



# Configuring BGP EVPN VXLANv6

This document describes new deployment and migration scenarios for implementing IPv6 in the underlay of a BGP EVPN VXLAN fabric.

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## Information About BGP EVPN VXLANv6

The ever-expanding needs of the enterprise networks to enhance the IP addressing capabilities and simplify the network configurations makes it pertinent to adopt IPv6-enabled networks. The larger IPv6 address space allows networks to scale and provide global reachability. The simplified IPv6 packet header format handles packets more efficiently. IPv6 prefix aggregation, simplified network renumbering, and IPv6 site multihoming capabilities provide an IPv6 addressing hierarchy that allows for more efficient routing. When you enable IPv6 in the underlay for VXLAN tunnel endpoints (VTEPS), the overlay traffic is encapsulated with the IPv6 VXLAN encapsulation. IPv6 connectivity between the VTEPS is established by enabling IPv6 unicast routing protocols. For overlay multi-destination traffic (BUM), when underlay multicast is used, IPv6 multicast protocol must be enabled.

For a new deployment, you can build your BGP EVPN VXLAN fabric with IPv6 underlay. For an existing BGP EVPN VXLAN fabric with IPv4 underlay, you can seamlessly migrate to an IPv6 only or dual stack underlay.



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**Note** This feature is not supported on the Cisco Catalyst 9500X Series switches.

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## BGP EVPN VXLANv6 Fabric Capabilities

In Cisco IOS XE Dublin 17.10.1 and later releases, a BGP EVPN VXLAN fabric with an IPv6 underlay supports the following features:

- Ingress Replication or Static Multicast Replication
- Layer 2 Gateway

- Distributed Anycast Gateway with Symmetric Integrated Routing and Bridging
- Layer 2 External connectivity with IEEE 802.1Q network
- Layer 3 External Connectivity with VRF-Lite or MPLS Layer 3 VPN network
- Seamless migration between EVPN VXLANv4 fabric and EVPN VXLANv6 fabric
- IPv6 BGP EVPN Neighbor Peering

However, the following features will be supported in the upcoming releases:

- Centralized Gateway
- Multi-Homing
- Layer 3 Tenant Routed Multicast
- Optimized Layer 2 Overlay Multicast
- Access Virtual Forwarding Interface (VFI)
- Fabric Netflow

## New Deployment of BGP EVPN VXLANv6

VXLANv6 (IPv6 underlay) is supported in the following BGP EVPN VXLAN overlays:

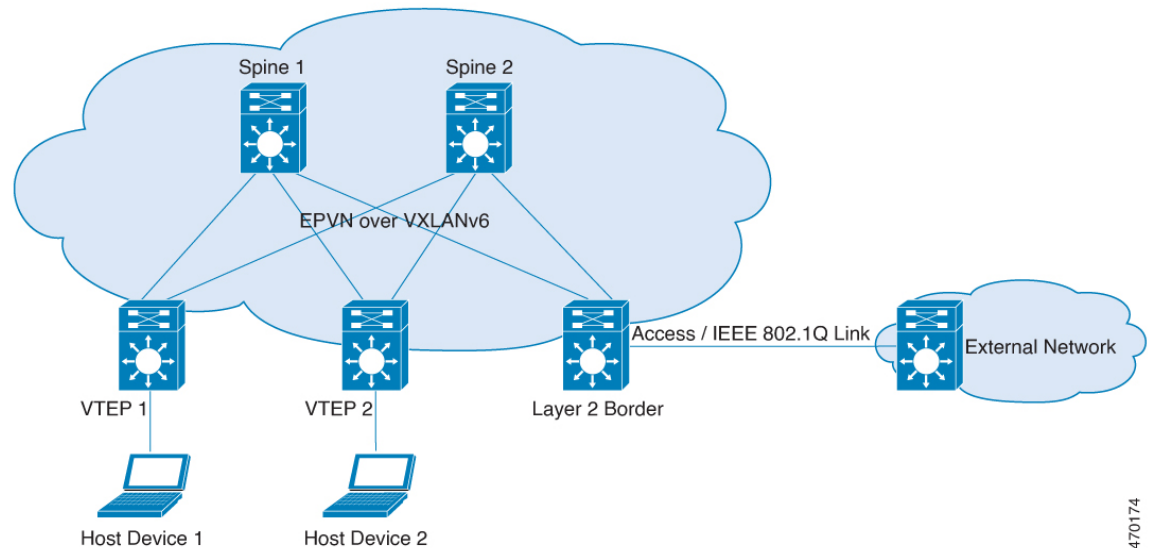
- Layer 2 Overlay
- Distributed Anycast Gateway

### Layer 2 Overlay

The Layer 2 Gateway with VXLANv6 deployment has a single IPv6 transport in the underlay. The VXLAN tunnels and BGP peering between Layer 2 Gateways are both IPv6 based. The overlay has only Layer 2 routes.

A Layer 2 Gateway with VXLANv6 supports Layer 2 bridging between Layer 2 Gateways. Layer 3 Routing is implemented with the external Layer 3 Gateways.

Figure 1: EVPN VXLANv6 Fabric with Layer 2 Gateway



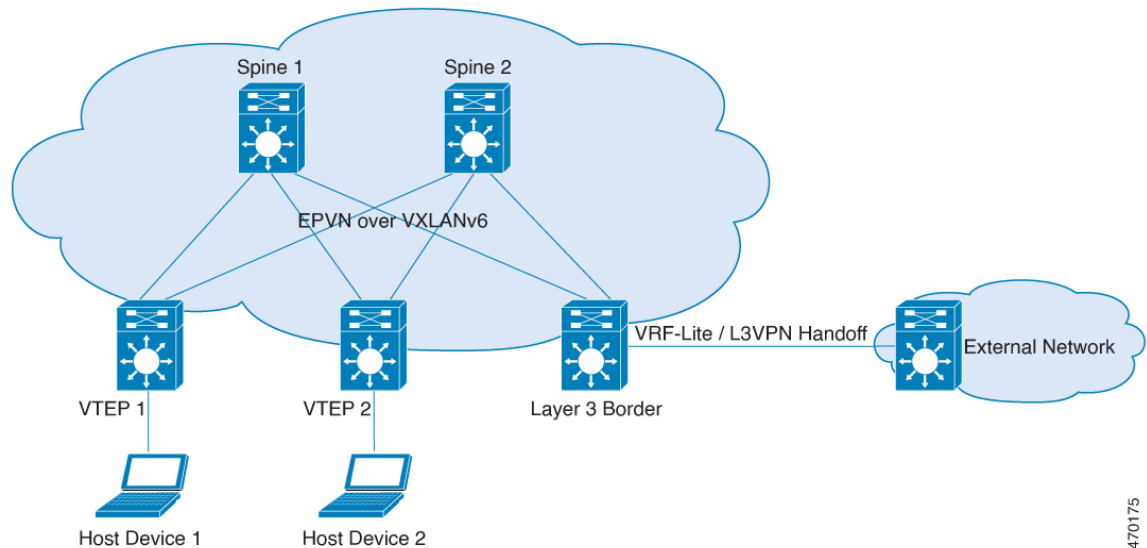
The topology in the [Figure 1: EVPN VXLANv6 Fabric with Layer 2 Gateway](#) shows a BGP EVPN VXLAN fabric with a Layer 2 overlay that supports IPv6 underlay. The fabric supports both IPv4 and IPv6 hosts.

## Overlay with Distributed Anycast Gateway

In a BGP EVPN VXLANv6 fabric with Distributed Anycast Gateway, the underlay has a single IPv6 transport. The VXLAN tunnels and BGP peering, both support IPv6 addressing. The overlay has both Layer 2 and Layer 3 routes and supports MAC, IPv4 and IPv6 addressing.

Distributed Anycast Gateway with VXLANv6 supports Layer 2 bridging, Layer 3 routing within the EVPN fabric, and Layer 3 stitching through Layer 3 border gateway with IPv6 underlay. For Layer 3 routing, both IPv4 and IPv6 overlay prefixes are supported over IPv6 underlay.

Figure 2: BGP EVPN VXLANv6 Fabric with Distributed Anycast Gateway



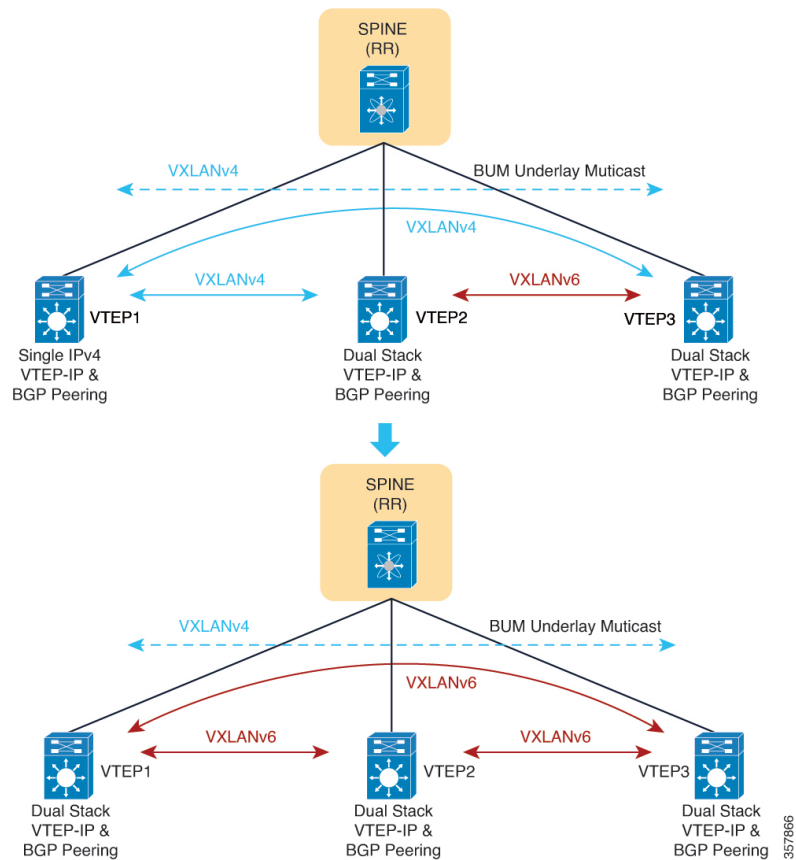
Topology in the [Figure 2: BGP EVPN VXLANv6 Fabric with Distributed Anycast Gateway](#) shows a BGP EVPN VXLANv6 fabric with integrated routing and bridging (IRB) using distributed anycast gateway (DAG). The fabric supports both IPv4 and IPv6 hosts, and IPv6 BGP peering.

## Migration from VXLANv4 to VXLANv6

You can seamlessly migrate your existing network from VXLANv4 to VXLANv6 underlay. To achieve a nondisruptive migration, the EVPN VXLAN network should migrate incrementally from IPv4 to IPv6 underlay. During migration, the part of the network that is migrated to IPv6 underlay remains connected with the part of the network that still works with IPv4 underlay.

The incremental migration is achieved by individually making each VTEP dual stack-capable. A dual stack VTEP node has two VTEP addresses (IPv4 and IPv6) associated with the same VXLAN Network Identifier (VNI). During the underlay migration, both these VTEP IP addresses are advertised to peers in a single BGP EVPN dual next-hop update. The receiving nodes in the underlay can choose either IPv4 or IPv6 for traffic forwarding. This ensures connectivity between the IPv4 VTEPs, the dual stack VTEPs and IPv6 VTEPs. After all the VTEPs in the fabric are made dual stack-capable, each VTEP is migrated to IPv6.

### Step 1



### 1. Configure IPv4/IPv6 Loopback interface.

```
VTEP(config)#interface Loopback1
VTEP(config-if)# ipv6 address ABCD:1::2/128
VTEP(config-if)# ipv6 ospf 1 area 0
```

### 2. Enable Dual Stack.

```
VTEP(config)# interface nve1
VTEP(config-if)# vxlan encapsulation dual-stack prefer-ipv6
```

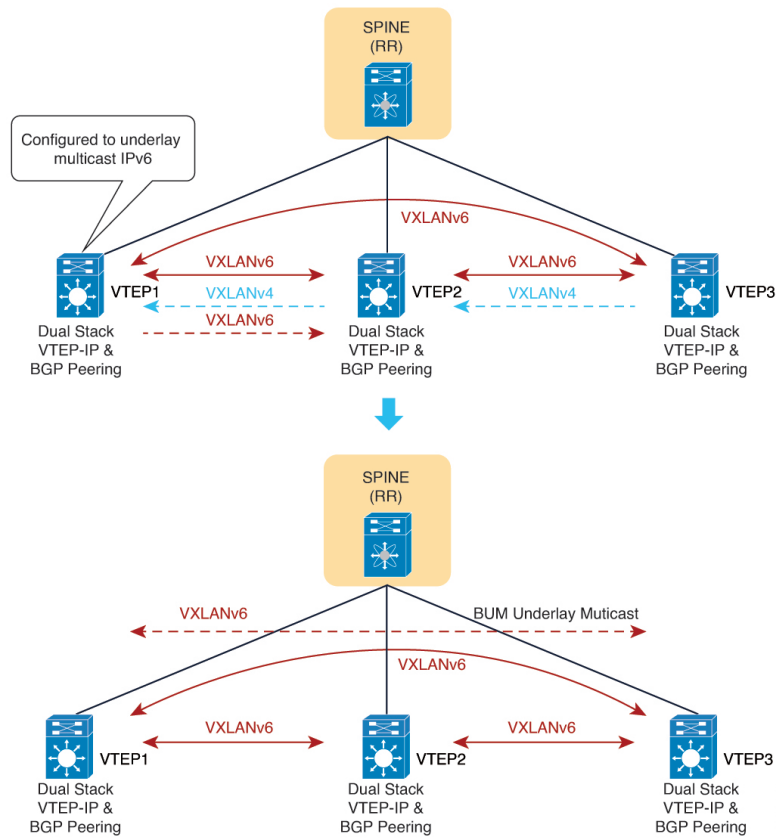
### 3. For unicast traffic and BUM traffic using ingress replication, the dual stack VTEP communicates with other IPv4 VTEPs using VXLANv4 and with other dual stack VTEPs using VXLANv6.

Configure static multicast replication for L2VNI.

```
VTEP(config-if)# member vni 20011 mcast-group 239.2.1.11 FF0E::11
```

## Step 2

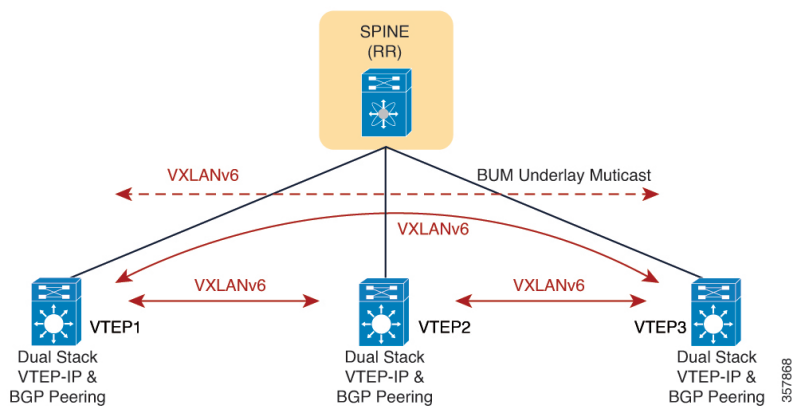
This step is only needed for BUM traffic using Multicast Replication.



- After all the VTEPs are dual stack-capable, underlay multicast switches to IPv6 Multicast.

```
VTEP(config)# interface nve1
VTEP(config-if)# vxlan encapsulation dual-stack prefer-ipv6 underlay-mcast ipv6
```

Step 3



- Configure all VTEPs to support only IPv6.

```
VTEP(config)# interface nve1
VTEP(config-if)# member vni 20011 mcast-group FF0E::11
VTEP(config-if)# vxlan encapsulation ipv6
```

- The fabric switches to IPv6 encapsulations.

See [Migrate EVPN VXLAN to IPv6 Underlay on Catalyst 9000 Switches](#) document for detailed steps to migrate from VXLANv4 to VXLANv6.

## How to Configure BGP EVPN VXLANv6

This section describes only the changes in the underlay configuration. For the overlay and complete configuration of the fabric, refer [How to Configure EVPN VXLAN Layer 2 Overlay Network](#) and [Information About EVPN VXLAN Integrated Routing and Bridging](#).

### Configure VXLANv6 for BGP EVPN Fabric with Layer 2 Overlay

Implement the following tasks to configure IPv6 underlay for a BGP EVPN VXLAN fabric with Layer 2 overlay.

#### Procedure

**Step 1** Configure an explicit router-id for L2VPN EVPN.

```
l2vpn
 router-id 1.1.1.3
l2vpn evpn
 replication-type ingress
end
```

**Step 2** Configure an L2EVPN instance.

```
l2vpn evpn instance 1 vlan-based
 encapsulation vxlan
```

**Step 3** Configure Loopback interface.

```
interface Loopback1
 ipv6 address ABCD:1::2/128
 ipv6 ospf 1 area 0
```

**Step 4** Configure NVE interface.

```
interface nve1
 source-interface Loopback1
 host-reachability protocol bgp
 vxlan encapsulation ipv6
 member vni 20011 ingress-replication
 member vni 20012 mcast-group FF0E::12
```

**Step 5** Configure the VLAN.

```
vlan configuration 11
 member evpn-instance 1 vni 20011
```

**Step 6** Configure the L2VPN EVPN BGP peering.

```
interface Loopback0
 description BGP UPDATE SOURCE
 ipv6 address ABCD:1::1/128
 ipv6 ospf 1 area 0
```

```

!
router bgp 100
  bgp router-id 1.1.1.1
  bgp log-neighbor-changes
  bgp graceful-restart
  neighbor ABCD:99::99 remote-as 100
  neighbor ABCD:99::99 update-source Loopback0
  !
  address-family l2vpn evpn
    neighbor ABCD:99::99 activate
    neighbor ABCD:99::99 send-community both
  exit-address-family
  !

```

## Configure VXLANv6 for BGP EVPN Fabric with Distributed Anycast Gateway

Implement the following tasks to configure IPv6 underlay for a BGP EVPN VXLAN fabric with a Distributed Anycast Gateway (DAG).

### Procedure

#### Step 1 Configure IP-VRF.

```

vrf definition red
  rd 100:1
  !
  address-family ipv4
    route-target export 100:100
    route-target import 100:100
    route-target export 100:100 stitching
    route-target import 100:100 stitching
  exit-address-family
  !
  address-family ipv6
    route-target export 100:200
    route-target import 100:200
    route-target export 100:200 stitching
    route-target import 100:200 stitching
  exit-address-family
end

```

#### Step 2 Configure Access SVI IRB interface.

```

interface Vlan11
  mac-address 0011.0011.0011
  vrf forwarding red
  ip address 192.168.11.254 255.255.255.0
  ipv6 address 2001:11::254/64
end

```

#### Step 3 Configure IPv6 BGP peering.

```

router bgp 100
  bgp router-id 1.1.1.1
  bgp log-neighbor-changes
  bgp graceful-restart
  neighbor ABCD:99::99 remote-as 100
  neighbor ABCD:99::99 update-source Loopback0

```



```

!
address-family l2vpn evpn
  neighbor ABCD:99::99 activate
  neighbor ABCD:99::99 send-community both
exit-address-family
!
address-family ipv4 vrf red
  advertise l2vpn evpn
  redistribute connected
exit-address-family
address-family ipv6 vrf red
  advertise l2vpn evpn
  redistribute connected
exit-address-family
end

```

**Step 4** Configure NVE interface.

```

interface nve1
  source-interface Loopback1
  host-reachability protocol bgp
  vxlan encapsulation ipv6
  member vni 30001 vrf red
  member vni 20011 ingress-replication
  member vni 20012 mcast-group ff0e::12

```

**Step 5** Configure the core SVI IRB interface.

```

vlan configuration 3
  member vni 30001
interface Vlan3
  vrf forwarding red
  ip unnumbered Loopback192
  ip pim sparse-mode
  ipv6 unnumbered Loopback192
  no autostate
end

```

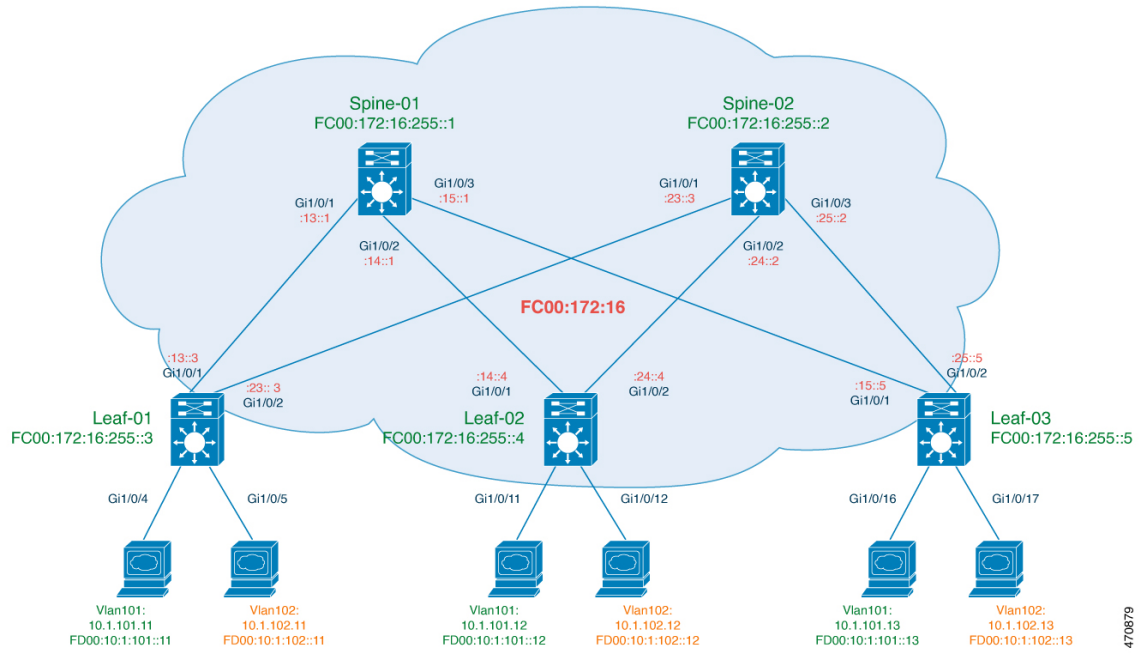
## Configuration Examples for BGP EVPN VXLANv6

The following sections provide examples to show how to configure BGP EVPN VXLAN fabric with an IPv6 underlay and a dual stack underlay.

