions fabric devices. This step verifies the process.

### Action

Verify eBGP Toward Fabric:

```

user@SPINE-1> show bgp summary | find 110.100
110.100.1.0      65300      3554      3313      0      0  1d 3:13:39 Establ
  inet.0: 3/5/5/0
  inet6.0: 4/4/4/0
110.100.1.2      65300      3558      3312      0      0  1d 3:13:38 Establ
  inet.0: 3/6/6/0
  inet6.0: 4/5/5/0
110.100.1.4      65300      3550      3312      0      0  1d 3:13:36 Establ
  inet.0: 3/4/4/0
  inet6.0: 4/4/4/0
110.100.1.6      65300      3552      3312      0      0  1d 3:13:37 Establ
  inet.0: 3/5/5/0
  inet6.0: 4/5/5/0
110.100.1.8      65300      3570      3312      0      0  1d 3:13:35 Establ
  inet.0: 3/5/5/0
  inet6.0: 4/4/4/0
110.100.1.10     65300      3570      3312      0      0  1d 3:13:35 Establ
  inet.0: 3/6/6/0
  inet6.0: 4/5/5/0
110.100.1.12     65300      3570      3311      0      0  1d 3:13:26 Establ
  inet.0: 3/4/4/0
  inet6.0: 4/4/4/0
110.100.1.14     65300      3568      3312      0      0  1d 3:13:33 Establ
  inet.0: 3/5/5/0

```



```
inet6.0: 4/5/5/08
```

## Verify SPINE-1 VRF\_lite1 (Customer 1) BGP Sessions Toward TOR

### Purpose

The BGP sessions for VRF\_lite1 must be up toward the TOR. This step verifies the process.

### Action

Verify BGP for VRF\_lite1Toward TOR:

```
user@SPINE-1> show bgp summary exact-instance VRF_lite1
Groups: 1 Peers: 8 Down peers: 0
Table          Tot Paths  Act Paths Suppressed    History Damp State   Pending
VRF_lite1.inet.0
                3846      96        0          0        0        0
VRF_lite1.inet6.0
                325      88        0          0        0        0
VRF_lite1.mdt.0
                0        0        0          0        0        0
VRF_lite1.evpn.0
                926     926        0          0        0        0
Peer           AS      InPkt    OutPkt    OutQ    Flaps  Last Up/Dwn State|#Active/
Received/Accepted/Damped...
101.1.101.1     65100    3376     3327      0        0 1d 3:08:24 Establ
  VRF_lite1.inet.0: 13/479/479/0
  VRF_lite1.inet6.0: 12/39/39/0
101.1.101.3     65100    3374     3315      0        0 1d 3:08:27 Establ
  VRF_lite1.inet.0: 13/482/482/0
  VRF_lite1.inet6.0: 12/42/42/0
101.1.101.5     65100    3370     3321      0        0 1d 3:08:28 Establ
  VRF_lite1.inet.0: 13/482/482/0
  VRF_lite1.inet6.0: 12/42/42/0
101.1.101.7     65100    3374     3340      0        0 1d 3:08:27 Establ
  VRF_lite1.inet.0: 13/482/482/0
  VRF_lite1.inet6.0: 12/42/42/0
101.1.101.9     65100    3373     3315      0        0 1d 3:08:27 Establ
  VRF_lite1.inet.0: 13/482/482/0
  VRF_lite1.inet6.0: 12/42/42/0
```

```

101.1.101.11      65100      3374      3315      0      0 1d 3:08:27 Establ
VRF_lite1.inet.0: 13/482/482/0
  VRF_lite1.inet6.0: 12/42/42/0
101.1.102.1      65100      3426      3311      0      0 1d 3:08:27 Establ
  VRF_lite1.inet.0: 8/475/475/0
  VRF_lite1.inet6.0: 8/34/34/0
101.1.102.3      65100      3430      3315      0      0 1d 3:08:27 Establ
  VRF_lite1.inet.0: 10/482/482/0
  VRF_lite1.inet6.0: 8/42/42/0

```

## Verify SPINE-1 VRF\_lite2 (Customer 2) BGP Sessions Toward TOR

### Purpose

The BGP sessions for VRF\_lite2 must be up toward the TOR. This step verifies the process.