### Example: Configuring BGP EVPN VXLAN with IPv6 Underlay

This example shows how to configure a BGP EVPN VXLAN fabric with only IPv6 in the underlay. The following tables provide sample configuration of the VTEPs (Leaf-01, Leaf-02, Leaf-03) and the Spine nodes (Spine-01, Spine-02) in the topology [Figure 3: BGP EVPN VXLAN with IPv6 Underlay](#).

Figure 3: BGP EVPN VXLAN with IPv6 Underlay



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*Table 1: Configure the VTEPs*

VTEP 1	VTEP 2	VTEP 3
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VTEP 1	VTEP 2	VTEP 3
<pre>Leaf-01# show running-config hostname Leaf-01 ! vrf definition green rd 1:1 ! address-family ipv4 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! address-family ipv6 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! ip routing ! ipv6 unicast-routing ipv6 multicast-routing ! l2vpn evpn router-id Loopback1 replication-type static default-gateway advertise ! l2vpn evpn instance 101 vlan-based encapsulation vxlan ! l2vpn evpn instance 102 vlan-based encapsulation vxlan replication-type ingress ! system mtu 9198 ! vlan configuration 101 member evpn-instance 101 vni 10101 vlan configuration 102 member evpn-instance 102 vni 10102 vlan configuration 901 member vni 50901 ! interface Loopback0 ipv6 address fc00:172:16:255::3/128 ipv6 ospf 1 area 0 ! interface Loopback1 ipv6 address fc00:172:16:254::3/128</pre>	<pre>Leaf-02# show running-config hostname Leaf-02 ! vrf definition green rd 1:1 ! address-family ipv4 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! address-family ipv6 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! ip routing ! ipv6 unicast-routing ipv6 multicast-routing ! l2vpn evpn router-id Loopback1 replication-type static default-gateway advertise ! l2vpn evpn instance 101 vlan-based encapsulation vxlan ! l2vpn evpn instance 102 vlan-based encapsulation vxlan replication-type ingress ! system mtu 9198 ! vlan configuration 101 member evpn-instance 101 vni 10101 vlan configuration 102 member evpn-instance 102 vni 10102 vlan configuration 901 member vni 50901 ! interface Loopback0 ipv6 address fc00:172:16:255::4/128 ipv6 ospf 1 area 0 ! interface Loopback1 ipv6 address fc00:172:16:254::4/128</pre>	<pre>Leaf-03# show running-config hostname Leaf-03 ! vrf definition green rd 1:1 ! address-family ipv4 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! address-family ipv6 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! ip routing ip multicast-routing ! ipv6 unicast-routing ipv6 multicast-routing ! l2vpn evpn router-id Loopback1 replication-type static default-gateway advertise ! l2vpn evpn instance 101 vlan-based encapsulation vxlan ! l2vpn evpn instance 102 vlan-based encapsulation vxlan replication-type ingress ! system mtu 9198 ! vlan configuration 101 member evpn-instance 101 vni 10101 vlan configuration 102 member evpn-instance 102 vni 10102 vlan configuration 901 member vni 50901 ! interface Loopback0 ipv6 address fc00:172:16:255::5/128 ipv6 ospf 1 area 0 ! interface Loopback1 ipv6 address</pre>

VTEP 1	VTEP 2	VTEP 3
<pre> ip address 172.16.254.3 255.255.255.255 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ipv6 address fc00:172:16:13::3/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ipv6 address fc00:172:16:23::3/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/4 switchport access vlan 101 switchport mode access ! interface GigabitEthernet1/0/5 switchport access vlan 102 switchport mode access ! ipv6 router ospf 1 router-id 172.16.255.3 ! router bgp 65001 bgp router-id 172.16.255.3 neighbor fc00:172:16:255::1 remote-as 65001 update-source Loopback0 neighbor fc00:172:16:255::2 remote-as 65001 neighbor fc00:172:16:255::2 update-source Loopback0 ! address-family l2vpn evpn neighbor fc00:172:16:255::1 activate neighbor fc00:172:16:255::1 send-community both neighbor fc00:172:16:255::2 activate neighbor fc00:172:16:255::2 send-community both exit-address-family ! address-family ipv4 vrf green advertise l2vpn evpn redistribute connected exit-address-family ! address-family ipv6 vrf green redistribute connected                     </pre>	<pre> ip address 172.16.254.4 255.255.255.255 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ipv6 address fc00:172:16:14::4/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ipv6 address fc00:172:16:24::4/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/11 switchport access vlan 101 switchport mode access ! interface GigabitEthernet1/0/12 switchport access vlan 102 switchport mode access ! ipv6 router ospf 1 router-id 172.16.255.4 ! router bgp 65001 bgp router-id 172.16.255.4 neighbor fc00:172:16:255::1 remote-as 65001 neighbor fc00:172:16:255::1 update-source Loopback0 neighbor fc00:172:16:255::2 remote-as 65001 neighbor fc00:172:16:255::2 update-source Loopback0 ! address-family l2vpn evpn neighbor fc00:172:16:255::1 activate neighbor fc00:172:16:255::1 send-community both neighbor fc00:172:16:255::2 activate neighbor fc00:172:16:255::2 send-community both exit-address-family ! address-family ipv4 vrf green advertise l2vpn evpn redistribute connected exit-address-family !                     </pre>	<pre> fc00:172:16:254::5/128 ip address 172.16.254.5 255.255.255.255 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ipv6 address fc00:172:16:15::5/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ipv6 address fc00:172:16:25::5/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/16 switchport access vlan 101 switchport mode access ! interface GigabitEthernet1/0/17 switchport access vlan 102 switchport mode access ! ipv6 router ospf 1 router-id 172.16.255.5 ! router bgp 65001 bgp router-id 172.16.255.5 neighbor fc00:172:16:255::1 remote-as 65001 neighbor fc00:172:16:255::1 update-source Loopback0 neighbor fc00:172:16:255::2 remote-as 65001 neighbor fc00:172:16:255::2 update-source Loopback0 ! address-family l2vpn evpn neighbor fc00:172:16:255::1 activate neighbor fc00:172:16:255::1 send-community both neighbor fc00:172:16:255::2 activate neighbor fc00:172:16:255::2 send-community both exit-address-family ! address-family ipv4 vrf green advertise l2vpn evpn redistribute connected exit-address-family                     </pre>

VTEP 1	VTEP 2	VTEP 3
<pre> advertise l2vpn evpn exit-address-family ! int vlan101 vrf forwarding green ip address 10.1.101.1 255.255.255.0 ipv6 address fd00:10:1:101::1/64 ipv6 enable ! int vlan102 vrf forwarding green ip address 10.1.102.1 255.255.255.0 ipv6 address fd00:10:1:102::1/64 ipv6 enable ! int vlan901 vrf forwarding green ip unnumbered Loopback1 ipv6 enable no autostate ! interface nve1 no ip address source-interface Loopback1 host-reachability protocol bgp vxlan encapsulation ipv6 member vni 10101 mcast-group FF0E:225::101 member vni 10102 ingress-replication member vni 50901 vrf green ! ipv6 pim rp-address fc00:172:16:255::255 ! end </pre>	<pre> address-family ipv6 vrf green ! redistribute connected advertise l2vpn evpn exit-address-family ! int vlan101 vrf forwarding green ip address 10.1.101.1 255.255.255.0 ipv6 address fd00:10:1:101::1/64 ipv6 enable ! int vlan102 vrf forwarding green ip address 10.1.102.1 255.255.255.0 ipv6 address fd00:10:1:102::1/64 ipv6 enable ! int vlan901 vrf forwarding green ip unnumbered Loopback1 ipv6 enable no autostate ! interface nve1 no ip address source-interface Loopback1 host-reachability protocol bgp vxlan encapsulation ipv6 member vni 10101 mcast-group FF0E:225::101 member vni 10102 ingress-replication member vni 50901 vrf green ! ipv6 pim rp-address fc00:172:16:255::255 ! end </pre>	<pre> ! address-family ipv6 vrf green redistribute connected advertise l2vpn evpn exit-address-family ! int vlan101 vrf forwarding green ip address 10.1.101.1 255.255.255.0 ipv6 address fd00:10:1:101::1/64 ipv6 enable ! int vlan102 vrf forwarding green ip address 10.1.102.1 255.255.255.0 ipv6 address fd00:10:1:102::1/64 ipv6 enable ! int vlan901 vrf forwarding green ip unnumbered Loopback1 ipv6 enable no autostate ! interface nve1 no ip address source-interface Loopback1 host-reachability protocol bgp vxlan encapsulation ipv6 member vni 10101 mcast-group FF0E:225::101 member vni 10102 ingress-replication member vni 50901 vrf green ! ipv6 pim rp-address fc00:172:16:255::255 ! end </pre>

*Table 2: Configure the Spine Nodes*

Spine Switch 1	Spine Switch 2
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Spine Switch 1	Spine Switch 2
<pre> Spine-01# show running-config hostname Spine-01 ! ip routing ! ipv6 unicast-routing ipv6 multicast-routing ! system mtu 9198 ! interface Loopback0 ipv6 address fc00:172:16:255::1/128 ipv6 ospf 1 area 0 ! interface Loopback1 ipv6 address fc00:172:16:254::1/128 ipv6 ospf 1 area 0 ! interface Loopback2 ipv6 address fc00:172:16:255::255/128 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ipv6 address fc00:172:16:13::1/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ipv6 address fc00:172:16:14::1/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/3 no switchport ipv6 address fc00:172:16:15::1/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! ipv6 router ospf 1 router-id 172.16.255.1 ! router bgp 65001 bgp router-id 172.16.255.1 neighbor fc00:172:16:255::2 remote-as 65001 neighbor fc00:172:16:255::2 update-source Loopback0 neighbor fc00:172:16:255::3 remote-as 65001 neighbor fc00:172:16:255::3 update-source Loopback0 neighbor fc00:172:16:255::4 remote-as 65001 neighbor fc00:172:16:255::4 update-source Loopback0 neighbor fc00:172:16:255::5 remote-as 65001 neighbor fc00:172:16:255::5 update-source Loopback0 ! address-family l2vpn evpn </pre>	<pre> Spine-02# show running-config hostname Spine-02 ! ip routing ! ipv6 unicast-routing ipv6 multicast-routing ! system mtu 9198 ! interface Loopback0 ipv6 address fc00:172:16:255::2/128 ipv6 ospf 1 area 0 ! interface Loopback1 ipv6 address fc00:172:16:254::2/128 ipv6 ospf 1 area 0 ! interface Loopback2 ipv6 address fc00:172:16:255::255/128 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ipv6 address fc00:172:16:23::2/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ipv6 address fc00:172:16:24::2/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/3 no switchport ipv6 address fc00:172:16:25::2/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! ipv6 router ospf 1 router-id 172.16.255.2 ! router bgp 65001 bgp router-id 172.16.255.2 neighbor fc00:172:16:255::1 remote-as 65001 neighbor fc00:172:16:255::1 update-source Loopback0 neighbor fc00:172:16:255::3 remote-as 65001 neighbor fc00:172:16:255::3 update-source Loopback0 neighbor fc00:172:16:255::4 remote-as 65001 neighbor fc00:172:16:255::4 update-source Loopback0 neighbor fc00:172:16:255::5 remote-as 65001 neighbor fc00:172:16:255::5 update-source Loopback0 ! address-family l2vpn evpn </pre>



Spine Switch 1	Spine Switch 2
<pre>neighbor fc00:172:16:255::2 activate neighbor fc00:172:16:255::2 send-community both neighbor fc00:172:16:255::2 route-reflector-client neighbor fc00:172:16:255::3 activate neighbor fc00:172:16:255::3 send-community both neighbor fc00:172:16:255::3 route-reflector-client neighbor fc00:172:16:255::4 activate neighbor fc00:172:16:255::4 send-community both neighbor fc00:172:16:255::4 route-reflector-client neighbor fc00:172:16:255::5 activate neighbor fc00:172:16:255::5 send-community both neighbor fc00:172:16:255::5 route-reflector-client exit-address-family ! ipv6 pim rp-address fc00:172:16:255::255 ! ipv6 pim anycast-rp fc00:172:16:255::255 fc00:172:16:254::2 ! end</pre>	<pre>neighbor fc00:172:16:255::1 activate neighbor fc00:172:16:255::1 send-community both neighbor fc00:172:16:255::1 route-reflector-client neighbor fc00:172:16:255::3 activate neighbor fc00:172:16:255::3 send-community both neighbor fc00:172:16:255::3 route-reflector-client neighbor fc00:172:16:255::4 activate neighbor fc00:172:16:255::4 send-community both neighbor fc00:172:16:255::4 route-reflector-client neighbor fc00:172:16:255::5 activate neighbor fc00:172:16:255::5 send-community both neighbor fc00:172:16:255::5 route-reflector-client exit-address-family ! ipv6 pim rp-address fc00:172:16:255::255 ! ipv6 pim anycast-rp fc00:172:16:255::255 fc00:172:16:254::1 ! end</pre>

## Verifying BGP EVPN VXLAN with IPv6 Underlay Configuration

The following sections provide sample output of **show** commands to verify the BGP EVPN VXLAN configuration with IPv6 underlay.

- [Outputs to Verify Configuration on VTEP 1, on page 17](#)
- [Outputs to Verify Configuration on VTEP 2, on page 23](#)
- [Outputs to Verify Configuration on VTEP 3, on page 29](#)
- [Outputs to Verify Configuration on Spine 1, on page 36](#)
- [Outputs to Verify Configuration on Spine 2, on page 41](#)

### Outputs to Verify Configuration on VTEP 1

```
Leaf-01# show ipv6 route
IPv6 Routing Table - default - 20 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, lA - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary
C   FC00:172:16:13::/64 [0/0]
```

```

    via GigabitEthernet1/0/1, directly connected
L  FC00:172:16:13::3/128 [0/0]
    via GigabitEthernet1/0/1, receive
O  FC00:172:16:14::/64 [110/2]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
O  FC00:172:16:15::/64 [110/2]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
C  FC00:172:16:23::/64 [0/0]
    via GigabitEthernet1/0/2, directly connected
L  FC00:172:16:23::3/128 [0/0]
    via GigabitEthernet1/0/2, receive
O  FC00:172:16:24::/64 [110/2]
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
O  FC00:172:16:25::/64 [110/2]
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
O  FC00:172:16:254::1/128 [110/1]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
O  FC00:172:16:254::2/128 [110/1]
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
LC FC00:172:16:254::3/128 [0/0]
    via Loopback1, receive
O  FC00:172:16:254::4/128 [110/2]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
O  FC00:172:16:254::5/128 [110/2]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
O  FC00:172:16:255::1/128 [110/1]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
O  FC00:172:16:255::2/128 [110/1]
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
LC FC00:172:16:255::3/128 [0/0]
    via Loopback0, receive
O  FC00:172:16:255::4/128 [110/2]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
O  FC00:172:16:255::5/128 [110/2]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
O  FC00:172:16:255::255/128 [110/1]
    via FE80::7E21:DFF:FE92:B2E4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CE4, GigabitEthernet1/0/2
L  FF00::/8 [0/0]
    via Null0, receive

```

Leaf-01# **show ipv6 mroute**

Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,  
 C - Connected, L - Local, I - Received Source Specific Host Report,  
 P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,  
 J - Join SPT, Y - Joined MDT-data group,  
 y - Sending to MDT-data group  
 g - BGP signal originated, G - BGP Signal received,  
 N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,  
 q - BGP Src-Active originated, Q - BGP Src-Active received  
 E - Extranet

Timers: Uptime/Expires

Interface state: Interface, State

```

(*, FF0E:225::101), 00:05:08/never, RP FC00:172:16:255::255, flags: SCJ
  Incoming interface: GigabitEthernet1/0/2
  RPF nbr: FE80::7E21:DFF:FEBD:2CE4
  Immediate Outgoing interface list:
    Tunnel1, Forward, 00:05:08/never

```

```
(FC00:172:16:254::3, FF0E:225::101), 00:04:36/00:03:01, flags: SFJT
  Incoming interface: Loopback1
  RPF nbr: FE80::12B3:D5FF:FE6A:8F80
  Immediate Outgoing interface list:
    GigabitEthernet1/0/1, Forward, 00:04:36/00:03:02
  Inherited Outgoing interface list:
    Tunnell1, Forward, 00:05:08/never

(FC00:172:16:254::4, FF0E:225::101), 00:04:28/00:02:45, flags: SJT
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::7E21:DFF:FE92:B2E4
  Inherited Outgoing interface list:
    Tunnell1, Forward, 00:05:08/never

(FC00:172:16:254::5, FF0E:225::101), 00:04:22/00:00:12, flags: SJT
  Incoming interface: GigabitEthernet1/0/2
  RPF nbr: FE80::7E21:DFF:FEBD:2CE4
  Inherited Outgoing interface list:
    Tunnell1, Forward, 00:05:08/never
```

Leaf-01# show nve peer

'M' - MAC entry download flag 'A' - Adjacency download flag  
'4' - IPv4 flag '6' - IPv6 flag

Interface	VNI	Type	Peer-IP	RMAC/Num_RTs	eVNI	state	flags	UP time
nve1	50901	L3CP	FC00:172:16:254::5 \	7c21.0dbd.2748	50901	UP	A/-/4	00:03:30
nve1	50901	L3CP	FC00:172:16:254::4 \	7c21.0dbd.9548	50901	UP	A/-/4	00:03:30
nve1	50901	L3CP	FC00:172:16:254::5 \	7c21.0dbd.2748	50901	UP	A/M/6	00:03:30
nve1	50901	L3CP	FC00:172:16:254::4 \	7c21.0dbd.9548	50901	UP	A/M/6	00:03:30
nve1	10101	L2CP	FC00:172:16:254::4 \	4	10101	UP	N/A	00:03:29
nve1	10101	L2CP	FC00:172:16:254::5 \	4	10101	UP	N/A	00:03:29
nve1	10102	L2CP	FC00:172:16:254::4 \	6	10102	UP	N/A	00:03:29
nve1	10102	L2CP	FC00:172:16:254::5 \	6	10102	UP	N/A	00:03:29

Leaf-01# show bgp l2vpn evpn summary

```
BGP router identifier 172.16.255.3, local AS number 65001
BGP table version is 49, main routing table version 49
46 network entries using 17664 bytes of memory
62 path entries using 14384 bytes of memory
18/18 BGP path/bestpath attribute entries using 5328 bytes of memory
4 BGP rrinfo entries using 160 bytes of memory
14 BGP extended community entries using 744 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 38280 total bytes of memory
BGP activity 56/0 prefixes, 82/6 paths, scan interval 60 secs
46 networks peaked at 16:39:55 Oct 31 2022 UTC (00:01:35.087 ago)
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
FC00:172:16:255::1	4	65001	27	15	49	0	0	00:04:40	16
FC00:172:16:255::2	4	65001	27	15	49	0	0	00:04:30	16

```

Leaf-01# show bgp 12vpn evpn
BGP table version is 49, local router ID is 172.16.255.3
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
               t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

      Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 172.16.254.3:101
*> [2][172.16.254.3:101][0][48][10B3D56A8FC1][32][10.1.101.1]/24
      ::                               32768 ?
*> [2][172.16.254.3:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36
      ::                               32768 ?
*>i [2][172.16.254.3:101][0][48][44D3CA286CC1][0][*]/20
      FC00:172:16:254::4
      0 100 0 ?
*>i [2][172.16.254.3:101][0][48][44D3CA286CC3][0][*]/20
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:101][0][48][7C210DBD2741][32][10.1.101.1]/24
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:101][0][48][7C210DBD9541][32][10.1.101.1]/24
      FC00:172:16:254::4
      0 100 0 ?
*>i [2][172.16.254.3:101][0][48][7C210DBD9541][128][FD00:10:1:101::1]/36
      FC00:172:16:254::4
      0 100 0 ?
*> [2][172.16.254.3:101][0][48][F4CFE24334C1][0][*]/20
      ::                               32768 ?
*> [2][172.16.254.3:101][0][48][F4CFE24334C1][32][10.1.101.11]/24
      ::                               32768 ?
*> [2][172.16.254.3:101][0][48][F4CFE24334C1][128][FE80::F6CF:E2FF:FE43:34C1]/36
      ::                               32768 ?
Route Distinguisher: 172.16.254.3:102
*> [2][172.16.254.3:102][0][48][10B3D56A8FCD][32][10.1.102.1]/24
      ::                               32768 ?
*> [2][172.16.254.3:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
      ::                               32768 ?
*>i [2][172.16.254.3:102][0][48][44D3CA286CC2][0][*]/20
      FC00:172:16:254::4
      0 100 0 ?
*>i [2][172.16.254.3:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
      FC00:172:16:254::4
      0 100 0 ?
*>i [2][172.16.254.3:102][0][48][44D3CA286CC4][0][*]/20
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:102][0][48][7C210DBD274D][32][10.1.102.1]/24
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
      FC00:172:16:254::5
      0 100 0 ?
*>i [2][172.16.254.3:102][0][48][7C210DBD954D][32][10.1.102.1]/24
      FC00:172:16:254::4

```

```

                                0    100    0 ?
*>i [2] [172.16.254.3:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
                                FC00:172:16:254::4
                                0    100    0 ?
*> [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [0] [*]/20
                                ::                                32768 ?
*> [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36
                                ::                                32768 ?
Route Distinguisher: 172.16.254.4:101
* i [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [0] [*]/20
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
Route Distinguisher: 172.16.254.4:102
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [0] [*]/20
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
                                FC00:172:16:254::4
                                0    100    0 ?
*>i                                FC00:172:16:254::4
                                0    100    0 ?
Route Distinguisher: 172.16.254.5:101
* i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
                                FC00:172:16:254::5
                                0    100    0 ?
*>i                                FC00:172:16:254::5
                                0    100    0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
                                FC00:172:16:254::5
                                0    100    0 ?
*>i                                FC00:172:16:254::5
                                0    100    0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
                                FC00:172:16:254::5
                                0    100    0 ?
*>i                                FC00:172:16:254::5
                                0    100    0 ?
Route Distinguisher: 172.16.254.5:102
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [0] [*]/20
                                FC00:172:16:254::5

```

```

* > i          FC00:172:16:254::5          0    100    0 ?
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
      FC00:172:16:254::5          0    100    0 ?
* > i          FC00:172:16:254::5          0    100    0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][32][10.1.102.1]/24
      FC00:172:16:254::5          0    100    0 ?
* > i          FC00:172:16:254::5          0    100    0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
      FC00:172:16:254::5          0    100    0 ?
* > i          FC00:172:16:254::5          0    100    0 ?
Route Distinguisher: 172.16.254.3:102
* > [3][172.16.254.3:102][0][32][172.16.254.3]/17
      ::                          32768 ?
* > i [3][172.16.254.3:102][0][32][172.16.254.4]/17
      FC00:172:16:254::4          0    100    0 ?
* > i [3][172.16.254.3:102][0][32][172.16.254.5]/17
      FC00:172:16:254::5          0    100    0 ?
Route Distinguisher: 172.16.254.4:102
* i [3][172.16.254.4:102][0][32][172.16.254.4]/17
      FC00:172:16:254::4          0    100    0 ?
* > i          FC00:172:16:254::4          0    100    0 ?
Route Distinguisher: 172.16.254.5:102
* i [3][172.16.254.5:102][0][32][172.16.254.5]/17
      FC00:172:16:254::5          0    100    0 ?
* > i          FC00:172:16:254::5          0    100    0 ?
Route Distinguisher: 1:1 (default for vrf green)
* > [5][1:1][0][24][10.1.101.0]/17
      0.0.0.0                      0    32768 ?
* > [5][1:1][0][24][10.1.102.0]/17
      0.0.0.0                      0    32768 ?
* > [5][1:1][0][64][FD00:10:1:101::]/29
      ::                          0    32768 ?
* > [5][1:1][0][64][FD00:10:1:102::]/29
      ::                          0    32768 ?

```

Leaf-01# show l2vpn evpn mac ip

IP Address	EVI	VLAN	MAC Address	Next Hop(s)
10.1.101.11	101	101	f4cf.e243.34c1	Gi1/0/4:101
FE80::F6CF:E2FF:FE43:34C1	101	101	f4cf.e243.34c1	Gi1/0/4:101
10.1.102.12	102	102	44d3.ca28.6cc2	FC00:172:16:254::4
10.1.102.13	102	102	44d3.ca28.6cc4	FC00:172:16:254::5
FE80::F6CF:E2FF:FE43:34C2	102	102	f4cf.e243.34c2	Gi1/0/5:102

Leaf-01# show l2route evpn mac ip

EVI	Etag	Prod	Mac Address	Host IP
			Next Hop(s)	

```

-----
101          0 L2VPN 10b3.d56a.8fc1                10.1.101.1
              V1101:0
101          0 L2VPN 10b3.d56a.8fc1                FD00:10:1:101::1
              V1101:0
101          0 BGP 7c21.0dbd.2741                10.1.101.1
V:10101 FC00:172:16:254::5
101          0 BGP 7c21.0dbd.2741                FD00:10:1:101::1
V:10101 FC00:172:16:254::5
101          0 BGP 7c21.0dbd.9541                10.1.101.1
V:10101 FC00:172:16:254::4
101          0 BGP 7c21.0dbd.9541                FD00:10:1:101::1
V:10101 FC00:172:16:254::4
101          0 L2VPN f4cf.e243.34c1                10.1.101.11
              Gi1/0/4:101
101          0 L2VPN f4cf.e243.34c1                FE80::F6CF:E2FF:FE43:34C1
              Gi1/0/4:101
102          0 L2VPN 10b3.d56a.8fcd                10.1.102.1
              V1102:0
102          0 L2VPN 10b3.d56a.8fcd                FD00:10:1:102::1
              V1102:0
102          0 BGP 44d3.ca28.6cc2                10.1.102.12
V:10102 FC00:172:16:254::4
102          0 BGP 44d3.ca28.6cc4                10.1.102.13
V:10102 FC00:172:16:254::5
102          0 BGP 7c21.0dbd.274d                10.1.102.1
V:10102 FC00:172:16:254::5
102          0 BGP 7c21.0dbd.274d                FD00:10:1:102::1
V:10102 FC00:172:16:254::5
102          0 BGP 7c21.0dbd.954d                10.1.102.1
V:10102 FC00:172:16:254::4
102          0 BGP 7c21.0dbd.954d                FD00:10:1:102::1
V:10102 FC00:172:16:254::4
102          0 L2VPN f4cf.e243.34c2                FE80::F6CF:E2FF:FE43:34C2
              Gi1/0/5:102

```

To return to the configuration example, click [Example: Configuring BGP EVPN VXLAN with IPv6 Underlay, on page 9](#).

## Outputs to Verify Configuration on VTEP 2

```

Leaf-02# show ipv6 route
IPv6 Routing Table - default - 20 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, la - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary
O FC00:172:16:13::/64 [110/2]
  via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
C FC00:172:16:14::/64 [0/0]
  via GigabitEthernet1/0/1, directly connected
L FC00:172:16:14::4/128 [0/0]
  via GigabitEthernet1/0/1, receive
O FC00:172:16:15::/64 [110/2]
  via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
O FC00:172:16:23::/64 [110/2]
  via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
C FC00:172:16:24::/64 [0/0]
  via GigabitEthernet1/0/2, directly connected

```

```

L   FC00:172:16:24::4/128 [0/0]
    via GigabitEthernet1/0/2, receive
O   FC00:172:16:25::/64 [110/2]
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
O   FC00:172:16:254::1/128 [110/1]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
O   FC00:172:16:254::2/128 [110/1]
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
O   FC00:172:16:254::3/128 [110/2]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
LC  FC00:172:16:254::4/128 [0/0]
    via Loopback1, receive
O   FC00:172:16:254::5/128 [110/2]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
O   FC00:172:16:255::1/128 [110/1]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
O   FC00:172:16:255::2/128 [110/1]
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
O   FC00:172:16:255::3/128 [110/2]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
LC  FC00:172:16:255::4/128 [0/0]
    via Loopback0, receive
O   FC00:172:16:255::5/128 [110/2]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
O   FC00:172:16:255::255/128 [110/1]
    via FE80::7E21:DFF:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2CD6, GigabitEthernet1/0/2
L   FF00::/8 [0/0]
    via Null0, receive

```

Leaf-02# **show ipv6 mroute**

Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,  
 C - Connected, L - Local, I - Received Source Specific Host Report,  
 P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,  
 J - Join SPT, Y - Joined MDT-data group,  
 y - Sending to MDT-data group  
 g - BGP signal originated, G - BGP Signal received,  
 N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,  
 q - BGP Src-Active originated, Q - BGP Src-Active received  
 E - Extranet

Timers: Uptime/Expires

Interface state: Interface, State

```

(*, FF0E:225::101), 00:05:12/never, RP FC00:172:16:255::255, flags: SCJ
  Incoming interface: GigabitEthernet1/0/2
  RPF nbr: FE80::7E21:DFF:FEBD:2CD6
  Immediate Outgoing interface list:
    Tunnell, Forward, 00:05:12/never

```

```

(FC00:172:16:254::3, FF0E:225::101), 00:03:23/00:01:40, flags: SJT
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::7E21:DFF:FE92:B2D6
  Inherited Outgoing interface list:
    Tunnell, Forward, 00:05:12/never

```

```

(FC00:172:16:254::4, FF0E:225::101), 00:04:40/00:02:41, flags: SFJT
  Incoming interface: Loopback1
  RPF nbr: FE80::7E21:DFF:FEBD:9500
  Immediate Outgoing interface list:

```



```
GigabitEthernet1/0/1, Forward, 00:04:40/00:02:50
Inherited Outgoing interface list:
  Tunnell, Forward, 00:05:12/never

(FC00:172:16:254::5, FF0E:225::101), 00:04:33/00:00:01, flags: SJT
Incoming interface: GigabitEthernet1/0/1
RPF nbr: FE80::7E21:DFE:FE92:B2D6
Inherited Outgoing interface list:
  Tunnell, Forward, 00:05:12/never
```

Leaf-02# **show nve peer**

'M' - MAC entry download flag 'A' - Adjacency download flag  
'4' - IPv4 flag '6' - IPv6 flag

Interface	VNI	Type	Peer-IP	RMAC/Num_RT	eVNI	state	flags	UP	time
nve1	50901	L3CP	FC00:172:16:254::3 \	10b3.d56a.8fc8	50901	UP	A/-/4	00:03:41	
nve1	50901	L3CP	FC00:172:16:254::5 \	7c21.0dbd.2748	50901	UP	A/-/4	00:03:41	
nve1	50901	L3CP	FC00:172:16:254::3 \	10b3.d56a.8fc8	50901	UP	A/M/6	00:03:41	
nve1	50901	L3CP	FC00:172:16:254::5 \	7c21.0dbd.2748	50901	UP	A/M/6	00:03:41	
nve1	10101	L2CP	FC00:172:16:254::3 \	6	10101	UP	N/A	00:03:41	
nve1	10101	L2CP	FC00:172:16:254::5 \	4	10101	UP	N/A	00:03:41	
nve1	10102	L2CP	FC00:172:16:254::3 \	6	10102	UP	N/A	00:03:41	
nve1	10102	L2CP	FC00:172:16:254::5 \	6	10102	UP	N/A	00:03:41	

Leaf-02# **show bgp l2vpn evpn summary**

```
BGP router identifier 172.16.255.4, local AS number 65001
BGP table version is 53, main routing table version 53
48 network entries using 18432 bytes of memory
74 path entries using 17168 bytes of memory
19/18 BGP path/bestpath attribute entries using 5624 bytes of memory
4 BGP rrinfo entries using 160 bytes of memory
15 BGP extended community entries using 784 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 42168 total bytes of memory
BGP activity 62/2 prefixes, 113/19 paths, scan interval 60 secs
48 networks peaked at 16:39:55 Oct 31 2022 UTC (00:01:46.413 ago)
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
FC00:172:16:255::1	4	65001	27	14	53	0	0	00:04:49	22
FC00:172:16:255::2	4	65001	27	14	53	0	0	00:04:39	22

Leaf-02# **show bgp l2vpn evpn**

```
BGP table version is 53, local router ID is 172.16.255.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
              x best-external, a additional-path, c RIB-compressed,
              t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

```
Network          Next Hop          Metric LocPrf Weight Path
Route Distinguisher: 172.16.254.3:101
```

```

* i [2][172.16.254.3:101][0][48][10B3D56A8FC1][32][10.1.101.1]/24
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:101][0][48][F4CFE24334C1][0][*]/20
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
*>i [2][172.16.254.3:101][0][48][F4CFE24334C1][32][10.1.101.11]/24
    FC00:172:16:254::3
    0 100 0 ?
* i FC00:172:16:254::3
    0 100 0 ?
*>i [2][172.16.254.3:101][0][48][F4CFE24334C1][128][FE80::F6CF:E2FF:FE43:34C1]/36
    FC00:172:16:254::3
    0 100 0 ?
* i FC00:172:16:254::3
    0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][32][10.1.102.1]/24
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][0][*]/20
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][128][FE80::F6CF:E2FF:FE43:34C2]/36
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
Route Distinguisher: 172.16.254.4:101
*>i [2][172.16.254.4:101][0][48][10B3D56A8FC1][32][10.1.101.1]/24
    FC00:172:16:254::3
    0 100 0 ?
*>i [2][172.16.254.4:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36
    FC00:172:16:254::3
    0 100 0 ?
*> [2][172.16.254.4:101][0][48][44D3CA286CC1][0][*]/20
    :: 32768 ?
*>i [2][172.16.254.4:101][0][48][44D3CA286CC3][0][*]/20
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:101][0][48][7C210DBD2741][32][10.1.101.1]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
    FC00:172:16:254::5
    0 100 0 ?

```

```

*> [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
      ::                               32768 ?
*> [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
      ::                               32768 ?
*>i [2] [172.16.254.4:101] [0] [48] [F4CFE24334C1] [0] [*]/20
      FC00:172:16:254::3
      0 100 0 ?
*>i [2] [172.16.254.4:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24
      FC00:172:16:254::3
      0 100 0 ?
*>i [2] [172.16.254.4:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36
      FC00:172:16:254::3
      0 100 0 ?
Route Distinguisher: 172.16.254.4:102
*>i [2] [172.16.254.4:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24
      FC00:172:16:254::3
      0 100 0 ?
*>i [2] [172.16.254.4:102] [0] [48] [10B3D56A8FCD] [128] [FD00:10:1:102::1]/36
      FC00:172:16:254::3
      0 100 0 ?
*> [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [0] [*]/20
      ::                               32768 ?
*> [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24
      ::                               32768 ?
*>i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC4] [0] [*]/20
      FC00:172:16:254::5
      0 100 0 ?
*>i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC4] [32] [10.1.102.13]/24
      FC00:172:16:254::5
      0 100 0 ?
*>i [2] [172.16.254.4:102] [0] [48] [7C210DBD274D] [32] [10.1.102.1]/24
      FC00:172:16:254::5
      0 100 0 ?
*>i [2] [172.16.254.4:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
      FC00:172:16:254::5
      0 100 0 ?
*> [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
      ::                               32768 ?
*> [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
      ::                               32768 ?
*>i [2] [172.16.254.4:102] [0] [48] [F4CFE24334C2] [0] [*]/20
      FC00:172:16:254::3
      0 100 0 ?
*>i [2] [172.16.254.4:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36
      FC00:172:16:254::3
      0 100 0 ?
Route Distinguisher: 172.16.254.5:101
* i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
      FC00:172:16:254::5
      0 100 0 ?
*>i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
      FC00:172:16:254::5
      0 100 0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
      FC00:172:16:254::5
      0 100 0 ?
*>i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
      FC00:172:16:254::5
      0 100 0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
      FC00:172:16:254::5
      0 100 0 ?
*>i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
      FC00:172:16:254::5
      0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [0] [*]/20

```

```

FC00:172:16:254::5
0 100 0 ?
*>i FC00:172:16:254::5
0 100 0 ?
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [32] [10.1.102.13]/24
FC00:172:16:254::5
0 100 0 ?
*>i FC00:172:16:254::5
0 100 0 ?
* i [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [32] [10.1.102.1]/24
FC00:172:16:254::5
0 100 0 ?
*>i FC00:172:16:254::5
0 100 0 ?
* i [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
FC00:172:16:254::5
0 100 0 ?
*>i FC00:172:16:254::5
0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [3] [172.16.254.3:102] [0] [32] [172.16.254.3]/17
FC00:172:16:254::3
0 100 0 ?
*>i FC00:172:16:254::3
0 100 0 ?
Route Distinguisher: 172.16.254.4:102
*>i [3] [172.16.254.4:102] [0] [32] [172.16.254.3]/17
FC00:172:16:254::3
0 100 0 ?
*> [3] [172.16.254.4:102] [0] [32] [172.16.254.4]/17
:: 32768 ?
*>i [3] [172.16.254.4:102] [0] [32] [172.16.254.5]/17
FC00:172:16:254::5
0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [3] [172.16.254.5:102] [0] [32] [172.16.254.5]/17
FC00:172:16:254::5
0 100 0 ?
*>i FC00:172:16:254::5
0 100 0 ?
Route Distinguisher: 1:1 (default for vrf green)
* i [5] [1:1] [0] [24] [10.1.101.0]/17
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::3
0 100 0 ?
*> 0.0.0.0
0 32768 ?
* i [5] [1:1] [0] [24] [10.1.102.0]/17
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::3
0 100 0 ?
*> 0.0.0.0
0 32768 ?
* i [5] [1:1] [0] [64] [FD00:10:1:101::]/29
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::3
0 100 0 ?
*> ::
0 32768 ?
* i [5] [1:1] [0] [64] [FD00:10:1:102::]/29
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::3
0 100 0 ?

```

```
*>                               ::                               0                               32768 ?
```

```
Leaf-02# show l2vpn evpn mac ip
```

IP Address	EVI	VLAN	MAC Address	Next Hop(s)
10.1.101.11	101	101	f4cf.e243.34c1	FC00:172:16:254::3
FE80::F6CF:E2FF:FE43:34C1	101	101	f4cf.e243.34c1	FC00:172:16:254::3
10.1.102.12	102	102	44d3.ca28.6cc2	Gi1/0/12:102
10.1.102.13	102	102	44d3.ca28.6cc4	FC00:172:16:254::5
FE80::F6CF:E2FF:FE43:34C2	102	102	f4cf.e243.34c2	FC00:172:16:254::3

```
Leaf-02# show l2route evpn mac ip
```

EVI	ETag	Prod	Mac Address	Next Hop(s)	Host IP
101	0	BGP	10b3.d56a.8fc1		10.1.101.1
		V:10101	FC00:172:16:254::3		
101	0	BGP	10b3.d56a.8fc1		FD00:10:1:101::1
		V:10101	FC00:172:16:254::3		
101	0	BGP	7c21.0dbd.2741		10.1.101.1
		V:10101	FC00:172:16:254::5		
101	0	BGP	7c21.0dbd.2741		FD00:10:1:101::1
		V:10101	FC00:172:16:254::5		
101	0	L2VPN	7c21.0dbd.9541		10.1.101.1
			V1101:0		
101	0	L2VPN	7c21.0dbd.9541		FD00:10:1:101::1
			V1101:0		
101	0	BGP	f4cf.e243.34c1		10.1.101.11
		V:10101	FC00:172:16:254::3		
101	0	BGP	f4cf.e243.34c1		FE80::F6CF:E2FF:FE43:34C1
		V:10101	FC00:172:16:254::3		
102	0	BGP	10b3.d56a.8fcd		10.1.102.1
		V:10102	FC00:172:16:254::3		
102	0	BGP	10b3.d56a.8fcd		FD00:10:1:102::1
		V:10102	FC00:172:16:254::3		
102	0	L2VPN	44d3.ca28.6cc2		10.1.102.12
			Gi1/0/12:102		
102	0	BGP	44d3.ca28.6cc4		10.1.102.13
		V:10102	FC00:172:16:254::5		
102	0	BGP	7c21.0dbd.274d		10.1.102.1
		V:10102	FC00:172:16:254::5		
102	0	BGP	7c21.0dbd.274d		FD00:10:1:102::1
		V:10102	FC00:172:16:254::5		
102	0	L2VPN	7c21.0dbd.954d		10.1.102.1
			V1102:0		
102	0	L2VPN	7c21.0dbd.954d		FD00:10:1:102::1
			V1102:0		
102	0	BGP	f4cf.e243.34c2		FE80::F6CF:E2FF:FE43:34C2
		V:10102	FC00:172:16:254::3		

To return to the configuration example, click [Example: Configuring BGP EVPN VXLAN with IPv6 Underlay, on page 9](#).

### Outputs to Verify Configuration on VTEP 3