### Action

Verify BGP for VRF\_lite2Toward TOR:

```

user@SPINE-1> show bgp summary exact-instance VRF_lite2
Groups: 1 Peers: 8 Down peers: 0
Table          Tot Paths  Act Paths Suppressed    History Damp State   Pending
VRF_lite2.inet.0
                3404      88        0          0        0        0
VRF_lite2.inet6.0
                326      88        0          0        0        0
VRF_lite2.mdt.0
                0        0        0          0        0        0
VRF_lite2.evpn.0
                924     924        0          0        0        0
Peer           AS      InPkt    OutPkt    OutQ   Flaps Last Up/Dwn State|#Active/
Received/Accepted/Damped...
101.2.101.1    65100    3408     3383      0      0 1d 3:09:36 Establ
  VRF_lite2.inet.0: 12/51/51/0
  VRF_lite2.inet6.0: 12/39/39/0
101.2.101.3    65100    3406     3403      0      0 1d 3:09:37 Establ
  VRF_lite2.inet.0: 12/480/480/0
  VRF_lite2.inet6.0: 12/42/42/0
101.2.101.5    65100    3405     3402      0      0 1d 3:09:35 Establ
  VRF_lite2.inet.0: 12/480/480/0

```

```

VRF_lite2.inet6.0: 12/42/42/0
101.2.101.7          65100      3405      3381      0      0 1d 3:09:27 Establ
VRF_lite2.inet.0: 12/480/480/0
VRF_lite2.inet6.0: 12/42/42/0
101.2.101.9          65100      3406      3402      0      0 1d 3:09:34 Establ
VRF_lite2.inet.0: 12/480/480/0
VRF_lite2.inet6.0: 12/42/42/0
101.2.101.11         65100      3405      3402      0      0 1d 3:09:33 Establ
VRF_lite2.inet.0: 12/480/480/0
VRF_lite2.inet6.0: 12/42/42/0
101.2.102.1          65100      3482      3398      0      0 1d 3:09:36 Establ
VRF_lite2.inet.0: 8/473/473/0
VRF_lite2.inet6.0: 8/35/35/0
101.2.102.3          65100      3498      3380      0      0 1d 3:09:27 Establ
VRF_lite2.inet.0: 8/480/480/0
VRF_lite2.inet6.0: 8/42/42/0
172.16.93.1          Up          xe-0/0/47.0  7.500      2.500      3
192.168.11.2         Up          et-0/0/48.0  0.750      0.250      3
192.168.11.18        Up          et-0/0/49.0  0.750      0.250      3

```

## Verify SPINE-1 EVPN Type 5 Route Learned from TOR-3 with VXLAN Information

### Purpose

The Spine-1 device must learn EVPN Type 5 routes from TOR-3 (inter-pod) containing VXLAN information. This step verifies the process.

### Action

Verify EVPN Type 5 route learned from TOR-3 with VXLAN information:

```

user@SPINE-1> route 3.3.1.1 table VRF_lite1 extensive
VRF_lite1.inet.0: 491 destinations, 4317 routes (491 active, 0 holddown, 0 hidden)
3.3.1.0/24 (9 entries, 1 announced)
TSI:
KRT in-kernel 3.3.1.0/24 -> {composite(15808), composite(16947)}
Page 0 idx 0, (group access-eBGPv4 type External) Type 1 val 0xee70238 (adv_entry)
  Advertised metrics:
    Nexthop: Self
    AS path: [65200] I
    Communities:

```

```

Path 3.3.1.0 Vector len 4. Val: 0
  *EVPN Preference: 170
    Next hop type: Indirect, Next hop index: 0
    Address: 0x9dfdf90
    Next-hop reference count: 898
    Next hop type: Router, Next hop index: 524822
    Next hop: 110.100.1.0 via et-0/0/36.0, selected
    Session Id: 0x0
    Next hop: 110.100.1.4 via et-0/0/37.0
    Session Id: 0x0
    Next hop: 110.100.1.8 via et-0/0/38.0
    Session Id: 0x0
    Next hop: 110.100.1.12 via et-0/0/39.0
    Session Id: 0x0
    Next hop: 110.100.1.2 via et-0/0/40.0
    Session Id: 0x0
    Next hop: 110.100.1.6 via et-0/0/41.0
    Session Id: 0x0
    Next hop: 110.100.1.10 via et-0/0/42.0
    Session Id: 0x0
    Next hop: 110.100.1.14 via et-0/0/43.0
    Session Id: 0x0
    Next hop type: Router, Next hop index: 524822
    Next hop: 110.100.1.0 via et-0/0/36.0
    Session Id: 0x0
    Next hop: 110.100.1.4 via et-0/0/37.0
    Session Id: 0x0
    Next hop: 110.100.1.8 via et-0/0/38.0
    Session Id: 0x0
    Next hop: 110.100.1.12 via et-0/0/39.0
    Session Id: 0x0
    Next hop: 110.100.1.2 via et-0/0/40.0
    Session Id: 0x0
    Next hop: 110.100.1.6 via et-0/0/41.0
    Session Id: 0x0
    Next hop: 110.100.1.10 via et-0/0/42.0
    Session Id: 0x0
    Next hop: 110.100.1.14 via et-0/0/43.0
    Session Id: 0x0
    Protocol next hop: 100.100.255.3
    Composite next hop: 0xe52e190 15808 INH Session ID: 0x0
    VXLAN tunnel rewrite:
      MTU: 0, Flags: 0x0

```

```

Encap table ID: 0, Decap table ID: 5
Encap VNI: 1680, Decap VNI: 1
Source VTEP: 100.100.255.1, Destination VTEP: 100.100.255.3
SMAC: 54:4b:8c:cd:13:f8, DMAC: 54:4b:8c:5e:77:f8
Indirect next hop: 0xdc43840 524373 INH Session ID: 0x0
Protocol next hop: 100.100.255.4
Composite next hop: 0xe52f450 16947 INH Session ID: 0x0
VXLAN tunnel rewrite:
  MTU: 0, Flags: 0x0
  Encap table ID: 0, Decap table ID: 5
  Encap VNI: 1690, Decap VNI: 1
  Source VTEP: 100.100.255.1, Destination VTEP: 100.100.255.4
  SMAC: 54:4b:8c:cd:13:f8, DMAC: 0c:86:10:d6:51:fe
Indirect next hop: 0xed4b840 524358 INH Session ID: 0x0
State: <Active Int Ext>
Age: 1d 3:16:39      Metric2: 0
Validation State: unverified
Task: VRF_lite1-EVPN-L3-context
Announcement bits (2): 2-KRT 5-BGP_RT_Background
AS path: I
Composite next hops: 2
  Protocol next hop: 100.100.255.3
  Composite next hop: 0xe52e190 15808 INH Session ID: 0x0
  VXLAN tunnel rewrite:
    MTU: 0, Flags: 0x0
    Encap table ID: 0, Decap table ID: 5
    Encap VNI: 1680, Decap VNI: 1
    Source VTEP: 100.100.255.1, Destination VTEP: 100.100.255.3
    SMAC: 54:4b:8c:cd:13:f8, DMAC: 54:4b:8c:5e:77:f8
  Indirect next hop: 0xdc43840 524373 INH Session ID: 0x0
  Indirect path forwarding next hops: 8
    Next hop type: Router
    Next hop: 110.100.1.0 via et-0/0/36.0
    Session Id: 0x0
    Next hop: 110.100.1.4 via et-0/0/37.0
    Session Id: 0x0
    Next hop: 110.100.1.8 via et-0/0/38.0
    Session Id: 0x0
    Next hop: 110.100.1.12 via et-0/0/39.0
    Session Id: 0x0
    Next hop: 110.100.1.2 via et-0/0/40.0
    Session Id: 0x0
    Next hop: 110.100.1.6 via et-0/0/41.0