```
Leaf-03# show ipv6 route
```

```
IPv6 Routing Table - default - 20 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
```

```

I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
NDR - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
ld - LISP dyn-eid, la - LISP away, le - LISP extranet-policy
lp - LISP publications, ls - LISP destinations-summary
O FC00:172:16:13::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
O FC00:172:16:14::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
C FC00:172:16:15::/64 [0/0]
  via GigabitEthernet1/0/1, directly connected
L FC00:172:16:15::5/128 [0/0]
  via GigabitEthernet1/0/1, receive
O FC00:172:16:23::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:24::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
C FC00:172:16:25::/64 [0/0]
  via GigabitEthernet1/0/2, directly connected
L FC00:172:16:25::5/128 [0/0]
  via GigabitEthernet1/0/2, receive
O FC00:172:16:254::1/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
O FC00:172:16:254::2/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:254::3/128 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:254::4/128 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
LC FC00:172:16:254::5/128 [0/0]
  via Loopback1, receive
O FC00:172:16:255::1/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
O FC00:172:16:255::2/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:255::3/128 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:255::4/128 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
LC FC00:172:16:255::5/128 [0/0]
  via Loopback0, receive
O FC00:172:16:255::255/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
L FF00::/8 [0/0]
  via Null0, receive

```

Leaf-03# **show ipv6 mroute**

Multicast Routing Table

```

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, Y - Joined MDT-data group,
       y - Sending to MDT-data group
       g - BGP signal originated, G - BGP Signal received,
       n - BGP Shared-Tree Prune received, N - BGP C-Mroute suppressed,
       q - BGP Src-Active originated, Q - BGP Src-Active received
       E - Extranet

```

```

Timers: Uptime/Expires
Interface state: Interface, State

(*, FF0E:225::101), 00:05:13/never, RP FC00:172:16:255::255, flags: SCJ
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::7E21:DFF:FE92:B2D8
  Immediate Outgoing interface list:
    Tunnell1, Forward, 00:05:13/never

(FC00:172:16:254::3, FF0E:225::101), 00:04:55/00:02:48, flags: SJT
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::7E21:DFF:FE92:B2D8
  Inherited Outgoing interface list:
    Tunnell1, Forward, 00:05:13/never

(FC00:172:16:254::4, FF0E:225::101), 00:04:48/00:02:24, flags: SJT
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::7E21:DFF:FE92:B2D8
  Inherited Outgoing interface list:
    Tunnell1, Forward, 00:05:13/never

(FC00:172:16:254::5, FF0E:225::101), 00:04:41/00:02:50, flags: SFT
  Incoming interface: Loopback1
  RPF nbr: FE80::7E21:DFF:FE92:B2D8
  Immediate Outgoing interface list:
    GigabitEthernet1/0/2, Forward, 00:04:41/00:02:50
  Inherited Outgoing interface list:
    Tunnell1, Forward, 00:05:13/never

```

Leaf-03# **show nve peer**

```

'M' - MAC entry download flag 'A' - Adjacency download flag
'4' - IPv4 flag '6' - IPv6 flag

```

Interface	VNI	Type	Peer-IP	RMAC/Num_RTs	eVNI	state	flags	UP	time
nve1	50901	L3CP	FC00:172:16:254::3 \	10b3.d56a.8fc8	50901	UP	A/-/4	00:03:49	
nve1	50901	L3CP	FC00:172:16:254::4 \	7c21.0dbd.9548	50901	UP	A/-/4	00:03:49	
nve1	50901	L3CP	FC00:172:16:254::3 \	10b3.d56a.8fc8	50901	UP	A/M/6	00:03:49	
nve1	50901	L3CP	FC00:172:16:254::4 \	7c21.0dbd.9548	50901	UP	A/M/6	00:03:49	
nve1	10101	L2CP	FC00:172:16:254::3 \	6	10101	UP	N/A	00:03:49	
nve1	10101	L2CP	FC00:172:16:254::4 \	4	10101	UP	N/A	00:03:49	
nve1	10102	L2CP	FC00:172:16:254::3 \	6	10102	UP	N/A	00:03:49	
nve1	10102	L2CP	FC00:172:16:254::4 \	6	10102	UP	N/A	00:03:49	

Leaf-03# **show bgp l2vpn evpn summary**

```

BGP router identifier 172.16.255.5, local AS number 65001
BGP table version is 53, main routing table version 53
48 network entries using 18432 bytes of memory
74 path entries using 17168 bytes of memory
19/18 BGP path/bestpath attribute entries using 5624 bytes of memory
4 BGP rrinfo entries using 160 bytes of memory
15 BGP extended community entries using 784 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 42168 total bytes of memory
BGP activity 60/0 prefixes, 100/6 paths, scan interval 60 secs

```

## Verifying BGP EVPN VXLAN with IPv6 Underlay Configuration

48 networks peaked at 16:39:55 Oct 31 2022 UTC (00:01:54.313 ago)

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
FC00:172:16:255::1	4	65001	28	13	53	0	0	00:04:56	22
FC00:172:16:255::2	4	65001	28	14	53	0	0	00:04:49	22

Leaf-03#show bgp l2vpn evpn

BGP table version is 53, local router ID is 172.16.255.5

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,  
t secondary path, L long-lived-stale,

Origin codes: i - IGP, e - EGP, ? - incomplete

RPKI validation codes: V valid, I invalid, N Not found

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				
		0	100	0	?
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [128] [FD00:10:1:101::1]/36	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				
		0	100	0	?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [0] [*]/20	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				
		0	100	0	?
*>i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24	FC00:172:16:254::3				
		0	100	0	?
* i	FC00:172:16:254::3				
		0	100	0	?
*>i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36	FC00:172:16:254::3				
		0	100	0	?
* i	FC00:172:16:254::3				
		0	100	0	?
Route Distinguisher: 172.16.254.3:102					
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				
		0	100	0	?
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [128] [FD00:10:1:102::1]/36	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				
		0	100	0	?
* i [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [0] [*]/20	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				
		0	100	0	?
* i [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36	FC00:172:16:254::3				
		0	100	0	?
*>i	FC00:172:16:254::3				



```

                                0    100    0 ?
Route Distinguisher: 172.16.254.4:101
* i [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [0] [*]/20
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
Route Distinguisher: 172.16.254.4:102
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [0] [*]/20
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
* i [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
    FC00:172:16:254::4
                                0    100    0 ?
*>i          FC00:172:16:254::4
                                0    100    0 ?
Route Distinguisher: 172.16.254.5:101
*>i [2] [172.16.254.5:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24
    FC00:172:16:254::3
                                0    100    0 ?
*>i [2] [172.16.254.5:101] [0] [48] [10B3D56A8FC1] [128] [FD00:10:1:101::1]/36
    FC00:172:16:254::3
                                0    100    0 ?
*>i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC1] [0] [*]/20
    FC00:172:16:254::4
                                0    100    0 ?
*> [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
    ::                               32768 ?
*> [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
    ::                               32768 ?
*> [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
    ::                               32768 ?
*>i [2] [172.16.254.5:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
    FC00:172:16:254::4
                                0    100    0 ?
*>i [2] [172.16.254.5:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
    FC00:172:16:254::4
                                0    100    0 ?
*>i [2] [172.16.254.5:101] [0] [48] [F4CFE24334C1] [0] [*]/20
    FC00:172:16:254::3
                                0    100    0 ?
*>i [2] [172.16.254.5:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24

```

```

FC00:172:16:254::3
0 100 0 ?
*>i [2] [172.16.254.5:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36
FC00:172:16:254::3
0 100 0 ?
Route Distinguisher: 172.16.254.5:102
*>i [2] [172.16.254.5:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24
FC00:172:16:254::3
0 100 0 ?
*>i [2] [172.16.254.5:102] [0] [48] [10B3D56A8FCD] [128] [FD00:10:1:102::1]/36
FC00:172:16:254::3
0 100 0 ?
*>i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC2] [0] [*]/20
FC00:172:16:254::4
0 100 0 ?
*>i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24
FC00:172:16:254::4
0 100 0 ?
*> [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [0] [*]/20
:: 32768 ?
*> [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [32] [10.1.102.13]/24
:: 32768 ?
*> [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [32] [10.1.102.1]/24
:: 32768 ?
*> [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
:: 32768 ?
*>i [2] [172.16.254.5:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
FC00:172:16:254::4
0 100 0 ?
*>i [2] [172.16.254.5:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
FC00:172:16:254::4
0 100 0 ?
*>i [2] [172.16.254.5:102] [0] [48] [F4CFE24334C2] [0] [*]/20
FC00:172:16:254::3
0 100 0 ?
*>i [2] [172.16.254.5:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36
FC00:172:16:254::3
0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [3] [172.16.254.3:102] [0] [32] [172.16.254.3]/17
FC00:172:16:254::3
0 100 0 ?
*>i FC00:172:16:254::3
0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [3] [172.16.254.4:102] [0] [32] [172.16.254.4]/17
FC00:172:16:254::4
0 100 0 ?
*>i FC00:172:16:254::4
0 100 0 ?
Route Distinguisher: 172.16.254.5:102
*>i [3] [172.16.254.5:102] [0] [32] [172.16.254.3]/17
FC00:172:16:254::3
0 100 0 ?
*>i [3] [172.16.254.5:102] [0] [32] [172.16.254.4]/17
FC00:172:16:254::4
0 100 0 ?
*> [3] [172.16.254.5:102] [0] [32] [172.16.254.5]/17
:: 32768 ?
Route Distinguisher: 1:1 (default for vrf green)
* i [5] [1:1] [0] [24] [10.1.101.0]/17
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::3

```

```

* >                                0      100      0 ?
* i [5] [1:1] [0] [24] [10.1.102.0]/17      0      32768 ?
      FC00:172:16:254::3
* i                                0      100      0 ?
      FC00:172:16:254::3
* >                                0      100      0 ?
* i [5] [1:1] [0] [64] [FD00:10:1:101::]/29  0      32768 ?
      FC00:172:16:254::3
* i                                0      100      0 ?
      FC00:172:16:254::3
* >                                0      100      0 ?
* i [5] [1:1] [0] [64] [FD00:10:1:102::]/29  0      32768 ?
      FC00:172:16:254::3
* i                                0      100      0 ?
      FC00:172:16:254::3
* >                                0      100      0 ?
      ::

```

Leaf-03# show l2vpn evpn mac ip

IP Address	EVI	VLAN	MAC Address	Next Hop(s)
10.1.101.11	101	101	f4cf.e243.34c1	FC00:172:16:254::3
FE80::F6CF:E2FF:FE43:34C1	101	101	f4cf.e243.34c1	FC00:172:16:254::3
10.1.102.12	102	102	44d3.ca28.6cc2	FC00:172:16:254::4
10.1.102.13	102	102	44d3.ca28.6cc4	Gi1/0/17:102
FE80::F6CF:E2FF:FE43:34C2	102	102	f4cf.e243.34c2	FC00:172:16:254::3

Leaf-03# show l2route evpn mac ip

EVI	ETag	Prod	Mac Address	Next Hop(s)	Host IP
101	0	BGP	10b3.d56a.8fc1		10.1.101.1
	V:10101		FC00:172:16:254::3		
101	0	BGP	10b3.d56a.8fc1		FD00:10:1:101::1
	V:10101		FC00:172:16:254::3		
101	0	L2VPN	7c21.0dbd.2741		10.1.101.1
			Vl101:0		
101	0	L2VPN	7c21.0dbd.2741		FD00:10:1:101::1
			Vl101:0		
101	0	BGP	7c21.0dbd.9541		10.1.101.1
	V:10101		FC00:172:16:254::4		
101	0	BGP	7c21.0dbd.9541		FD00:10:1:101::1
	V:10101		FC00:172:16:254::4		
101	0	BGP	f4cf.e243.34c1		10.1.101.11
	V:10101		FC00:172:16:254::3		
101	0	BGP	f4cf.e243.34c1		FE80::F6CF:E2FF:FE43:34C1
	V:10101		FC00:172:16:254::3		
102	0	BGP	10b3.d56a.8fcd		10.1.102.1
	V:10102		FC00:172:16:254::3		
102	0	BGP	10b3.d56a.8fcd		FD00:10:1:102::1
	V:10102		FC00:172:16:254::3		
102	0	BGP	44d3.ca28.6cc2		10.1.102.12
	V:10102		FC00:172:16:254::4		
102	0	L2VPN	44d3.ca28.6cc4		10.1.102.13
			Gi1/0/17:102		
102	0	L2VPN	7c21.0dbd.274d		10.1.102.1
			Vl102:0		

```

102          0 L2VPN 7c21.0dbd.274d          FD00:10:1:102::1
              V1102:0
102          0 BGP 7c21.0dbd.954d          10.1.102.1
              V:10102 FC00:172:16:254::4
102          0 BGP 7c21.0dbd.954d          FD00:10:1:102::1
              V:10102 FC00:172:16:254::4
102          0 BGP f4cf.e243.34c2          FE80::F6CF:E2FF:FE43:34C2
              V:10102 FC00:172:16:254::3

```

To return to the configuration example, click [Example: Configuring BGP EVPN VXLAN with IPv6 Underlay, on page 9](#).

### Outputs to Verify Configuration on Spine 1

```

Spine-01# show ipv6 route
IPv6 Routing Table - default - 21 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, la - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary
C   FC00:172:16:13::/64 [0/0]
    via GigabitEthernet1/0/1, directly connected
L   FC00:172:16:13::1/128 [0/0]
    via GigabitEthernet1/0/1, receive
C   FC00:172:16:14::/64 [0/0]
    via GigabitEthernet1/0/2, directly connected
L   FC00:172:16:14::1/128 [0/0]
    via GigabitEthernet1/0/2, receive
C   FC00:172:16:15::/64 [0/0]
    via GigabitEthernet1/0/3, directly connected
L   FC00:172:16:15::1/128 [0/0]
    via GigabitEthernet1/0/3, receive
O   FC00:172:16:23::/64 [110/2]
    via FE80::12B3:D5FF:FE6A:8FE4, GigabitEthernet1/0/1
O   FC00:172:16:24::/64 [110/2]
    via FE80::7E21:DFF:FEBD:9564, GigabitEthernet1/0/2
O   FC00:172:16:25::/64 [110/2]
    via FE80::7E21:DFF:FEBD:2764, GigabitEthernet1/0/3
LC  FC00:172:16:254::1/128 [0/0]
    via Loopback1, receive
O   FC00:172:16:254::2/128 [110/2]
    via FE80::7E21:DFF:FEBD:9564, GigabitEthernet1/0/2
    via FE80::12B3:D5FF:FE6A:8FE4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2764, GigabitEthernet1/0/3
O   FC00:172:16:254::3/128 [110/1]
    via FE80::12B3:D5FF:FE6A:8FE4, GigabitEthernet1/0/1
O   FC00:172:16:254::4/128 [110/1]
    via FE80::7E21:DFF:FEBD:9564, GigabitEthernet1/0/2
O   FC00:172:16:254::5/128 [110/1]
    via FE80::7E21:DFF:FEBD:2764, GigabitEthernet1/0/3
LC  FC00:172:16:255::1/128 [0/0]
    via Loopback0, receive
O   FC00:172:16:255::2/128 [110/2]
    via FE80::7E21:DFF:FEBD:9564, GigabitEthernet1/0/2
    via FE80::12B3:D5FF:FE6A:8FE4, GigabitEthernet1/0/1
    via FE80::7E21:DFF:FEBD:2764, GigabitEthernet1/0/3
O   FC00:172:16:255::3/128 [110/1]

```

```

    via FE80::12B3:D5FF:FE6A:8FE4, GigabitEthernet1/0/1
O  FC00:172:16:255::4/128 [110/1]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
O  FC00:172:16:255::5/128 [110/1]
    via FE80::7E21:DFE:FEBD:2764, GigabitEthernet1/0/3
LC FC00:172:16:255::255/128 [0/0]
    via Loopback2, receive
L  FF00::/8 [0/0]
    via Null0, receive

```

Spine-01# **show ipv6 mroute**

Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,  
 C - Connected, L - Local, I - Received Source Specific Host Report,  
 P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,  
 J - Join SPT, Y - Joined MDT-data group,  
 y - Sending to MDT-data group  
 g - BGP signal originated, G - BGP Signal received,  
 N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,  
 q - BGP Src-Active originated, Q - BGP Src-Active received  
 E - Extranet

Timers: Uptime/Expires

Interface state: Interface, State

```

(*, FF0E:225::101), 00:05:14/00:03:17, RP FC00:172:16:255::255, flags: S
  Incoming interface: Tunnel2
  RPF nbr: FC00:172:16:255::255
  Immediate outgoing interface list:
    GigabitEthernet1/0/3, Forward, 00:05:14/00:03:17

(FC00:172:16:254::3, FF0E:225::101), 00:05:14/00:01:13, flags: ST
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::12B3:D5FF:FE6A:8FE4
  Immediate outgoing interface list:
    GigabitEthernet1/0/3, Forward, 00:05:14/00:03:17
    GigabitEthernet1/0/2, Forward, 00:03:49/00:02:40

(FC00:172:16:254::4, FF0E:225::101), 00:05:06/00:02:04, flags: ST
  Incoming interface: GigabitEthernet1/0/2
  RPF nbr: FE80::7E21:DFE:FEBD:9564
  Immediate outgoing interface list:
    GigabitEthernet1/0/3, Forward, 00:05:06/00:03:27
    GigabitEthernet1/0/1, Forward, 00:05:06/00:03:23

(FC00:172:16:254::5, FF0E:225::101), 00:04:59/00:03:17, RP FC00:172:16:255::255, flags: SPR
  Incoming interface: Tunnel2
  RPF nbr: FC00:172:16:255::255
  Immediate outgoing interface list:
    GigabitEthernet1/0/3, Null, 00:04:59/00:03:17

```

Spine-01# **show bgp l2vpn evpn summary**

```

BGP router identifier 172.16.255.1, local AS number 65001
BGP table version is 31, main routing table version 31
30 network entries using 11520 bytes of memory
68 path entries using 15776 bytes of memory
18/16 BGP path/bestpath attribute entries using 5328 bytes of memory
3 BGP rrinfo entries using 120 bytes of memory
15 BGP extended community entries using 800 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 33544 total bytes of memory
BGP activity 30/0 prefixes, 68/0 paths, scan interval 60 secs

```

30 networks peaked at 16:39:55 Oct 31 2022 UTC (00:02:12.681 ago)

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
FC00:172:16:255::2	4	65001	28	28	31	0	0	00:05:03	30
FC00:172:16:255::3	4	65001	16	28	31	0	0	00:05:18	14
FC00:172:16:255::4	4	65001	14	28	31	0	0	00:05:15	12
FC00:172:16:255::5	4	65001	14	28	31	0	0	00:05:14	12

Spine-01# show bgp l2vpn evpn

BGP table version is 31, local router ID is 172.16.255.1

Status codes: s suppressed, d damped, h history, \* valid, > best, i - internal,  
r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,  
x best-external, a additional-path, c RIB-compressed,  
t secondary path, L long-lived-stale,

Origin codes: i - IGP, e - EGP, ? - incomplete

RPKI validation codes: V valid, I invalid, N Not found

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [128] [FD00:10:1:101::1]/36	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [0] [*]/20	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
Route Distinguisher: 172.16.254.3:102					
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [128] [FD00:10:1:102::1]/36	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [0] [*]/20	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?