```

```

        Session Id: 0x0
        Next hop: 110.100.1.10 via et-0/0/42.0
        Session Id: 0x0
        Next hop: 110.100.1.14 via et-0/0/43.0
        Session Id: 0x0
100.100.255.3/32 Originating RIB: inet.0
    Node path count: 1
    Forwarding nexthops: 8
        Nexthop: 110.100.1.0 via et-0/0/36.0
Protocol next hop: 100.100.255.4
Composite next hop: 0xe52f450 16947 INH Session ID: 0x0
    VXLAN tunnel rewrite:
        MTU: 0, Flags: 0x0
        Encap table ID: 0, Decap table ID: 5
        Encap VNI: 1690, Decap VNI: 1
        Source VTEP: 100.100.255.1, Destination VTEP: 100.100.255.4
        SMAC: 54:4b:8c:cd:13:f8, DMAC: 0c:86:10:d6:51:fe
Indirect next hop: 0xed4b840 524358 INH Session ID: 0x0
Indirect path forwarding next hops: 8
    Next hop type: Router
    Next hop: 110.100.1.0 via et-0/0/36.0
    Session Id: 0x0
    Next hop: 110.100.1.4 via et-0/0/37.0
    Session Id: 0x0
    Next hop: 110.100.1.8 via et-0/0/38.0
    Session Id: 0x0
    Next hop: 110.100.1.12 via et-0/0/39.0
    Session Id: 0x0
    Next hop: 110.100.1.2 via et-0/0/40.0
    Session Id: 0x0
    Next hop: 110.100.1.6 via et-0/0/41.0
    Session Id: 0x0
    Next hop: 110.100.1.10 via et-0/0/42.0
    Session Id: 0x0
    Next hop: 110.100.1.14 via et-0/0/43.0
    Session Id: 0x0
100.100.255.4/32 Originating RIB: inet.0
    Node path count: 1
    Forwarding nexthops: 8
        Nexthop: 110.100.1.0 via et-0/0/36.0
BGP    Preference: 170/-101
        Next hop type: Router, Next hop index: 0
        Address: 0xdee7d30

```

```

Next-hop reference count: 466
Source: 101.1.102.1
Next hop: 101.1.102.1 via et-0/0/2.1, selected
Session Id: 0x0
State: <Ext>
Inactive reason: AS path
Peer AS: 65100
Age: 1d 3:16:43
Validation State: unverified
Task: BGP_65100.101.1.102.1
AS path: 65100 65200 I
Accepted
Localpref: 100
Router ID: 2.2.1.1
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
Address: 0xdef3b50
Next-hop reference count: 482
Source: 101.1.102.3
Next hop: 101.1.102.3 via et-0/0/3.1, selected
Session Id: 0x0
State: <NotBest Ext>
Inactive reason: Not Best in its group - Update source
Peer AS: 65100
Age: 1d 3:16:42
Validation State: unverified
Task: BGP_65100.101.1.102.3
AS path: 65100 65200 I
Accepted
Localpref: 100
Router ID: 2.2.1.1
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
Address: 0xf35fa70
Next-hop reference count: 466
Source: 101.1.101.1
Next hop: 101.1.101.1 via et-0/0/0.1, selected
Session Id: 0x0
State: <NotBest Ext>
Inactive reason: Not Best in its group - Router ID
Peer AS: 65100
Age: 1d 3:16:40
Validation State: unverified

```

```

Task: BGP_65100.101.1.101.1
AS path: 65100 65200 I
Accepted
Localpref: 100
Router ID: 10.10.10.1
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
AS path: 65100 65200 I
Accepted
Localpref: 100
Router ID: 10.10.10.1
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
Address: 0xdef2710
Next-hop reference count: 482
Source: 101.1.101.9
Next hop: 101.1.101.9 via et-0/0/6.1, selected
Session Id: 0x0
State: <NotBest Ext>
Inactive reason: Not Best in its group - Router ID
Peer AS: 65100
Age: 1d 3:16:42
Validation State: unverified
Task: BGP_65100.101.1.101.9
AS path: 65100 65200 I
Accepted
Localpref: 100
Router ID: 10.10.10.1
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
Address: 0xdef0df0
Next-hop reference count: 482
Source: 101.1.101.11
Next hop: 101.1.101.11 via et-0/0/7.1, selected
Session Id: 0x0
State: <NotBest Ext>
Inactive reason: Not Best in its group - Router ID
Peer AS: 65100
Age: 1d 3:16:42
Validation State: unverified
Task: BGP_65100.101.1.101.11
AS path: 65100 65200 I
Accepted

```



```
Localpref: 100
Router ID: 10.10.10.1
```

## Verify SPINE-1 EVPN Type 5 Forwarding Table Next-Hop Type for VRF\_Lite1

### Purpose

The EVPN Type 5 Forwarding Table Next-Hop Type with Unilist with Comp Next-Hops. This step verifies the process.

### Action

Verify EVPN Type 5 forwarding table next-hop:

```
user@SPINE-1> show route forwarding-table destination 3.3.1.1 table VRF_lite1
Routing table: VRF_lite1.inet
Internet:
Destination      Type RtRef Next hop          Type Index   NhRef Netif
3.3.1.0/24       user    0           ulst    524359   449
                  comp    15808      4
                  comp    16947      4
```

## Verify SPINE-1 EVPN Type-5 Routes Learned from TOR-2 with Inet only (no VXLAN info )

### Purpose

The Spine-1 device must learn EVPN Type 5 routes from TOR-2 (inter-pod) without VXLAN information. This step verifies the process.

### Action

Verify EVPN Type 5 route learned from TOR-2 without VXLAN information:

```
user@SPINE-1> show route 2.2.1.1 table VRF_lite1 extensive
VRF_lite1.inet.0: 491 destinations, 4317 routes (491 active, 0 holddown, 0 hidden)
2.2.1.0/24 (8 entries, 1 announced)
TSI:
KRT in-kernel 2.2.1.0/24 -> {101.1.102.1, 101.1.102.3}
Page 0 idx 0, (group access-eBGPv4 type External) Type 1 val 0xee701ac (adv_entry)
```

```

Advertised metrics:
  Nexthop: 101.1.102.1
  AS path: [65200] 65100 I
  Communities:
  Advertise: 000000bf
Path 2.2.1.0 from 101.1.102.1 Vector len 4. Val: 0
  *BGP   Preference: 170/-101
        Next hop type: Router, Next hop index: 524374
        Address: 0x9dff990
        Next-hop reference count: 16
        Source: 101.1.102.1
        Next hop: 101.1.102.1 via et-0/0/2.1
        Session Id: 0x0
        Next hop: 101.1.102.3 via et-0/0/3.1, selected
        Session Id: 0x0
        State: <Active Ext>
        Peer AS: 65100
        Age: 1d 3:34:23
        Validation State: unverified
        Task: BGP_65100.101.1.102.1
        Announcement bits (4): 0-Resolve tree 54 1-VRF_lite1-EVPN-L3-context 2-KRT 5-
BGP_RT_Background
  AS path: 65100 I
  Accepted Multipath
  Localpref: 100
  Router ID: 2.2.1.1
  BGP   Preference: 170/-101
        Next hop type: Router, Next hop index: 0
        Address: 0xdef3b50
        Next-hop reference count: 482
        Source: 101.1.102.3
        Next hop: 101.1.102.3 via et-0/0/3.1, selected
        Session Id: 0x0
        State: <NotBest Ext>
        Inactive reason: Not Best in its group - Update source
        Peer AS: 65100
        Age: 1d 3:34:22
        Validation State: unverified
        Task: BGP_65100.101.1.102.3
        AS path: 65100 I
        Accepted MultipathContrib
        Localpref: 100
        Router ID: 2.2.1.1

```

```

BGP   Preference: 170/-101
      Next hop type: Router, Next hop index: 0
      Address: 0xf35fa70
      Next-hop reference count: 466
      Source: 101.1.101.1
      Next hop: 101.1.101.1 via et-0/0/0.1, selected
      Session Id: 0x0
      State: <Ext>
      Inactive reason: AS path
      Peer AS: 65100
      Age: 1d 3:34:20
      Validation State: unverified
      Task: BGP_65100.101.1.101.1
      AS path: 65100 65200 65100 I
      Accepted
      Localpref: 100
      Router ID: 10.10.10.1
BGP   Preference: 170/-101
      Next hop type: Router, Next hop index: 0
      Address: 0xdef60d0
      Next-hop reference count: 482
      Source: 101.1.101.3
      Next hop: 101.1.101.3 via et-0/0/1.1, selected
      Session Id: 0x0
      State: <NotBest Ext>
      Inactive reason: Not Best in its group - Update source
      Peer AS: 65100
      Age: 1d 3:34:22
      Validation State: unverified
      Task: BGP_65100.101.1.101.3
      AS path: 65100 65200 65100 I
      Accepted
      Localpref: 100
      Router ID: 10.10.10.1
BGP   Preference: 170/-101
      Next hop type: Router, Next hop index: 0
      Address: 0xdeda110
      Next-hop reference count: 482
      Source: 101.1.101.5
      Next hop: 101.1.101.5 via et-0/0/4.1, selected
      Session Id: 0x0
      State: <NotBest Ext>
      Inactive reason: Not Best in its group - Update source