```

                                0    100    0 ?
* i  [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36
      FC00:172:16:254::3
* > i                                0    100    0 ?
      FC00:172:16:254::3
                                0    100    0 ?
Route Distinguisher: 172.16.254.4:101
* i  [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [0] [*]/20
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
* i  [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
* i  [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
Route Distinguisher: 172.16.254.4:102
* i  [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [0] [*]/20
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
* i  [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
* i  [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
* i  [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
      FC00:172:16:254::4
* > i                                0    100    0 ?
      FC00:172:16:254::4
                                0    100    0 ?
Route Distinguisher: 172.16.254.5:101
* i  [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
      FC00:172:16:254::5
* > i                                0    100    0 ?
      FC00:172:16:254::5
                                0    100    0 ?
* i  [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
      FC00:172:16:254::5
* > i                                0    100    0 ?
      FC00:172:16:254::5
                                0    100    0 ?
* i  [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
      FC00:172:16:254::5
* > i                                0    100    0 ?
      FC00:172:16:254::5
                                0    100    0 ?
Route Distinguisher: 172.16.254.5:102
* i  [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [0] [*]/20
      FC00:172:16:254::5
* > i                                0    100    0 ?
      FC00:172:16:254::5

```

```

0 100 0 ?
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
FC00:172:16:254::5
*>i FC00:172:16:254::5 0 100 0 ?
0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][32][10.1.102.1]/24
FC00:172:16:254::5
*>i FC00:172:16:254::5 0 100 0 ?
0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
FC00:172:16:254::5
*>i FC00:172:16:254::5 0 100 0 ?
0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [3][172.16.254.3:102][0][32][172.16.254.3]/17
FC00:172:16:254::3
*>i FC00:172:16:254::3 0 100 0 ?
0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [3][172.16.254.4:102][0][32][172.16.254.4]/17
FC00:172:16:254::4
*>i FC00:172:16:254::4 0 100 0 ?
0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [3][172.16.254.5:102][0][32][172.16.254.5]/17
FC00:172:16:254::5
*>i FC00:172:16:254::5 0 100 0 ?
0 100 0 ?
Route Distinguisher: 1:1
* i [5][1:1][0][24][10.1.101.0]/17
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::4 0 100 0 ?
*>i FC00:172:16:254::3 0 100 0 ?
* i FC00:172:16:254::5 0 100 0 ?
* i [5][1:1][0][24][10.1.102.0]/17
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::4 0 100 0 ?
*>i FC00:172:16:254::3 0 100 0 ?
* i FC00:172:16:254::5 0 100 0 ?
* i [5][1:1][0][64][FD00:10:1:101::]/29
FC00:172:16:254::3
0 100 0 ?
* i FC00:172:16:254::4 0 100 0 ?
*>i FC00:172:16:254::3 0 100 0 ?
* i FC00:172:16:254::5 0 100 0 ?
* i [5][1:1][0][64][FD00:10:1:102::]/29
FC00:172:16:254::3

```



```

* i          FC00:172:16:254::4          0    100    0 ?
*>i         FC00:172:16:254::3          0    100    0 ?
* i          FC00:172:16:254::5          0    100    0 ?

```

```

Spine-01# show ipv6 pim anycast-rp
Anycast RP Peers For FC00:172:16:255::255    Last Register/Register-Stop received
FC00:172:16:254::2    00:05:25/00:05:25

```

To return to the configuration example, click [Example: Configuring BGP EVPN VXLAN with IPv6 Underlay, on page 9](#).

## Outputs to Verify Configuration on Spine 2

```

Spine-02# show ipv6 route
IPv6 Routing Table - default - 21 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination
       NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, lA - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary
O  FC00:172:16:13::/64 [110/2]
   via FE80::12B3:D5FF:FE6A:8FD6, GigabitEthernet1/0/1
O  FC00:172:16:14::/64 [110/2]
   via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
O  FC00:172:16:15::/64 [110/2]
   via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
C  FC00:172:16:23::/64 [0/0]
   via GigabitEthernet1/0/1, directly connected
L  FC00:172:16:23::2/128 [0/0]
   via GigabitEthernet1/0/1, receive
C  FC00:172:16:24::/64 [0/0]
   via GigabitEthernet1/0/2, directly connected
L  FC00:172:16:24::2/128 [0/0]
   via GigabitEthernet1/0/2, receive
C  FC00:172:16:25::/64 [0/0]
   via GigabitEthernet1/0/3, directly connected
L  FC00:172:16:25::2/128 [0/0]
   via GigabitEthernet1/0/3, receive
O  FC00:172:16:254::1/128 [110/2]
   via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
   via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
   via FE80::12B3:D5FF:FE6A:8FD6, GigabitEthernet1/0/1
LC FC00:172:16:254::2/128 [0/0]
   via Loopback1, receive
O  FC00:172:16:254::3/128 [110/1]
   via FE80::12B3:D5FF:FE6A:8FD6, GigabitEthernet1/0/1
O  FC00:172:16:254::4/128 [110/1]
   via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
O  FC00:172:16:254::5/128 [110/1]
   via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
O  FC00:172:16:255::1/128 [110/2]
   via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
   via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3

```

```

    via FE80::12B3:D5FF:FE6A:8FD6, GigabitEthernet1/0/1
LC FC00:172:16:255::2/128 [0/0]
    via Loopback0, receive
O FC00:172:16:255::3/128 [110/1]
    via FE80::12B3:D5FF:FE6A:8FD6, GigabitEthernet1/0/1
O FC00:172:16:255::4/128 [110/1]
    via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
O FC00:172:16:255::5/128 [110/1]
    via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
LC FC00:172:16:255::255/128 [0/0]
    via Loopback2, receive
L FF00::/8 [0/0]
    via Null0, receive

```

Spine-02# **show ipv6 mroute**

Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,  
 C - Connected, L - Local, I - Received Source Specific Host Report,  
 P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,  
 J - Join SPT, Y - Joined MDT-data group,  
 y - Sending to MDT-data group  
 g - BGP signal originated, G - BGP Signal received,  
 N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,  
 q - BGP Src-Active originated, Q - BGP Src-Active received  
 E - Extranet

Timers: Uptime/Expires

Interface state: Interface, State

(\*, FF0E:225::101), 00:05:17/00:03:21, RP FC00:172:16:255::255, flags: S

Incoming interface: Tunnel2

RPF nbr: FC00:172:16:255::255

Immediate Outgoing interface list:

GigabitEthernet1/0/1, Forward, 00:05:17/00:03:14

GigabitEthernet1/0/2, Forward, 00:05:15/00:03:21

(FC00:172:16:254::3, FF0E:225::101), 00:05:17/00:02:55, RP FC00:172:16:255::255, flags: SPR

Incoming interface: Tunnel2

RPF nbr: FC00:172:16:255::255

Immediate Outgoing interface list:

GigabitEthernet1/0/1, Null, 00:05:17/00:03:14

GigabitEthernet1/0/2, Null, 00:02:24/00:03:21

(FC00:172:16:254::3, FF0E:225::101), 00:04:27/00:02:55, flags: S

Incoming interface: GigabitEthernet1/0/1

RPF nbr: FE80::12B3:D5FF:FE6A:8FD6

Inherited Outgoing interface list:

GigabitEthernet1/0/2, Forward, 00:05:15/00:03:21

(FC00:172:16:254::4, FF0E:225::101), 00:05:15/00:02:50, RP FC00:172:16:255::255, flags: SPR

Incoming interface: Tunnel2

RPF nbr: FC00:172:16:255::255

Immediate Outgoing interface list:

GigabitEthernet1/0/2, Null, 00:05:15/00:03:21

GigabitEthernet1/0/1, Null, 00:05:15/00:03:14

(FC00:172:16:254::4, FF0E:225::101), 00:05:15/00:02:50, flags: S

Incoming interface: GigabitEthernet1/0/2

RPF nbr: FE80::7E21:DFE:FEBD:9556

Inherited Outgoing interface list:

GigabitEthernet1/0/1, Forward, 00:05:17/00:03:14

```
(FC00:172:16:254::5, FF0E:225::101), 00:05:08/00:02:01, flags: ST
Incoming interface: GigabitEthernet1/0/3
RPF nbr: FE80::7E21:DFF:FEBD:2756
Inherited Outgoing interface list:
GigabitEthernet1/0/1, Forward, 00:05:17/00:03:14
GigabitEthernet1/0/2, Forward, 00:05:15/00:03:21
```

Spine-02# **show bgp l2vpn evpn summary**

```
BGP router identifier 172.16.255.2, local AS number 65001
BGP table version is 31, main routing table version 31
30 network entries using 11520 bytes of memory
68 path entries using 15776 bytes of memory
18/16 BGP path/bestpath attribute entries using 5328 bytes of memory
3 BGP rrinfo entries using 120 bytes of memory
15 BGP extended community entries using 800 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 33544 total bytes of memory
BGP activity 30/0 prefixes, 68/0 paths, scan interval 60 secs
30 networks peaked at 16:39:55 Oct 31 2022 UTC (00:02:21.575 ago)
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
FC00:172:16:255::1	4	65001	28	28	31	0	0	00:05:12	30
FC00:172:16:255::3	4	65001	16	28	31	0	0	00:05:16	14
FC00:172:16:255::4	4	65001	14	28	31	0	0	00:05:15	12
FC00:172:16:255::5	4	65001	14	28	31	0	0	00:05:16	12

Spine-02# **show bgp l2vpn evpn**

```
BGP table version is 31, local router ID is 172.16.255.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
               t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [128] [FD00:10:1:101::1]/36	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [0] [*]/20	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24	FC00:172:16:254::3		0	100	0 ?
*>i	FC00:172:16:254::3		0	100	0 ?

```

* i [2][172.16.254.3:101][0][48][F4CFE24334C1][128][FE80::F6CF:E2FF:FE43:34C1]/36
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][32][10.1.102.1]/24
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][0][*]/20
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][128][FE80::F6CF:E2FF:FE43:34C2]/36
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
Route Distinguisher: 172.16.254.4:101
* i [2][172.16.254.4:101][0][48][44D3CA286CC1][0][*]/20
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
* i [2][172.16.254.4:101][0][48][7C210DBD9541][32][10.1.101.1]/24
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
* i [2][172.16.254.4:101][0][48][7C210DBD9541][128][FD00:10:1:101::1]/36
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][0][*]/20
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][32][10.1.102.1]/24
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][128][FD00:10:1:102::1]/36
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
Route Distinguisher: 172.16.254.5:101

```

```

* i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [0] [*]/20
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [32] [10.1.102.13]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
* i [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [32] [10.1.102.1]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
* i [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [3] [172.16.254.3:102] [0] [32] [172.16.254.3]/17
    FC00:172:16:254::3
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [3] [172.16.254.4:102] [0] [32] [172.16.254.4]/17
    FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::4
    0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [3] [172.16.254.5:102] [0] [32] [172.16.254.5]/17
    FC00:172:16:254::5
    0 100 0 ?
*>i FC00:172:16:254::5
    0 100 0 ?
Route Distinguisher: 1:1
* i [5] [1:1] [0] [24] [10.1.101.0]/17
    FC00:172:16:254::3
    0 100 0 ?
* i FC00:172:16:254::4
    0 100 0 ?
*>i FC00:172:16:254::3
    0 100 0 ?
* i FC00:172:16:254::5
    0 100 0 ?

```

```

* i [5][1:1][0][24][10.1.102.0]/17
    FC00:172:16:254::3          0 100 0 ?
* i          FC00:172:16:254::4          0 100 0 ?
*>i          FC00:172:16:254::3          0 100 0 ?
* i          FC00:172:16:254::5          0 100 0 ?
* i [5][1:1][0][64][FD00:10:1:101:]/29
    FC00:172:16:254::3          0 100 0 ?
* i          FC00:172:16:254::4          0 100 0 ?
*>i          FC00:172:16:254::3          0 100 0 ?
* i          FC00:172:16:254::5          0 100 0 ?
* i [5][1:1][0][64][FD00:10:1:102:]/29
    FC00:172:16:254::3          0 100 0 ?
* i          FC00:172:16:254::4          0 100 0 ?
*>i          FC00:172:16:254::3          0 100 0 ?
* i          FC00:172:16:254::5          0 100 0 ?

```

```

Spine-02# show ipv6 pim anycast-rp
Anycast RP Peers For FC00:172:16:255::255 Last Register/Register-Stop received
FC00:172:16:254::1 00:05:27/00:05:27

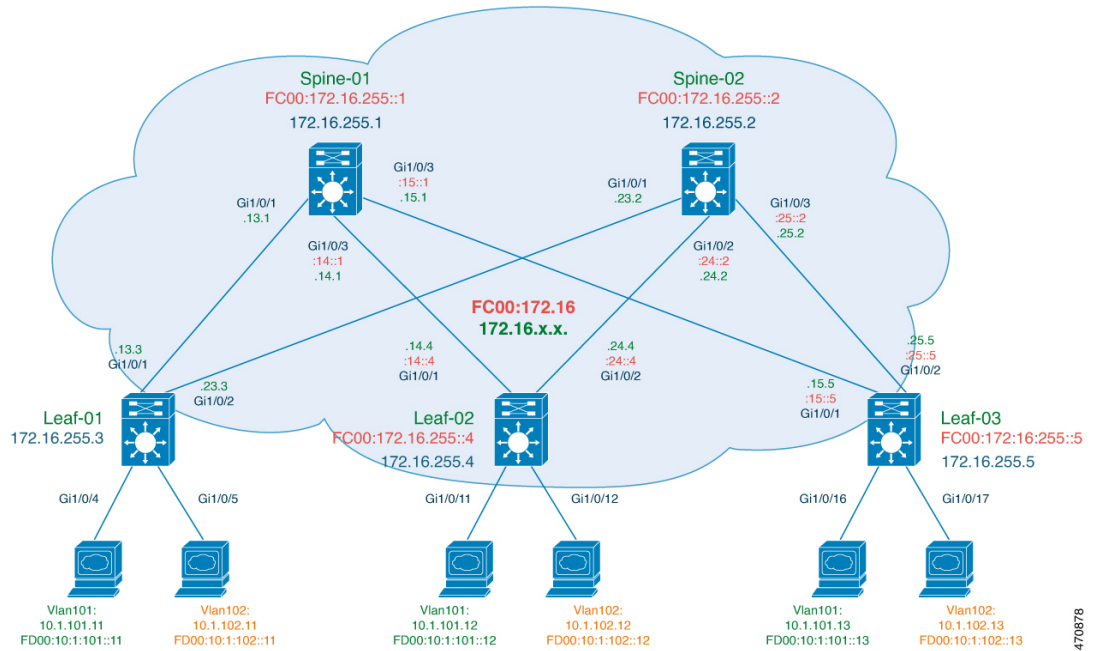
```

To return to the configuration example, click [Example: Configuring BGP EVPN VXLAN with IPv6 Underlay, on page 9](#).

## Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay

This example shows how to configure a BGP EVPN VXLAN fabric with a dual stack (both IPv4 and IPv6) underlay. The following tables provide sample configuration of the VTEPs (Leaf-01, Leaf-02, Leaf-03) and the Spine nodes (Spine-01, Spine-02) in the topology [Figure 4: BGP EVPN VXLAN with a Dual Stack Underlay](#).

Figure 4: BGP EVPN VXLAN with a Dual Stack Underlay



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**Configure the VTEPs**

<b>VTEP 1</b>	<b>VTEP 2</b>	<b>VTEP 3</b>
---------------	---------------	---------------



VTEP 1	VTEP 2	VTEP 3
<pre>Leaf-01# show running-config hostname Leaf-01 ! vrf definition green rd 1:1 ! address-family ipv4 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! address-family ipv6 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! ip routing ! ip multicast-routing ! ipv6 unicast-routing ! l2vpn evpn replication-type static router-id Loopback1 default-gateway advertise ! l2vpn evpn instance 101 vlan-based encapsulation vxlan ! l2vpn evpn instance 102 vlan-based encapsulation vxlan replication-type ingress ! system mtu 9198 ! vlan configuration 101 member evpn-instance 101 vni 10101 vlan configuration 102 member evpn-instance 102 vni 10102 vlan configuration 901 member vni 50901 ! interface Loopback0 ip address 172.16.255.3 255.255.255.255 ip ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.3</pre>	<pre>Leaf-02# show running-config hostname Leaf-02 ! vrf definition green rd 1:1 ! address-family ipv4 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! address-family ipv6 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! ip routing ! ip multicast-routing ! ipv6 unicast-routing ipv6 multicast-routing ! l2vpn evpn replication-type static router-id Loopback1 default-gateway advertise ! l2vpn evpn instance 101 vlan-based encapsulation vxlan ! l2vpn evpn instance 102 vlan-based encapsulation vxlan replication-type ingress ! system mtu 9198 ! vlan configuration 101 member evpn-instance 101 vni 10101 vlan configuration 102 member evpn-instance 102 vni 10102 vlan configuration 901 member vni 50901 ! interface Loopback0 ip address 172.16.255.4 255.255.255.255 ip ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.3 ipv6 address</pre>	<pre>Leaf-03# show running-config hostname Leaf-03 ! vrf definition green rd 1:1 ! address-family ipv4 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! address-family ipv6 route-target export 1:1 route-target import 1:1 route-target export 1:1 stitching route-target import 1:1 stitching exit-address-family ! ip routing ! ip multicast-routing ! ipv6 unicast-routing ipv6 multicast-routing ! l2vpn evpn replication-type static router-id Loopback1 default-gateway advertise ! l2vpn evpn instance 101 vlan-based encapsulation vxlan ! l2vpn evpn instance 102 vlan-based encapsulation vxlan replication-type ingress ! system mtu 9198 ! vlan configuration 101 member evpn-instance 101 vni 10101 vlan configuration 102 member evpn-instance 102 vni 10102 vlan configuration 901 member vni 50901 ! interface Loopback0 ip address 172.16.255.5 255.255.255.255 ip ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.3 ipv6 address</pre>

## Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay

VTEP 1	VTEP 2	VTEP 3
<pre> 255.255.255.255 ip pim sparse-mode ip ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ip address 172.16.13.3 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ! interface GigabitEthernet1/0/2 no switchport ip address 172.16.23.3 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ! interface GigabitEthernet1/0/4 switchport access vlan 101 switchport mode access ! interface GigabitEthernet1/0/5 switchport access vlan 102 switchport mode access ! interface Vlan101 vrf forwarding green ip address 10.1.101.1 255.255.255.0 ipv6 address FD00:10:1:101::1/64 ipv6 enable ! interface Vlan102 vrf forwarding green ip address 10.1.102.1 255.255.255.0 ipv6 address FD00:10:1:102::1/64 ipv6 enable ! interface Vlan901 vrf forwarding green ip unnumbered Loopback1 ipv6 enable no autostate ! interface nve1 no ip address source-interface Loopback1 host-reachability protocol bgp member vni 10101 mcast-group 225.0.0.101 member vni 10102 ingress-replication member vni 50901 vrf green ! router ospf 1 router-id 172.16.255.3 </pre>	<pre> FC00:172:16:255::4/128 ipv6 ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.4 255.255.255.255 ip pim sparse-mode ip ospf 1 area 0 ipv6 address FC00:172:16:254::4/128 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ip address 172.16.14.4 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:14::4/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ip address 172.16.24.4 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:24::4/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/11 switchport access vlan 101 switchport mode access ! interface GigabitEthernet1/0/12 switchport access vlan 102 switchport mode access ! interface Vlan101 vrf forwarding green ip address 10.1.101.1 255.255.255.0 ipv6 address FD00:10:1:101::1/64 ipv6 enable ! interface Vlan102 vrf forwarding green ip address 10.1.102.1 255.255.255.0 </pre>	<pre> FC00:172:16:255::5/128 ipv6 ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.5 255.255.255.255 ip pim sparse-mode ip ospf 1 area 0 ipv6 address FC00:172:16:254::5/128 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ip address 172.16.15.5 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:15::5/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ip address 172.16.25.5 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:25::5/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/16 switchport access vlan 101 switchport mode access ! interface GigabitEthernet1/0/17 switchport access vlan 102 switchport mode access ! interface Vlan101 vrf forwarding green ip address 10.1.101.1 255.255.255.0 ipv6 address FD00:10:1:101::1/64 ipv6 enable ! interface Vlan102 vrf forwarding green ip address 10.1.102.1 255.255.255.0 </pre>

VTEP 1	VTEP 2	VTEP 3
<pre> ! router bgp 65001 bgp router-id 172.16.255.3 bgp log-neighbor-changes neighbor 172.16.255.1 remote-as 65001 neighbor 172.16.255.1 update-source Loopback0 neighbor 172.16.255.2 remote-as 65001 neighbor 172.16.255.2 update-source Loopback0 ! address-family l2vpn evpn neighbor 172.16.255.1 activate neighbor 172.16.255.1 send-community both neighbor 172.16.255.2 activate neighbor 172.16.255.2 send-community both exit-address-family ! address-family ipv4 vrf green advertise l2vpn evpn redistribute connected exit-address-family ! address-family ipv6 vrf green redistribute connected advertise l2vpn evpn exit-address-family ! ip pim rp-address 172.16.255.255 ! end </pre>	<pre> ipv6 address FD00:10:1:102::1/64 ipv6 enable ! interface Vlan901 vrf forwarding green ip unnumbered Loopback1 ipv6 enable no autostate ! interface nvel no ip address source-interface Loopback1 host-reachability protocol bgp vxlan encapsulation dual-stack prefer-ipv6 underlay-mcast ipv4 member vni 10101 mcast-group 225.0.0.101 FF0E:225::101 member vni 10102 ingress-replication member vni 50901 vrf green ! router ospf 1 router-id 172.16.255.4 ! router bgp 65001 bgp router-id 172.16.255.4 bgp log-neighbor-changes neighbor 172.16.255.1 remote-as 65001 neighbor 172.16.255.1 update-source Loopback0 neighbor 172.16.255.2 remote-as 65001 neighbor 172.16.255.2 update-source Loopback0 neighbor FC00:172:16:255::1 remote-as 65001 neighbor FC00:172:16:255::1 update-source Loopback0 neighbor FC00:172:16:255::2 remote-as 65001 neighbor FC00:172:16:255::2 update-source Loopback0 ! address-family l2vpn evpn neighbor 172.16.255.1 activate neighbor 172.16.255.1 send-community both neighbor 172.16.255.2 activate neighbor 172.16.255.2 send-community both neighbor FC00:172:16:255::1 activate neighbor FC00:172:16:255::1 send-community both neighbor FC00:172:16:255::2 activate neighbor FC00:172:16:255::2 send-community both exit-address-family </pre>	<pre> ipv6 address FD00:10:1:102::1/64 ipv6 enable ! interface Vlan901 vrf forwarding green ip unnumbered Loopback1 ipv6 enable no autostate ! interface nvel no ip address source-interface Loopback1 host-reachability protocol bgp vxlan encapsulation dual-stack prefer-ipv6 underlay-mcast ipv4 member vni 10101 mcast-group 225.0.0.101 FF0E:225::101 member vni 10102 ingress-replication member vni 50901 vrf green ! router ospf 1 router-id 172.16.255.5 ! router bgp 65001 bgp router-id 172.16.255.5 bgp log-neighbor-changes neighbor FC00:172:16:255::1 remote-as 65001 neighbor FC00:172:16:255::1 update-source Loopback0 neighbor FC00:172:16:255::2 remote-as 65001 neighbor FC00:172:16:255::2 update-source Loopback0 ! address-family l2vpn evpn neighbor FC00:172:16:255::1 activate neighbor FC00:172:16:255::1 send-community both neighbor FC00:172:16:255::2 activate neighbor FC00:172:16:255::2 send-community both exit-address-family ! address-family ipv4 vrf green advertise l2vpn evpn redistribute connected exit-address-family ! address-family ipv6 vrf green redistribute connected advertise l2vpn evpn exit-address-family ! ip pim rp-address 172.16.255.255 ! </pre>

VTEP 1	VTEP 2	VTEP 3
	<pre> ! address-family ipv4 vrf green advertise l2vpn evpn redistribute connected exit-address-family ! address-family ipv6 vrf green redistribute connected advertise l2vpn evpn exit-address-family ! ip pim rp-address 172.16.255.255 ! ipv6 router ospf 1 router-id 172.16.255.4 ! ipv6 pim rp-address FC00:172:16:255::255 ! end </pre>	<pre> ipv6 router ospf 1 router-id 172.16.255.5 ! ipv6 pim rp-address FC00:172:16:255::255 ! ! end </pre>

*Table 3: Configure the Spine Nodes*

Spine 1	Spine 2
---------	---------

Spine 1	Spine 2
<pre> Spine-01# show running-config hostname Spine-01 ! ip routing ! ip multicast-routing ! ipv6 unicast-routing ipv6 multicast-routing ! system mtu 9198 ! interface Loopback0 ip address 172.16.255.1 255.255.255.255 ip ospf 1 area 0 ipv6 address FC00:172:16:255::1/128 ipv6 ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.1 255.255.255.255 ip ospf 1 area 0 ipv6 address FC00:172:16:254::1/128 ipv6 ospf 1 area 0 ! interface Loopback2 ip address 172.16.255.255 255.255.255.255 ip ospf 1 area 0 ipv6 address FC00:172:16:255::255/128 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ip address 172.16.13.1 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:13::1/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ip address 172.16.14.1 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:14::1/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/3 no switchport ip address 172.16.15.1 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:15::1/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point </pre>	<pre> Spine-02# show running-config hostname Spine-02 ! ip routing ! ip multicast-routing ! ipv6 unicast-routing ipv6 multicast-routing ! system mtu 9198 ! interface Loopback0 ip address 172.16.255.2 255.255.255.255 ip ospf 1 area 0 ipv6 address FC00:172:16:255::2/128 ipv6 ospf 1 area 0 ! interface Loopback1 ip address 172.16.254.2 255.255.255.255 ip ospf 1 area 0 ipv6 address FC00:172:16:254::2/128 ipv6 ospf 1 area 0 ! interface Loopback2 ip address 172.16.255.255 255.255.255.255 ip ospf 1 area 0 ipv6 address FC00:172:16:255::255/128 ipv6 ospf 1 area 0 ! interface GigabitEthernet1/0/1 no switchport ip address 172.16.23.2 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:23::2/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/2 no switchport ip address 172.16.24.2 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:24::2/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point ! interface GigabitEthernet1/0/3 no switchport ip address 172.16.25.2 255.255.255.0 ip pim sparse-mode ip ospf network point-to-point ip ospf 1 area 0 ipv6 address FC00:172:16:25::2/64 ipv6 enable ipv6 ospf 1 area 0 ipv6 ospf network point-to-point </pre>

Spine 1	Spine 2
<pre> ! router ospf 1 router-id 172.16.255.1 ! router bgp 65001 bgp router-id 172.16.255.1 bgp log-neighbor-changes neighbor 172.16.255.3 remote-as 65001 neighbor 172.16.255.3 update-source Loopback0 neighbor 172.16.255.4 remote-as 65001 neighbor 172.16.255.4 update-source Loopback0 neighbor FC00:172:16:255::2 remote-as 65001 neighbor FC00:172:16:255::2 update-source Loopback0 neighbor FC00:172:16:255::4 remote-as 65001 neighbor FC00:172:16:255::4 update-source Loopback0 neighbor FC00:172:16:255::5 remote-as 65001 neighbor FC00:172:16:255::5 update-source Loopback0 ! address-family l2vpn evpn neighbor 172.16.255.3 activate neighbor 172.16.255.3 send-community both neighbor 172.16.255.3 route-reflector-client neighbor 172.16.255.4 activate neighbor 172.16.255.4 send-community both neighbor 172.16.255.4 route-reflector-client neighbor FC00:172:16:255::2 activate neighbor FC00:172:16:255::2 send-community both neighbor FC00:172:16:255::2 route-reflector-client neighbor FC00:172:16:255::4 activate neighbor FC00:172:16:255::4 send-community both neighbor FC00:172:16:255::4 route-reflector-client neighbor FC00:172:16:255::5 activate neighbor FC00:172:16:255::5 send-community both neighbor FC00:172:16:255::5 route-reflector-client exit-address-family ! ip pim rp-address 172.16.255.255 ip msdp peer 172.16.254.2 connect-source Loopback1 remote-as 65001 ip msdp cache-sa-state ! ipv6 router ospf 1 router-id 172.16.255.1 ! ipv6 pim rp-address FC00:172:16:255::255 ipv6 pim anycast-rp FC00:172:16:255::255 FC00:172:16:254::2 ! end </pre>	<pre> ! router ospf 1 router-id 172.16.255.2 ! router bgp 65001 bgp router-id 172.16.255.2 bgp log-neighbor-changes neighbor 172.16.255.3 remote-as 65001 neighbor 172.16.255.3 update-source Loopback0 neighbor 172.16.255.4 remote-as 65001 neighbor 172.16.255.4 update-source Loopback0 neighbor FC00:172:16:255::1 remote-as 65001 neighbor FC00:172:16:255::1 update-source Loopback0 neighbor FC00:172:16:255::4 remote-as 65001 neighbor FC00:172:16:255::4 update-source Loopback0 neighbor FC00:172:16:255::5 remote-as 65001 neighbor FC00:172:16:255::5 update-source Loopback0 ! address-family l2vpn evpn neighbor 172.16.255.3 activate neighbor 172.16.255.3 send-community both neighbor 172.16.255.3 route-reflector-client neighbor 172.16.255.4 activate neighbor 172.16.255.4 send-community both neighbor 172.16.255.4 route-reflector-client neighbor FC00:172:16:255::1 activate neighbor FC00:172:16:255::1 send-community both neighbor FC00:172:16:255::1 route-reflector-client neighbor FC00:172:16:255::4 activate neighbor FC00:172:16:255::4 send-community both neighbor FC00:172:16:255::4 route-reflector-client neighbor FC00:172:16:255::5 activate neighbor FC00:172:16:255::5 send-community both neighbor FC00:172:16:255::5 route-reflector-client exit-address-family ! ip pim rp-address 172.16.255.255 ip msdp peer 172.16.254.1 connect-source Loopback1 remote-as 65001 ip msdp cache-sa-state ! ipv6 router ospf 1 router-id 172.16.255.2 ! ipv6 pim rp-address FC00:172:16:255::255 ipv6 pim anycast-rp FC00:172:16:255::255 FC00:172:16:254::1 ! end </pre>

## Verifying BGP EVPN VXLAN with Dual Stack Underlay Configuration

The following sections provide sample output of **show** commands to verify the BGP EVPN VXLAN configuration with dual stack underlay.

- [Outputs to Verify Configuration on VTEP 1, on page 56](#)
- [Outputs to Verify Configuration on VTEP 2, on page 61](#)
- [Outputs to Verify Configuration on VTEP 3, on page 69](#)
- [Outputs to Verify Configuration on Spine 1, on page 76](#)
- [Outputs to Verify the Configuration on Spine 2, on page 82](#)

### Outputs to Verify Configuration on VTEP 1

```
Leaf-01# show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PFR
       & - replicated local route overrides by connected

Gateway of last resort is not set

    172.16.0.0/16 is variably subnetted, 19 subnets, 2 masks
C       172.16.13.0/24 is directly connected, GigabitEthernet1/0/1
L       172.16.13.3/32 is directly connected, GigabitEthernet1/0/1
O       172.16.14.0/24
        [110/2] via 172.16.13.1, 02:27:03, GigabitEthernet1/0/1
O       172.16.15.0/24
        [110/2] via 172.16.13.1, 02:27:03, GigabitEthernet1/0/1
C       172.16.23.0/24 is directly connected, GigabitEthernet1/0/2
L       172.16.23.3/32 is directly connected, GigabitEthernet1/0/2
O       172.16.24.0/24
        [110/2] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
O       172.16.25.0/24
        [110/2] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
O       172.16.254.1/32
        [110/2] via 172.16.13.1, 02:27:03, GigabitEthernet1/0/1
O       172.16.254.2/32
        [110/2] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
C       172.16.254.3/32 is directly connected, Loopback1
O       172.16.254.4/32
        [110/3] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
        [110/3] via 172.16.13.1, 02:26:55, GigabitEthernet1/0/1
O       172.16.254.5/32
        [110/3] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
        [110/3] via 172.16.13.1, 02:26:55, GigabitEthernet1/0/1
O       172.16.255.1/32
        [110/2] via 172.16.13.1, 02:27:03, GigabitEthernet1/0/1
O       172.16.255.2/32
        [110/2] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
C       172.16.255.3/32 is directly connected, Loopback0
```



```

O      172.16.255.4/32
      [110/3] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
      [110/3] via 172.16.13.1, 02:26:55, GigabitEthernet1/0/1
O      172.16.255.5/32
      [110/3] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
      [110/3] via 172.16.13.1, 02:26:55, GigabitEthernet1/0/1
O      172.16.255.255/32
      [110/2] via 172.16.23.2, 02:26:55, GigabitEthernet1/0/2
      [110/2] via 172.16.13.1, 02:27:03, GigabitEthernet1/0/1

```

Leaf-01# **show ipv6 route**

```

IPv6 Routing Table - default - 1 entries
Codes: C - Connected, L - Local, S - Static, U - Per-user Static route
       B - BGP, R - RIP, H - NHRP, I1 - ISIS L1
       I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP
       EX - EIGRP external, ND - ND Default, NDP - ND Prefix, DCE - Destination
       NDR - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter
       OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1
       ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations
       ld - LISP dyn-eid, la - LISP away, le - LISP extranet-policy
       lp - LISP publications, ls - LISP destinations-summary
L  FF00::/8 [0/0]
   via Null0, receive

```

Leaf-01# **show ip mroute**

```

IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report,
       Z - Multicast Tunnel, z - MDT-data group sender,
       Y - Joined MDT-data group, y - Sending to MDT-data group,
       G - Received BGP C-Mroute, g - Sent BGP C-Mroute,
       N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,
       Q - Received BGP S-A Route, q - Sent BGP S-A Route,
       V - RD & Vector, v - Vector, p - PIM Joins on route,
       x - VxLAN group, c - PFP-SA cache created entry,
       * - determined by Assert, # - iif-starg configured on rpf intf,
       e - encap-helper tunnel flag, l - LISP decap ref count contributor
Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join
                        t - LISP transit group

Timers: Uptime/Expires
Interface state: Interface, Next-Hop or VCD, State/Mode

(*, 224.0.1.40), 02:28:41/00:02:57, RP 172.16.255.255, flags: SJCL
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.23.2
  Outgoing interface list:
    Loopback1, Forward/Sparse, 02:28:39/00:02:23, flags:
    GigabitEthernet1/0/1, Forward/Sparse, 02:26:54/00:02:50, flags:

(*, 225.0.0.101), 02:28:40/stopped, RP 172.16.255.255, flags: SJCFx
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.23.2
  Outgoing interface list:
    Tunnel0, Forward/Sparse-Dense, 02:28:40/stopped, flags:

(172.16.254.5, 225.0.0.101), 01:53:05/00:01:04, flags: JTx
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.23.2
  Outgoing interface list:
    Tunnel0, Forward/Sparse-Dense, 01:53:05/stopped, flags:

```

## Verifying BGP EVPN VXLAN with Dual Stack Underlay Configuration

```
(172.16.254.4, 225.0.0.101), 02:20:24/00:01:01, flags: JTx
Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.23.2
Outgoing interface list:
  Tunnel0, Forward/Sparse-Dense, 02:20:24/stopped, flags:

(172.16.254.3, 225.0.0.101), 02:28:09/00:03:22, flags: FTx
Incoming interface: Loopback1, RPF nbr 0.0.0.0
Outgoing interface list:
  GigabitEthernet1/0/2, Forward/Sparse, 02:25:53/00:02:32, flags: A
```

```
Leaf-01# show ipv6 mroute
No mroute entries found.
```

```
Leaf-01# show nve peer
'M' - MAC entry download flag 'A' - Adjacency download flag
'4' - IPv4 flag '6' - IPv6 flag
```

Interface	VNI	Type	Peer-IP	RMAC/Num_RTs	eVNI	state	flags	UP	time
nve1	50901	L3CP	172.16.254.5	7c21.0dbd.2748	50901	UP	A/-/4	02:25:57	
nve1	50901	L3CP	172.16.254.4	7c21.0dbd.9548	50901	UP	A/-/4	02:25:57	
nve1	50901	L3CP	172.16.254.5	7c21.0dbd.2748	50901	UP	A/M/6	02:25:57	
nve1	50901	L3CP	172.16.254.4	7c21.0dbd.9548	50901	UP	A/M/6	02:25:57	
nve1	10101	L2CP	172.16.254.4	5	10101	UP	N/A	02:25:57	
nve1	10101	L2CP	172.16.254.5	5	10101	UP	N/A	02:25:57	
nve1	10102	L2CP	172.16.254.4	6	10102	UP	N/A	02:25:57	
nve1	10102	L2CP	172.16.254.5	6	10102	UP	N/A	02:25:57	

```
Leaf-01# show bgp l2vpn evpn summary
BGP router identifier 172.16.255.3, local AS number 65001
BGP table version is 54, main routing table version 54
50 network entries using 19200 bytes of memory
68 path entries using 15776 bytes of memory
22/22 BGP path/bestpath attribute entries using 6512 bytes of memory
4 BGP rrinfo entries using 160 bytes of memory
16 BGP extended community entries using 864 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 42512 total bytes of memory
BGP activity 62/0 prefixes, 90/6 paths, scan interval 60 secs
50 networks peaked at 15:31:23 Oct 31 2022 UTC (00:00:34.727 ago)
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
172.16.255.1	4	65001	186	174	54	0	0	02:26:54	18
172.16.255.2	4	65001	187	174	54	0	0	02:26:53	18

```
Leaf-01# show bgp l2vpn evpn
BGP table version is 54, local router ID is 172.16.255.3
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
              x best-external, a additional-path, c RIB-compressed,
              t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
*> [2][172.16.254.3:101][0][48][10B3D56A8FC1][32][10.1.101.1]/24	0.0.0.0			32768	?
*> [2][172.16.254.3:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36					

```

0.0.0.0 32768 ?
*>i [2] [172.16.254.3:101] [0] [48] [44D3CA286CC1] [0] [*]/20
172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [44D3CA286CC1] [32] [10.1.101.12]/24
172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [44D3CA286CC3] [0] [*]/20
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [44D3CA286CC3] [32] [10.1.101.13]/24
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.3:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
172.16.254.4 0 100 0 ?
*> [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [0] [*]/20
0.0.0.0 32768 ?
*> [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24
0.0.0.0 32768 ?
*> [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36
0.0.0.0 32768 ?
Route Distinguisher: 172.16.254.3:102
*> [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24
0.0.0.0 32768 ?
*> [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [128] [FD00:10:1:102::1]/36
0.0.0.0 32768 ?
*>i [2] [172.16.254.3:102] [0] [48] [44D3CA286CC2] [0] [*]/20
172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24
172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [44D3CA286CC4] [0] [*]/20
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [44D3CA286CC4] [32] [10.1.102.13]/24
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [7C210DBD274D] [32] [10.1.102.1]/24
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
172.16.254.5 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.3:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
172.16.254.4 0 100 0 ?
*> [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [0] [*]/20
0.0.0.0 32768 ?
*> [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36
0.0.0.0 32768 ?
Route Distinguisher: 172.16.254.4:101
* i [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [0] [*]/20
172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
*>i [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [32] [10.1.101.12]/24
172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24
172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36
172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [0] [*]/20
172.16.254.4 0 100 0 ?

```

```

*>i          172.16.254.4          0 100 0 ?
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
    172.16.254.4          0 100 0 ?
*>i          172.16.254.4          0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][32][10.1.102.1]/24
    172.16.254.4          0 100 0 ?
*>i          172.16.254.4          0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][128][FD00:10:1:102::1]/36
    172.16.254.4          0 100 0 ?
*>i          172.16.254.4          0 100 0 ?
Route Distinguisher: 172.16.254.5:101
* i [2][172.16.254.5:101][0][48][44D3CA286CC3][0][*]/20
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
* i [2][172.16.254.5:101][0][48][44D3CA286CC3][32][10.1.101.13]/24
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
* i [2][172.16.254.5:101][0][48][7C210DBD2741][32][10.1.101.1]/24
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
* i [2][172.16.254.5:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][0][*]/20
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][32][10.1.102.1]/24
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
Route Distinguisher: 172.16.254.3:102
*> [3][172.16.254.3:102][0][32][172.16.254.3]/17
    0.0.0.0          0 32768 ?
*>i [3][172.16.254.3:102][0][32][172.16.254.4]/17
    172.16.254.4          0 100 0 ?
*>i [3][172.16.254.3:102][0][32][172.16.254.5]/17
    172.16.254.5          0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [3][172.16.254.4:102][0][32][172.16.254.4]/17
    172.16.254.4          0 100 0 ?
*>i          172.16.254.4          0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [3][172.16.254.5:102][0][32][172.16.254.5]/17
    172.16.254.5          0 100 0 ?
*>i          172.16.254.5          0 100 0 ?
Route Distinguisher: 1:1 (default for vrf green)
*> [5][1:1][0][24][10.1.101.0]/17
    0.0.0.0          0 32768 ?
*> [5][1:1][0][24][10.1.102.0]/17
    0.0.0.0          0 32768 ?
*> [5][1:1][0][64][FD00:10:1:101::]/29
    ::          0 32768 ?
*> [5][1:1][0][64][FD00:10:1:102::]/29
    ::          0 32768 ?

```

```
Leaf-01# show l2vpn evpn mac ip
```

```
IP Address          EVI    VLAN  MAC Address    Next Hop(s)
-----
```

```

10.1.101.11          101 101 f4cf.e243.34c1 Gi1/0/4:101
10.1.101.12          101 101 44d3.ca28.6cc1 172.16.254.4
10.1.101.13          101 101 44d3.ca28.6cc3 172.16.254.5
FE80::F6CF:E2FF:FE43:34C1 101 101 f4cf.e243.34c1 Gi1/0/4:101
10.1.102.12          102 102 44d3.ca28.6cc2 172.16.254.4
10.1.102.13          102 102 44d3.ca28.6cc4 172.16.254.5
FE80::F6CF:E2FF:FE43:34C2 102 102 f4cf.e243.34c2 Gi1/0/5:102

```

Leaf-01# **show l2route evpn mac ip**

```

EVI      ETag  Prod  Mac Address      Host IP
      Next Hop(s)
-----
101      0  L2VPN 10b3.d56a.8fc1   10.1.101.1
          V1101:0
101      0  L2VPN 10b3.d56a.8fc1   FD00:10:1:101::1
          V1101:0
101      0   BGP 44d3.ca28.6cc1   10.1.101.12
          V:10101 172.16.254.4
101      0   BGP 44d3.ca28.6cc3   10.1.101.13
          V:10101 172.16.254.5
101      0   BGP 7c21.0dbd.2741 10.1.101.1
          V:10101 172.16.254.5
101      0   BGP 7c21.0dbd.2741  FD00:10:1:101::1
          V:10101 172.16.254.5
101      0   BGP 7c21.0dbd.9541 10.1.101.1
          V:10101 172.16.254.4
101      0   BGP 7c21.0dbd.9541  FD00:10:1:101::1
          V:10101 172.16.254.4
101      0  L2VPN f4cf.e243.34c1   10.1.101.11
          Gi1/0/4:101
101      0  L2VPN f4cf.e243.34c1   FE80::F6CF:E2FF:FE43:34C1
          Gi1/0/4:101
102      0  L2VPN 10b3.d56a.8fcd   10.1.102.1
          V1102:0
102      0  L2VPN 10b3.d56a.8fcd   FD00:10:1:102::1
          V1102:0
102      0   BGP 44d3.ca28.6cc2   10.1.102.12
          V:10102 172.16.254.4
102      0   BGP 44d3.ca28.6cc4   10.1.102.13
          V:10102 172.16.254.5
102      0   BGP 7c21.0dbd.274d 10.1.102.1
          V:10102 172.16.254.5
102      0   BGP 7c21.0dbd.274d  FD00:10:1:102::1
          V:10102 172.16.254.5
102      0   BGP 7c21.0dbd.954d 10.1.102.1
          V:10102 172.16.254.4
102      0   BGP 7c21.0dbd.954d  FD00:10:1:102::1
          V:10102 172.16.254.4
102      0  L2VPN f4cf.e243.34c2   FE80::F6CF:E2FF:FE43:34C2
          Gi1/0/5:102

```

To return to the example configuration, click [Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay, on page 46](#).

### Outputs to Verify Configuration on VTEP 2

Leaf-02# **show ip route**