```

```

Peer AS: 65100
Age: 1d 3:34:22
Validation State: unverified
Task: BGP_65100.101.1.101.11
AS path: 65100 65200 65100 I
Accepted
Localpref: 100
Router ID: 10.10.10.1

```

## Verify SPINE-1 Intra-pod Route to TOR-2 Uses Unicast Next-Hop

### Purpose

The Spine-1 Intrapod Route to TOR-2 Must Use the Unicast Next-Hop. This step verifies the process.

### Action

Verify the Spine-1 intrapod route to TOR-2 uses unicast next-hop:

```

user@SPINE-1> show route forwarding-table destination 2.2.2.1 table VRF_lite1 detail
Routing table: VRF_lite1.inet
Internet:

```

Destination	Type	RtRef	Next hop	Type	Index	NhRef	Netif
2.2.2.0/24	user	0		ulst	524374	8	
			101.1.102.1	ucst	15122	4	et-0/0/2.1
			101.1.102.3	ucst	15324	4	et-0/0/3.1

## Verify Fabric-1 Interfaces

### Purpose

The Fabric-1 Intrapod interfaces must be configured properly. This step verifies the process.

### Action

Verify the cloud-Fabric-sw01 interfaces are configured properly:

```

user@cloud-Fabric-sw01> show interfaces terse | match 110.100
et-0/0/4.0          up    up    inet    110.100.1.0/31

```

```

et-0/0/5.0      up    up    inet6  ::ffff:110.100.1.0/127
                up    up    inet   110.100.1.2/31
                up    up    inet6  ::ffff:110.100.1.2/127
et-0/0/6.0      up    up    inet   110.100.2.0/31
                up    up    inet6  ::ffff:110.100.2.0/127
et-0/0/7.0      up    up    inet   110.100.2.2/31
                up    up    inet6  ::ffff:110.100.2.2/127
et-0/0/8.0      up    up    inet   110.100.3.0/31
                up    up    inet6  ::ffff:110.100.3.0/127
et-0/0/9.0      up    up    inet   110.100.3.2/31
                up    up    inet6  ::ffff:110.100.3.2/127
et-0/0/10.0     up    up    inet   110.100.4.0/31
                up    up    inet6  ::ffff:110.100.4.0/127
et-0/0/11.0     up    up    inet   110.100.4.2/31
                up    up    inet6  ::ffff:110.100.4.2/127
                up    up    inet6  110.100.255.7    --> 0/0
                up    up    inet6  ::ffff:110.100.255.7/32

```

## Verify Fabric-1 BGP Sessions

### Purpose

The Fabric-1 BGP sessions must be configured properly. This step verifies the process.

### Action

Verify the cloud-Fabric-sw01 BGP sessions:

```

user@cloud-Fabric-sw01> show bgp summary | find 110.100
110.100.1.1      65200      37      48      0      0      16:40 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.1.3      65200      38      48      0      0      17:00 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.2.1      65200      39      46      0      0      16:56 Establ
  inet.0: 2/2/2/0
  inet6.0: 1/1/1/0
110.100.2.3      65200      39      49      0      0      16:52 Establ
  inet.0: 2/2/2/0
  inet6.0: 1/1/1/0

```

```

110.100.3.1          65201      3701      3828      0      0  1d 5:11:33 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.3.3          65201      3704      3837      0      0  1d 5:11:42 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.4.1          65201      3557      3831      0      0  1d 5:11:48 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.4.3          65201      3555      3834      0      0  1d 5:11:38 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0

```

## Verify BGP Scaling on TOR-3

### Purpose

The TOR-3 BGP sessions must be configured properly and appear on TOR-3. This step verifies the process.