```

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area

```

N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
 E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP  
 n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA  
 i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2  
 ia - IS-IS inter area, \* - candidate default, U - per-user static route  
 H - NHRP, G - NHRP registered, g - NHRP registration summary  
 o - ODR, P - periodic downloaded static route, l - LISP  
 a - application route  
 + - replicated route, % - next hop override, p - overrides from PFR  
 & - replicated local route overrides by connected

Gateway of last resort is not set

```

172.16.0.0/16 is variably subnetted, 19 subnets, 2 masks
O   172.16.13.0/24
    [110/2] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1
C   172.16.14.0/24 is directly connected, GigabitEthernet1/0/1
L   172.16.14.4/32 is directly connected, GigabitEthernet1/0/1
O   172.16.15.0/24
    [110/2] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1
O   172.16.23.0/24
    [110/2] via 172.16.24.2, 02:29:52, GigabitEthernet1/0/2
C   172.16.24.0/24 is directly connected, GigabitEthernet1/0/2
L   172.16.24.4/32 is directly connected, GigabitEthernet1/0/2
O   172.16.25.0/24
    [110/2] via 172.16.24.2, 02:29:52, GigabitEthernet1/0/2
O   172.16.254.1/32
    [110/2] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1
O   172.16.254.2/32
    [110/2] via 172.16.24.2, 02:29:52, GigabitEthernet1/0/2
O   172.16.254.3/32
    [110/3] via 172.16.24.2, 02:29:47, GigabitEthernet1/0/2
    [110/3] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1
C   172.16.254.4/32 is directly connected, Loopback1
O   172.16.254.5/32
    [110/3] via 172.16.24.2, 02:29:47, GigabitEthernet1/0/2
    [110/3] via 172.16.14.1, 02:29:47, GigabitEthernet1/0/1
O   172.16.255.1/32
    [110/2] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1
O   172.16.255.2/32
    [110/2] via 172.16.24.2, 02:29:52, GigabitEthernet1/0/2
O   172.16.255.3/32
    [110/3] via 172.16.24.2, 02:29:47, GigabitEthernet1/0/2
    [110/3] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1
C   172.16.255.4/32 is directly connected, Loopback0
O   172.16.255.5/32
    [110/3] via 172.16.24.2, 02:29:47, GigabitEthernet1/0/2
    [110/3] via 172.16.14.1, 02:29:47, GigabitEthernet1/0/1
O   172.16.255.255/32
    [110/2] via 172.16.24.2, 02:29:52, GigabitEthernet1/0/2
    [110/2] via 172.16.14.1, 02:29:55, GigabitEthernet1/0/1

```

Leaf-02# **show ipv6 route**

IPv6 Routing Table - default - 18 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, H - NHRP, I1 - ISIS L1

I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP

EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination

NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter

OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1

ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations

ld - LISP dyn-eid, la - LISP away, le - LISP extranet-policy

lp - LISP publications, ls - LISP destinations-summary

```

O   FC00:172:16:13::/64 [110/2]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
C   FC00:172:16:14::/64 [0/0]
    via GigabitEthernet1/0/1, directly connected
L   FC00:172:16:14::4/128 [0/0]
    via GigabitEthernet1/0/1, receive
O   FC00:172:16:15::/64 [110/2]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
O   FC00:172:16:23::/64 [110/2]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
C   FC00:172:16:24::/64 [0/0]
    via GigabitEthernet1/0/2, directly connected
L   FC00:172:16:24::4/128 [0/0]
    via GigabitEthernet1/0/2, receive
O   FC00:172:16:25::/64 [110/2]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
O   FC00:172:16:254::1/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
O   FC00:172:16:254::2/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
LC  FC00:172:16:254::4/128 [0/0]
    via Loopback1, receive
O   FC00:172:16:254::5/128 [110/2]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
O   FC00:172:16:255::1/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
O   FC00:172:16:255::2/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
LC  FC00:172:16:255::4/128 [0/0]
    via Loopback0, receive
O   FC00:172:16:255::5/128 [110/2]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
O   FC00:172:16:255::255/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/1
    via FE80::7E21:DFE:FE92:B2D6, GigabitEthernet1/0/2
L   FF00::/8 [0/0]
    via Null0, receive

```

Leaf-02# **show ip mroute**

IP Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,

L - Local, P - Pruned, R - RP-bit set, F - Register flag,

T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,

X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,

U - URD, I - Received Source Specific Host Report,

Z - Multicast Tunnel, z - MDT-data group sender,

Y - Joined MDT-data group, y - Sending to MDT-data group,

G - Received BGP C-Mroute, g - Sent BGP C-Mroute,

N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,

Q - Received BGP S-A Route, q - Sent BGP S-A Route,

V - RD & Vector, v - Vector, p - PIM Joins on route,

x - VxLAN group, c - PFP-SA cache created entry,

\* - determined by Assert, # - iif-starg configured on rpf intf,

e - encap-helper tunnel flag, l - LISP decap ref count contributor

Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join

t - LISP transit group

Timers: Uptime/Expires

Interface state: Interface, Next-Hop or VCD, State/Mode

(\* , 224.0.1.40), 02:30:33/00:02:28, RP 172.16.255.255, flags: SJCL

Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.24.2

```

Outgoing interface list:
  Loopback1, Forward/Sparse, 02:30:32/00:02:28, flags:

(*, 225.0.0.101), 02:30:33/stopped, RP 172.16.255.255, flags: SJCFx
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.24.2
  Outgoing interface list:
    Tunnell, Forward/Sparse-Dense, 02:30:33/stopped, flags:

(172.16.254.3, 225.0.0.101), 02:22:31/00:02:40, flags: JTx
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.24.2
  Outgoing interface list:
    Tunnell, Forward/Sparse-Dense, 02:22:31/stopped, flags:

(172.16.254.5, 225.0.0.101), 02:22:41/00:01:28, flags: JTx
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.24.2
  Outgoing interface list:
    Tunnell, Forward/Sparse-Dense, 02:22:41/stopped, flags:

(172.16.254.4, 225.0.0.101), 02:30:17/00:01:32, flags: FTx
  Incoming interface: Loopback1, RPF nbr 0.0.0.0, Registering
  Outgoing interface list:
    GigabitEthernet1/0/2, Forward/Sparse, 02:29:51/00:03:28, flags: A

```

```
Leaf-02# show ipv6 mroute
```

```
Multicast Routing Table
```

```

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, Y - Joined MDT-data group,
       y - Sending to MDT-data group
       g - BGP signal originated, G - BGP Signal received,
       N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,
       q - BGP Src-Active originated, Q - BGP Src-Active received
       E - Extranet

```

```
Timers: Uptime/Expires
```

```
Interface state: Interface, State
```

```

(*, FF0E:225::101), 02:30:33/never, RP FC00:172:16:255::255, flags: SCJ
  Incoming interface: GigabitEthernet1/0/2
  RPF nbr: FE80::7E21:DFE:FE8D:2CD6
  Immediate Outgoing interface list:
    Tunnel2, Forward, 02:30:33/never

```

```
Leaf-02# show nve peer
```

```

'M' - MAC entry download flag 'A' - Adjacency download flag
'4' - IPv4 flag '6' - IPv6 flag

```

Interface	VNI	Type	Peer-IP	RMAC/Num_RTs	eVNI	state	flags	UP	time
nve1	50901	L3CP	172.16.254.3	10b3.d56a.8fc8	50901	UP	A/-/4	02:28:51	
nve1	50901	L3CP	FC00:172:16:254::5 \	7c21.0dbd.2748	50901	UP	A/-/4	02:28:51	
nve1	50901	L3CP	172.16.254.3	10b3.d56a.8fc8	50901	UP	A/M/6	02:28:51	
nve1	50901	L3CP	FC00:172:16:254::5 \	7c21.0dbd.2748	50901	UP	A/M/6	02:28:51	
nve1	10101	L2CP	172.16.254.3	6	10101	UP	N/A	02:28:51	
nve1	10101	L2CP	FC00:172:16:254::5 \	5	10101	UP	N/A	02:28:51	
nve1	10102	L2CP	172.16.254.3	6	10102	UP	N/A	02:28:51	
nve1	10102	L2CP	FC00:172:16:254::5 \	6	10102	UP	N/A	02:28:51	



Leaf-02# **show bgp 12vpn evpn summary**

```

BGP router identifier 172.16.255.4, local AS number 65001
BGP table version is 76, main routing table version 76
51 network entries using 19584 bytes of memory
124 path entries using 28768 bytes of memory
23/22 BGP path/bestpath attribute entries using 6808 bytes of memory
4 BGP rrinfo entries using 160 bytes of memory
17 BGP extended community entries using 904 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 56224 total bytes of memory
BGP activity 64/0 prefixes, 188/43 paths, scan interval 60 secs
51 networks peaked at 15:31:23 Oct 31 2022 UTC (00:03:28.886 ago)

```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
172.16.255.1	4	65001	189	175	76	0	0	02:29:49	23
172.16.255.2	4	65001	189	175	76	0	0	02:29:45	23
FC00:172:16:255::1	4	65001	188	172	76	0	0	02:30:00	23
FC00:172:16:255::2	4	65001	189	173	76	0	0	02:29:58	23

Leaf-02# **show bgp 12vpn evpn**

```

BGP table version is 76, local router ID is 172.16.255.4
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
               t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
* i [2]	[172.16.254.3:101]	[0]	[48]	[10B3D56A8FC1]	[32] [10.1.101.1]/24
	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
* i [2]	[172.16.254.3:101]	[0]	[48]	[10B3D56A8FC1]	[128] [FD00:10:1:101::1]/36
	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
* i [2]	[172.16.254.3:101]	[0]	[48]	[F4CFE24334C1]	[0] [*]/20
	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
*>i [2]	[172.16.254.3:101]	[0]	[48]	[F4CFE24334C1]	[32] [10.1.101.11]/24
	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
* i [2]	[172.16.254.3:101]	[0]	[48]	[F4CFE24334C1]	[128] [FE80::F6CF:E2FF:FE43:34C1]/36
	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
Route Distinguisher: 172.16.254.3:102					
* i [2]	[172.16.254.3:102]	[0]	[48]	[10B3D56A8FCD]	[32] [10.1.102.1]/24
	172.16.254.3	0	100	0	?
* i	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?

```

* i          172.16.254.3          0 100 0 ?
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
    172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
*>i         172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][0][*]/20
    172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
*>i         172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
*>i [2][172.16.254.3:102][0][48][F4CFE24334C2][128][FE80::F6CF:E2FF:FE43:34C2]/36
    172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
* i          172.16.254.3          0 100 0 ?
Route Distinguisher: 172.16.254.4:101
*>i [2][172.16.254.4:101][0][48][10B3D56A8FC1][32][10.1.101.1]/24
    172.16.254.3          0 100 0 ?
*>i [2][172.16.254.4:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36
    172.16.254.3          0 100 0 ?
*> [2][172.16.254.4:101][0][48][44D3CA286CC1][0][*]/20
    0.0.0.0              32768 ?
*> [2][172.16.254.4:101][0][48][44D3CA286CC1][32][10.1.101.12]/24
    0.0.0.0              32768 ?
*>i [2][172.16.254.4:101][0][48][44D3CA286CC3][0][*]/20
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:101][0][48][44D3CA286CC3][32][10.1.101.13]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:101][0][48][7C210DBD2741][32][10.1.101.1]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
    FC00:172:16:254::5
    0 100 0 ?
*> [2][172.16.254.4:101][0][48][7C210DBD9541][32][10.1.101.1]/24
    0.0.0.0              32768 ?
*> [2][172.16.254.4:101][0][48][7C210DBD9541][128][FD00:10:1:101::1]/36
    0.0.0.0              32768 ?
*>i [2][172.16.254.4:101][0][48][F4CFE24334C1][0][*]/20
    172.16.254.3          0 100 0 ?
*>i [2][172.16.254.4:101][0][48][F4CFE24334C1][32][10.1.101.11]/24
    172.16.254.3          0 100 0 ?
*>i [2][172.16.254.4:101][0][48][F4CFE24334C1][128][FE80::F6CF:E2FF:FE43:34C1]/36
    172.16.254.3          0 100 0 ?
Route Distinguisher: 172.16.254.4:102
*>i [2][172.16.254.4:102][0][48][10B3D56A8FCD][32][10.1.102.1]/24
    172.16.254.3          0 100 0 ?
*>i [2][172.16.254.4:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
    172.16.254.3          0 100 0 ?
*> [2][172.16.254.4:102][0][48][44D3CA286CC2][0][*]/20
    0.0.0.0              32768 ?
*> [2][172.16.254.4:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
    0.0.0.0              32768 ?
*>i [2][172.16.254.4:102][0][48][44D3CA286CC4][0][*]/20
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
    FC00:172:16:254::5
    0 100 0 ?
*>i [2][172.16.254.4:102][0][48][7C210DBD274D][32][10.1.102.1]/24
    FC00:172:16:254::5

```

```

                                0    100    0 ?
*>i [2] [172.16.254.4:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
                                FC00:172:16:254::5
                                0    100    0 ?
*> [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24
                                0.0.0.0                                32768 ?
*> [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36
                                0.0.0.0                                32768 ?
*>i [2] [172.16.254.4:102] [0] [48] [F4CFE24334C2] [0] [*]/20
                                172.16.254.3                                0    100    0 ?
*>i [2] [172.16.254.4:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36
                                172.16.254.3                                0    100    0 ?
Route Distinguisher: 172.16.254.5:101
* i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [0] [*]/20
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
* i [2] [172.16.254.5:101] [0] [48] [44D3CA286CC3] [32] [10.1.101.13]/24
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [32] [10.1.101.1]/24
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
* i [2] [172.16.254.5:101] [0] [48] [7C210DBD2741] [128] [FD00:10:1:101::1]/36
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
Route Distinguisher: 172.16.254.5:102
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [0] [*]/20
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
* i [2] [172.16.254.5:102] [0] [48] [44D3CA286CC4] [32] [10.1.102.13]/24
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
* i [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [32] [10.1.102.1]/24
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
* i [2] [172.16.254.5:102] [0] [48] [7C210DBD274D] [128] [FD00:10:1:102::1]/36
                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
* i                                172.16.254.5                                0    100    0 ?
*>i                                172.16.254.5                                0    100    0 ?
Route Distinguisher: 172.16.254.3:102
* i [3] [172.16.254.3:102] [0] [32] [172.16.254.3]/17
                                172.16.254.3                                0    100    0 ?
* i                                172.16.254.3                                0    100    0 ?
*>i                                172.16.254.3                                0    100    0 ?
* i                                172.16.254.3                                0    100    0 ?
Route Distinguisher: 172.16.254.4:102
*>i [3] [172.16.254.4:102] [0] [32] [172.16.254.3]/17
                                172.16.254.3                                0    100    0 ?
*> [3] [172.16.254.4:102] [0] [32] [172.16.254.4]/17

```

```

0.0.0.0                                32768 ?
*>i [3][172.16.254.4:102][0][32][172.16.254.5]/17
FC00:172:16:254::5                                0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [3][172.16.254.5:102][0][32][172.16.254.5]/17
172.16.254.5                                0 100 0 ?
* i 172.16.254.5                                0 100 0 ?
* i 172.16.254.5                                0 100 0 ?
*>i 172.16.254.5                                0 100 0 ?
Route Distinguisher: 1:1 (default for vrf green)
* i [5][1:1][0][24][10.1.101.0]/17
172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
*> 0.0.0.0                                0 32768 ?
* i [5][1:1][0][24][10.1.102.0]/17
172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
*> 0.0.0.0                                0 32768 ?
* i [5][1:1][0][64][FD00:10:1:101:]/29
172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
*> ::                                0 32768 ?
* i [5][1:1][0][64][FD00:10:1:102:]/29
172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
* i 172.16.254.3                                0 100 0 ?
*> ::                                0 32768 ?

```

Leaf-02# show l2vpn evpn mac ip

IP Address	EVI	VLAN	MAC Address	Next Hop(s)
10.1.101.11	101	101	f4cf.e243.34c1	172.16.254.3
10.1.101.12	101	101	44d3.ca28.6cc1	Gi1/0/11:101
10.1.101.13	101	101	44d3.ca28.6cc3	FC00:172:16:254::5
FE80::F6CF:E2FF:FE43:34C1	101	101	f4cf.e243.34c1	172.16.254.3
10.1.102.12	102	102	44d3.ca28.6cc2	Gi1/0/12:102
10.1.102.13	102	102	44d3.ca28.6cc4	FC00:172:16:254::5
FE80::F6CF:E2FF:FE43:34C2	102	102	f4cf.e243.34c2	172.16.254.3

Leaf-02# show l2route evpn mac ip

EVI	Etag	Prod	Mac Address	Host IP
				Next Hop(s)
101	0	BGP	10b3.d56a.8fc1	10.1.101.1
			V:10101 172.16.254.3	
101	0	BGP	10b3.d56a.8fc1	FD00:10:1:101::1
			V:10101 172.16.254.3	
101	0	L2VPN	44d3.ca28.6cc1	10.1.101.12
			Gi1/0/11:101	
101	0	BGP	44d3.ca28.6cc3	10.1.101.13
			V:10101 FC00:172:16:254::5	
101	0	BGP	7c21.0dbd.2741	10.1.101.1
			V:10101 FC00:172:16:254::5	
101	0	BGP	7c21.0dbd.2741	FD00:10:1:101::1

```

V:10101 FC00:172:16:254::5
101 0 L2VPN 7c21.0dbd.9541 10.1.101.1
    V1101:0
101 0 L2VPN 7c21.0dbd.9541 FD00:10:1:101::1
    V1101:0
101 0 BGP f4cf.e243.34c1 10.1.101.11
    V:10101 172.16.254.3
101 0 BGP f4cf.e243.34c1 FE80::F6CF:E2FF:FE43:34C1
    V:10101 172.16.254.3
102 0 BGP 10b3.d56a.8fcd 10.1.102.1
    V:10102 172.16.254.3
102 0 BGP 10b3.d56a.8fcd FD00:10:1:102::1
    V:10102 172.16.254.3
102 0 L2VPN 44d3.ca28.6cc2 10.1.102.12
    G11/0/12:102
102 0 BGP 44d3.ca28.6cc4 10.1.102.13
V:10102 FC00:172:16:254::5
102 0 BGP 7c21.0dbd.274d 10.1.102.1
V:10102 FC00:172:16:254::5
102 0 BGP 7c21.0dbd.274d FD00:10:1:102::1
V:10102 FC00:172:16:254::5
102 0 L2VPN 7c21.0dbd.954d 10.1.102.1
    V1102:0
102 0 L2VPN 7c21.0dbd.954d FD00:10:1:102::1
    V1102:0
102 0 BGP f4cf.e243.34c2 FE80::F6CF:E2FF:FE43:34C2
    V:10102 172.16.254.3

```

To return to the example configuration, click [Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay](#), on page 46.