### Action

Verify the TOR-4 BGP sessions:

```

user@TOR-4> show route summary
Autonomous system number: 65101
Router ID: 100.100.255.104

inet.0: 45 destinations, 45 routes (44 active, 0 holddown, 1 hidden)
  Direct:      3 routes,      2 active
  Local:       1 routes,      1 active
  Static:      41 routes,     41 active

VRF_lite1.inet.0: 489 destinations, 518 routes (489 active, 0 holddown, 0 hidden)
  Direct:      8 routes,      8 active
  Local:       7 routes,      7 active
  BGP:         503 routes,    474 active

VRF_lite10.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
  Direct:      7 routes,      7 active
  Local:       7 routes,      7 active

```

```

                BGP:      500 routes,      472 active

VRF_lite11.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      500 routes,      472 active

VRF_lite12.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      500 routes,      472 active

VRF_lite13.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      500 routes,      472 active

VRF_lite14.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      500 routes,      472 active

VRF_lite15.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      500 routes,      472 active

VRF_lite16.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      500 routes,      472 active

VRF_lite2.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      501 routes,      473 active

VRF_lite3.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)
    Direct:      7 routes,      7 active
    Local:      7 routes,      7 active
    BGP:      501 routes,      473 active

VRF_lite4.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)

```

```

Direct:      7 routes,      7 active
Local:      7 routes,      7 active
BGP:       501 routes,    473 active

```

VRF\_lite5.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)

```

Direct:      7 routes,      7 active
Local:      7 routes,      7 active
BGP:       501 routes,    473 active

```

VRF\_lite6.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)

```

Direct:      7 routes,      7 active
Local:      7 routes,      7 active
BGP:       501 routes,    473 active

```

VRF\_lite7.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)

```

Direct:      7 routes,      7 active
Local:      7 routes,      7 active
BGP:       501 routes,    473 active

```

VRF\_lite8.inet.0: 487 destinations, 515 routes (487 active, 0 holddown, 0 hidden)

```

Direct:      7 routes,      7 active
Local:      7 routes,      7 active
BGP:       501 routes,    473 active

```

VRF\_lite9.inet.0: 486 destinations, 514 routes (486 active, 0 holddown, 0 hidden)

```

Direct:      7 routes,      7 active
Local:      7 routes,      7 active
BGP:       500 routes,    472 active

```

VRF\_lite1.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

```

Direct:     14 routes,      8 active
Local:     14 routes,     14 active
BGP:      63 routes,     35 active

```

VRF\_lite10.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

```

Direct:     14 routes,      8 active
Local:     14 routes,     14 active
BGP:      63 routes,     35 active

```

VRF\_lite11.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

```

Direct:     14 routes,      8 active
Local:     14 routes,     14 active
BGP:      63 routes,     35 active

```



VRF\_lite12.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite13.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite14.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite15.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite16.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite2.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite3.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite4.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
Local:	14 routes,	14 active
BGP:	63 routes,	35 active

VRF\_lite5.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)

Direct:	14 routes,	8 active
---------	------------	----------

```

Local:      14 routes,      14 active
BGP:       63 routes,      35 active

VRF_lite6.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)
Direct:     14 routes,       8 active
Local:     14 routes,      14 active
BGP:      63 routes,      35 active

VRF_lite7.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)
Direct:     14 routes,       8 active
Local:     14 routes,      14 active
BGP:      63 routes,      35 active

VRF_lite8.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)
Direct:     14 routes,       8 active
Local:     14 routes,      14 active
BGP:      63 routes,      35 active

VRF_lite9.inet6.0: 57 destinations, 91 routes (57 active, 0 holddown, 0 hidden)
Direct:     14 routes,       8 active
Local:     14 routes,      14 active
BGP:      63 routes,      35 active

```

## Verify Fabric-1 BGP Sessions

### Purpose

The Fabric-1 BGP sessions must be configured properly. This step verifies the process.

### Action

Verify the cloud-Fabric-sw01 BGP sessions:

```

user@cloud-Fabric-sw01> show bgp summary | find 110.100
110.100.1.1          65200      37        48        0        0      16:40 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.1.3          65200      38        48        0        0      17:00 Establ
  inet.0: 1/1/1/0
  inet6.0: 1/1/1/0
110.100.2.1          65200      39        46        0        0      16:56 Establ

```

```

inet.0: 2/2/2/0
inet6.0: 1/1/1/0
110.100.2.3      65200      39        49        0        0        16:52 Establ
inet.0: 2/2/2/0
inet6.0: 1/1/1/0
110.100.3.1      65201      3701      3828      0        0 1d 5:11:33 Establ
inet.0: 1/1/1/0
inet6.0: 1/1/1/0
110.100.3.3      65201      3704      3837      0        0 1d 5:11:42 Establ
inet.0: 1/1/1/0
inet6.0: 1/1/1/0
110.100.4.1      65201      3557      3831      0        0 1d 5:11:48 Establ
inet.0: 1/1/1/0
inet6.0: 1/1/1/0
110.100.4.3      65201      3555      3834      0        0 1d 5:11:38 Establ
inet.0: 1/1/1/0
inet6.0: 1/1/1/0

```

## Verify BGP Scaling on SPINE-1

### Purpose

The SPINE-1 BGP sessions must be configured properly. This step verifies the process.

### Action

Verify the SPINE-1 BGP sessions:

```

user@SPINE-1> show bgp summary
Groups: 119 Peers: 1142 Down peers: 1
Table          Tot Paths  Act Paths Suppressed    History Damp State   Pending
inet.0
              70         46         0         0         0         0
inet6.0
              36         32         0         0         0         0
bgp.evpn.0
          19770      19770         0         0         0         0
Peer          AS      InPkt   OutPkt   OutQ   Flaps Last Up/Dwn State|#Active/
Received/Accepted/Damped...
100.100.101.1  65100      12654   12484     0     0 4d 6:28:40 Establ
inet.0: 6/8/8/0

```

```

    inet6.0: 0/0/0/0
100.100.101.3      65100      12654      12487      0          0  4d 6:28:41 Establ
    inet.0: 6/8/8/0
    inet6.0: 0/0/0/0
100.100.102.1      65100      12863      12480      0          0  4d 6:28:40 Establ
    inet.0: 5/7/7/0
    inet6.0: 0/0/0/0
100.100.102.3      65100      12863      12483      0          0  4d 6:28:40 Establ
    inet.0: 5/7/7/0
    inet6.0: 0/0/0/0
100.100.250.1      65500      17910      19397      0          0  4d 6:28:40 Establ
bgp.evpn.0: 19770/19770/19770/0
VRF_lite1.evpn.0: 926/926/926/0
VRF_lite10.evpn.0: 922/922/922/0
VRF_lite11.evpn.0: 922/922/922/0
VRF_lite12.evpn.0: 922/922/922/0
VRF_lite13.evpn.0: 922/922/922/0
VRF_lite14.evpn.0: 922/922/922/0
VRF_lite15.evpn.0: 922/922/922/0
VRF_lite16.evpn.0: 922/922/922/0
VRF_lite2.evpn.0: 924/924/924/0
VRF_lite3.evpn.0: 924/924/924/0
VRF_lite4.evpn.0: 924/924/924/0
VRF_lite5.evpn.0: 924/924/924/0
VRF_lite6.evpn.0: 924/924/924/0
VRF_lite7.evpn.0: 924/924/924/0
VRF_lite8.evpn.0: 924/924/924/0
VRF_lite9.evpn.0: 922/922/922/0
VRF_lite_TorGroup_1.evpn.0: 50/50/50/0
VRF_lite_TorGroup_10.evpn.0: 50/50/50/0
VRF_lite_TorGroup_100.evpn.0: 50/50/50/0
VRF_lite_TorGroup_11.evpn.0: 50/50/50/0
VRF_lite_TorGroup_12.evpn.0: 50/50/50/0
VRF_lite_TorGroup_13.evpn.0: 50/50/50/0
VRF_lite_TorGroup_14.evpn.0: 50/50/50/0
VRF_lite_TorGroup_15.evpn.0: 50/50/50/0

```

Till VRF115