### Outputs to Verify Configuration on VTEP 3

Leaf-03# **show ip route**

```

Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
       & - replicated local route overrides by connected

```

Gateway of last resort is not set

```

172.16.0.0/16 is variably subnetted, 19 subnets, 2 masks
O   172.16.13.0/24
    [110/2] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
O   172.16.14.0/24
    [110/2] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
C   172.16.15.0/24 is directly connected, GigabitEthernet1/0/1
L   172.16.15.5/32 is directly connected, GigabitEthernet1/0/1
O   172.16.23.0/24
    [110/2] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
O   172.16.24.0/24
    [110/2] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
C   172.16.25.0/24 is directly connected, GigabitEthernet1/0/2
L   172.16.25.5/32 is directly connected, GigabitEthernet1/0/2

```

```

O      172.16.254.1/32
      [110/2] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
O      172.16.254.2/32
      [110/2] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
O      172.16.254.3/32
      [110/3] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
      [110/3] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
O      172.16.254.4/32
      [110/3] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
      [110/3] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
C      172.16.254.5/32 is directly connected, Loopback1
O      172.16.255.1/32
      [110/2] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
O      172.16.255.2/32
      [110/2] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
O      172.16.255.3/32
      [110/3] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
      [110/3] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
O      172.16.255.4/32
      [110/3] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
      [110/3] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1
C      172.16.255.5/32 is directly connected, Loopback0
O      172.16.255.255/32
      [110/2] via 172.16.25.2, 02:30:22, GigabitEthernet1/0/2
      [110/2] via 172.16.15.1, 02:30:26, GigabitEthernet1/0/1

```

Leaf-03# **show ipv6 route**

IPv6 Routing Table - default - 18 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, H - NHRP, I1 - ISIS L1

I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP

EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination

NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter

OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1

ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations

ld - LISP dyn-eid, lA - LISP away, le - LISP extranet-policy

lp - LISP publications, ls - LISP destinations-summary

```

O FC00:172:16:13::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
O FC00:172:16:14::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
C FC00:172:16:15::/64 [0/0]
  via GigabitEthernet1/0/1, directly connected
L FC00:172:16:15::5/128 [0/0]
  via GigabitEthernet1/0/1, receive
O FC00:172:16:23::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:24::/64 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
C FC00:172:16:25::/64 [0/0]
  via GigabitEthernet1/0/2, directly connected
L FC00:172:16:25::5/128 [0/0]
  via GigabitEthernet1/0/2, receive
O FC00:172:16:254::1/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
O FC00:172:16:254::2/128 [110/1]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
O FC00:172:16:254::4/128 [110/2]
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/1
  via FE80::7E21:DFF:FE92:B2D8, GigabitEthernet1/0/2
LC FC00:172:16:254::5/128 [0/0]
  via Loopback1, receive
O FC00:172:16:255::1/128 [110/1]

```

```

    via FE80::7E21:DFE:FE92:B2D8, GigabitEthernet1/0/1
O  FC00:172:16:255::2/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D8, GigabitEthernet1/0/2
O  FC00:172:16:255::4/128 [110/2]
    via FE80::7E21:DFE:FE92:B2D8, GigabitEthernet1/0/1
    via FE80::7E21:DFE:FE92:B2D8, GigabitEthernet1/0/2
LC FC00:172:16:255::5/128 [0/0]
    via Loopback0, receive
O  FC00:172:16:255::255/128 [110/1]
    via FE80::7E21:DFE:FE92:B2D8, GigabitEthernet1/0/1
    via FE80::7E21:DFE:FE92:B2D8, GigabitEthernet1/0/2
L  FF00::/8 [0/0]
    via Null0, receive

```

Leaf-03# **show ip mroute**

IP Multicast Routing Table

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,

L - Local, P - Pruned, R - RP-bit set, F - Register flag,

T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,

X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,

U - URD, I - Received Source Specific Host Report,

Z - Multicast Tunnel, z - MDT-data group sender,

Y - Joined MDT-data group, y - Sending to MDT-data group,

G - Received BGP C-Mroute, g - Sent BGP C-Mroute,

N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,

Q - Received BGP S-A Route, q - Sent BGP S-A Route,

V - RD & Vector, v - Vector, p - PIM Joins on route,

x - VxLAN group, c - PFP-SA cache created entry,

\* - determined by Assert, # - iif-starg configured on rpf intf,

e - encap-helper tunnel flag, l - LISP decap ref count contributor

Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join  
t - LISP transit group

Timers: Uptime/Expires

Interface state: Interface, Next-Hop or VCD, State/Mode

(\* , 224.0.1.40), 02:30:48/00:02:16, RP 172.16.255.255, flags: SJCL

Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.25.2

Outgoing interface list:

Loopback1, Forward/Sparse, 02:30:47/00:02:16, flags:

(\* , 225.0.0.101), 02:30:48/stopped, RP 172.16.255.255, flags: SJCFx

Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.25.2

Outgoing interface list:

Tunnell1, Forward/Sparse-Dense, 02:30:48/stopped, flags:

(172.16.254.3, 225.0.0.101), 02:23:01/00:01:57, flags: JTx

Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.25.2

Outgoing interface list:

Tunnell1, Forward/Sparse-Dense, 02:23:01/stopped, flags:

(172.16.254.5, 225.0.0.101), 02:23:11/00:02:03, flags: FTx

Incoming interface: Loopback1, RPF nbr 0.0.0.0

Outgoing interface list:

GigabitEthernet1/0/2, Forward/Sparse, 02:23:11/00:02:56, flags: A

(172.16.254.4, 225.0.0.101), 02:23:49/00:00:40, flags: JTx

Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.25.2

Outgoing interface list:

Tunnell1, Forward/Sparse-Dense, 02:23:49/stopped, flags:

```
Leaf-03# show ipv6 mroute
```

```
Multicast Routing Table
```

```
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, Y - Joined MDT-data group,
       y - Sending to MDT-data group
       g - BGP signal originated, G - BGP Signal received,
       N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,
       q - BGP Src-Active originated, Q - BGP Src-Active received
       E - Extranet
```

```
Timers: Uptime/Expires
```

```
Interface state: Interface, State
```

```
(*, FF0E:225::101), 02:30:48/never, RP FC00:172:16:255::255, flags: SCJ
  Incoming interface: GigabitEthernet1/0/1
  RPF nbr: FE80::7E21:DFF:FE92:B2D8
  Immediate Outgoing interface list:
    Tunnel2, Forward, 02:30:48/never
```

```
Leaf-03# show nve peer
```

```
'M' - MAC entry download flag 'A' - Adjacency download flag
'4' - IPv4 flag '6' - IPv6 flag
```

Interface	VNI	Type	Peer-IP	RMAC/Num	RTs	eVNI	state	flags	UP	time
nve1	50901	L3CP	172.16.254.3	10b3.d56a.8fc8	6	50901	UP	A/-/4	02:29:22	
nve1	50901	L3CP	FC00:172:16:254::4	\						
				7c21.0dbd.9548		50901	UP	A/-/4	02:29:22	
nve1	50901	L3CP	172.16.254.3	10b3.d56a.8fc8	6	50901	UP	A/M/6	02:29:22	
nve1	50901	L3CP	FC00:172:16:254::4	\						
				7c21.0dbd.9548		50901	UP	A/M/6	02:29:22	
nve1	10101	L2CP	172.16.254.3	6		10101	UP	N/A	02:29:22	
nve1	10101	L2CP	FC00:172:16:254::4	\						
				5		10101	UP	N/A	02:29:22	
nve1	10102	L2CP	172.16.254.3	6		10102	UP	N/A	02:29:22	
nve1	10102	L2CP	FC00:172:16:254::4	\						
				6		10102	UP	N/A	02:29:22	

```
Leaf-03# show bgp l2vpn evpn summary
```

```
BGP router identifier 172.16.255.5, local AS number 65001
BGP table version is 56, main routing table version 56
51 network entries using 19584 bytes of memory
78 path entries using 18096 bytes of memory
23/22 BGP path/bestpath attribute entries using 6808 bytes of memory
4 BGP rrinfo entries using 160 bytes of memory
17 BGP extended community entries using 904 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 45552 total bytes of memory
BGP activity 64/0 prefixes, 105/6 paths, scan interval 60 secs
51 networks peaked at 15:31:23 Oct 31 2022 UTC (00:03:59.747 ago)
```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
FC00:172:16:255::1	4	65001	191	174	56	0	0	02:30:32	23
FC00:172:16:255::2	4	65001	191	174	56	0	0	02:30:25	23

```
Leaf-03# show bgp l2vpn evpn
```

```
BGP table version is 56, local router ID is 172.16.255.5
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
              r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
```



x best-external, a additional-path, c RIB-compressed,  
 t secondary path, L long-lived-stale,  
 Origin codes: i - IGP, e - EGP, ? - incomplete  
 RPKI validation codes: V valid, I invalid, N Not found

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [128] [FD00:10:1:101::1]/36	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [0] [*]/20	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
*>i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24	172.16.254.3	0	100	0 ?	
* i	172.16.254.3	0	100	0 ?	
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
Route Distinguisher: 172.16.254.3:102					
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [128] [FD00:10:1:102::1]/36	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
* i [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [0] [*]/20	172.16.254.3	0	100	0 ?	
*>i	172.16.254.3	0	100	0 ?	
*>i [2] [172.16.254.3:102] [0] [48] [F4CFE24334C2] [128] [FE80::F6CF:E2FF:FE43:34C2]/36	172.16.254.3	0	100	0 ?	
* i	172.16.254.3	0	100	0 ?	
Route Distinguisher: 172.16.254.4:101					
* i [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [0] [*]/20	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
* i [2] [172.16.254.4:101] [0] [48] [44D3CA286CC1] [32] [10.1.101.12]/24	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [32] [10.1.101.1]/24	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
* i [2] [172.16.254.4:101] [0] [48] [7C210DBD9541] [128] [FD00:10:1:101::1]/36	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
Route Distinguisher: 172.16.254.4:102					
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [0] [*]/20	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
* i [2] [172.16.254.4:102] [0] [48] [44D3CA286CC2] [32] [10.1.102.12]/24	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
* i [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [32] [10.1.102.1]/24	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
* i [2] [172.16.254.4:102] [0] [48] [7C210DBD954D] [128] [FD00:10:1:102::1]/36	172.16.254.4	0	100	0 ?	
*>i	172.16.254.4	0	100	0 ?	
Route Distinguisher: 172.16.254.5:101					
*>i [2] [172.16.254.5:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24	172.16.254.3	0	100	0 ?	

```

*>i [2][172.16.254.5:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36
      172.16.254.3      0      100      0 ?
*>i [2][172.16.254.5:101][0][48][44D3CA286CC1][0][*]/20
      FC00:172:16:254::4
      0      100      0 ?
*>i [2][172.16.254.5:101][0][48][44D3CA286CC1][32][10.1.101.12]/24
      FC00:172:16:254::4
      0      100      0 ?
*> [2][172.16.254.5:101][0][48][44D3CA286CC3][0][*]/20
      0.0.0.0      32768 ?
*> [2][172.16.254.5:101][0][48][44D3CA286CC3][32][10.1.101.13]/24
      0.0.0.0      32768 ?
*> [2][172.16.254.5:101][0][48][7C210DBD2741][32][10.1.101.1]/24
      0.0.0.0      32768 ?
*> [2][172.16.254.5:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
      0.0.0.0      32768 ?
*>i [2][172.16.254.5:101][0][48][7C210DBD9541][32][10.1.101.1]/24
      FC00:172:16:254::4
      0      100      0 ?
*>i [2][172.16.254.5:101][0][48][7C210DBD9541][128][FD00:10:1:101::1]/36
      FC00:172:16:254::4
      0      100      0 ?
*>i [2][172.16.254.5:101][0][48][F4CFE24334C1][0][*]/20
      172.16.254.3      0      100      0 ?
*>i [2][172.16.254.5:101][0][48][F4CFE24334C1][32][10.1.101.11]/24
      172.16.254.3      0      100      0 ?
*>i [2][172.16.254.5:101][0][48][F4CFE24334C1][128][FE80::F6CF:E2FF:FE43:34C1]/36
      172.16.254.3      0      100      0 ?
Route Distinguisher: 172.16.254.5:102
*>i [2][172.16.254.5:102][0][48][10B3D56A8FCD][32][10.1.102.1]/24
      172.16.254.3      0      100      0 ?
*>i [2][172.16.254.5:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
      172.16.254.3      0      100      0 ?
*>i [2][172.16.254.5:102][0][48][44D3CA286CC2][0][*]/20
      FC00:172:16:254::4
      0      100      0 ?
*>i [2][172.16.254.5:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
      FC00:172:16:254::4
      0      100      0 ?
*> [2][172.16.254.5:102][0][48][44D3CA286CC4][0][*]/20
      0.0.0.0      32768 ?
*> [2][172.16.254.5:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
      0.0.0.0      32768 ?
*> [2][172.16.254.5:102][0][48][7C210DBD274D][32][10.1.102.1]/24
      0.0.0.0      32768 ?
*> [2][172.16.254.5:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
      0.0.0.0      32768 ?
*>i [2][172.16.254.5:102][0][48][7C210DBD954D][32][10.1.102.1]/24
      FC00:172:16:254::4
      0      100      0 ?
*>i [2][172.16.254.5:102][0][48][7C210DBD954D][128][FD00:10:1:102::1]/36
      FC00:172:16:254::4
      0      100      0 ?
*>i [2][172.16.254.5:102][0][48][F4CFE24334C2][0][*]/20
      172.16.254.3      0      100      0 ?
*>i [2][172.16.254.5:102][0][48][F4CFE24334C2][128][FE80::F6CF:E2FF:FE43:34C2]/36
      172.16.254.3      0      100      0 ?
Route Distinguisher: 172.16.254.3:102
* i [3][172.16.254.3:102][0][32][172.16.254.3]/17
      172.16.254.3      0      100      0 ?
*>i      172.16.254.3      0      100      0 ?
Route Distinguisher: 172.16.254.4:102
* i [3][172.16.254.4:102][0][32][172.16.254.4]/17
      172.16.254.4      0      100      0 ?

```

```

*>i          172.16.254.4          0    100    0 ?
Route Distinguisher: 172.16.254.5:102
*>i  [3] [172.16.254.5:102] [0] [32] [172.16.254.3]/17
      172.16.254.3          0    100    0 ?
*>i  [3] [172.16.254.5:102] [0] [32] [172.16.254.4]/17
      FC00:172:16:254::4          0    100    0 ?
*>  [3] [172.16.254.5:102] [0] [32] [172.16.254.5]/17
      0.0.0.0          32768 ?
Route Distinguisher: 1:1 (default for vrf green)
* i  [5] [1:1] [0] [24] [10.1.101.0]/17
      172.16.254.3          0    100    0 ?
* i  172.16.254.3          0    100    0 ?
*>  0.0.0.0          32768 ?
* i  [5] [1:1] [0] [24] [10.1.102.0]/17
      172.16.254.3          0    100    0 ?
* i  172.16.254.3          0    100    0 ?
*>  0.0.0.0          32768 ?
* i  [5] [1:1] [0] [64] [FD00:10:1:101::]/29
      172.16.254.3          0    100    0 ?
* i  172.16.254.3          0    100    0 ?
*>  ::          32768 ?
* i  [5] [1:1] [0] [64] [FD00:10:1:102::]/29
      172.16.254.3          0    100    0 ?
* i  172.16.254.3          0    100    0 ?
*>  ::          32768 ?

```

Leaf-03# show l2vpn evpn mac ip

IP Address	EVI	VLAN	MAC Address	Next Hop(s)
10.1.101.11	101	101	f4cf.e243.34c1	172.16.254.3
10.1.101.12	101	101	44d3.ca28.6cc1	FC00:172:16:254::4
10.1.101.13	101	101	44d3.ca28.6cc3	Gi1/0/16:101
FE80::F6CF:E2FF:FE43:34C1	101	101	f4cf.e243.34c1	172.16.254.3
10.1.102.12	102	102	44d3.ca28.6cc2	FC00:172:16:254::4
10.1.102.13	102	102	44d3.ca28.6cc4	Gi1/0/17:102
FE80::F6CF:E2FF:FE43:34C2	102	102	f4cf.e243.34c2	172.16.254.3

Leaf-03# show l2route evpn mac ip

EVI	ETag	Prod	Mac Address	Next Hop(s)	Host IP
101	0	BGP	10b3.d56a.8fc1		10.1.101.1
			V:10101 172.16.254.3		
101	0	BGP	10b3.d56a.8fc1		FD00:10:1:101::1
			V:10101 172.16.254.3		
101	0	BGP	44d3.ca28.6cc1		10.1.101.12
			V:10101 FC00:172:16:254::4		
101	0	L2VPN	44d3.ca28.6cc3		10.1.101.13
			Gi1/0/16:101		
101	0	L2VPN	7c21.0dbd.2741		10.1.101.1
			V1101:0		
101	0	L2VPN	7c21.0dbd.2741		FD00:10:1:101::1
			V1101:0		
101	0	BGP	7c21.0dbd.9541		10.1.101.1
			V:10101 FC00:172:16:254::4		
101	0	BGP	7c21.0dbd.9541		FD00:10:1:101::1
			V:10101 FC00:172:16:254::4		
101	0	BGP	f4cf.e243.34c1		10.1.101.11
			V:10101 172.16.254.3		

```

101      0   BGP f4cf.e243.34c1          FE80::F6CF:E2FF:FE43:34C1
          V:10101 172.16.254.3
102      0   BGP 10b3.d56a.8fcd          10.1.102.1
          V:10102 172.16.254.3
102      0   BGP 10b3.d56a.8fcd          FD00:10:1:102::1
          V:10102 172.16.254.3
102      0   BGP 44d3.ca28.6cc2          10.1.102.12
          V:10102 FC00:172:16:254::4
102      0   L2VPN 44d3.ca28.6cc4        10.1.102.13
          Gi1/0/17:102
102      0   L2VPN 7c21.0dbd.274d        10.1.102.1
          V1102:0
102      0   L2VPN 7c21.0dbd.274d        FD00:10:1:102::1
          V1102:0
102      0   BGP 7c21.0dbd.954d          10.1.102.1
          V:10102 FC00:172:16:254::4
102      0   BGP 7c21.0dbd.954d          FD00:10:1:102::1
          V:10102 FC00:172:16:254::4
102      0   BGP f4cf.e243.34c2          FE80::F6CF:E2FF:FE43:34C2
          V:10102 172.16.254.3

```

To return to the example configuration, click [Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay, on page 46](#).

### Outputs to Verify Configuration on Spine 1

```

Spine-01# show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
       n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       H - NHRP, G - NHRP registered, g - NHRP registration summary
       o - ODR, P - periodic downloaded static route, l - LISP
       a - application route
       + - replicated route, % - next hop override, p - overrides from PfR
       & - replicated local route overrides by connected

Gateway of last resort is not set

172.16.0.0/16 is variably subnetted, 20 subnets, 2 masks
C       172.16.13.0/24 is directly connected, GigabitEthernet1/0/1
L       172.16.13.1/32 is directly connected, GigabitEthernet1/0/1
C       172.16.14.0/24 is directly connected, GigabitEthernet1/0/2
L       172.16.14.1/32 is directly connected, GigabitEthernet1/0/2
C       172.16.15.0/24 is directly connected, GigabitEthernet1/0/3
L       172.16.15.1/32 is directly connected, GigabitEthernet1/0/3
O       172.16.23.0/24
        [110/2] via 172.16.13.3, 03:11:49, GigabitEthernet1/0/1
O       172.16.24.0/24
        [110/2] via 172.16.14.4, 03:11:49, GigabitEthernet1/0/2
O       172.16.25.0/24
        [110/2] via 172.16.15.5, 03:11:48, GigabitEthernet1/0/3
C       172.16.254.1/32 is directly connected, Loopback1
O       172.16.254.2/32
        [110/3] via 172.16.15.5, 03:11:39, GigabitEthernet1/0/3
        [110/3] via 172.16.14.4, 03:11:43, GigabitEthernet1/0/2
        [110/3] via 172.16.13.3, 03:11:43, GigabitEthernet1/0/1
O       172.16.254.3/32
        [110/2] via 172.16.13.3, 03:11:49, GigabitEthernet1/0/1
O       172.16.254.4/32

```

```

O      [110/2] via 172.16.14.4, 03:11:49, GigabitEthernet1/0/2
O      172.16.254.5/32
C      [110/2] via 172.16.15.5, 03:11:48, GigabitEthernet1/0/3
C      172.16.255.1/32 is directly connected, Loopback0
O      172.16.255.2/32
O      [110/3] via 172.16.15.5, 03:11:39, GigabitEthernet1/0/3
O      [110/3] via 172.16.14.4, 03:11:43, GigabitEthernet1/0/2
O      [110/3] via 172.16.13.3, 03:11:43, GigabitEthernet1/0/1
O      172.16.255.3/32
O      [110/2] via 172.16.13.3, 03:11:49, GigabitEthernet1/0/1
O      172.16.255.4/32
O      [110/2] via 172.16.14.4, 03:11:49, GigabitEthernet1/0/2
O      172.16.255.5/32
C      [110/2] via 172.16.15.5, 03:11:48, GigabitEthernet1/0/3
C      172.16.255.255/32 is directly connected, Loopback2

```

Spine-01# **show ipv6 route**

IPv6 Routing Table - default - 19 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, H - NHRP, I1 - ISIS L1

I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP

EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination

NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter

OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1

ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations

ld - LISP dyn-eid, lA - LISP away, le - LISP extranet-policy

lp - LISP publications, ls - LISP destinations-summary

```

C   FC00:172:16:13::/64 [0/0]
    via GigabitEthernet1/0/1, directly connected
L   FC00:172:16:13::1/128 [0/0]
    via GigabitEthernet1/0/1, receive
C   FC00:172:16:14::/64 [0/0]
    via GigabitEthernet1/0/2, directly connected
L   FC00:172:16:14::1/128 [0/0]
    via GigabitEthernet1/0/2, receive
C   FC00:172:16:15::/64 [0/0]
    via GigabitEthernet1/0/3, directly connected
L   FC00:172:16:15::1/128 [0/0]
    via GigabitEthernet1/0/3, receive
O   FC00:172:16:23::/64 [110/3]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
    via FE80::7E21:DFE:FEBD:2764, GigabitEthernet1/0/3
O   FC00:172:16:24::/64 [110/2]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
O   FC00:172:16:25::/64 [110/2]
    via FE80::7E21:DFE:FEBD:2764, GigabitEthernet1/0/3
LC  FC00:172:16:254::1/128 [0/0]
    via Loopback1, receive
O   FC00:172:16:254::2/128 [110/2]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
    via FE80::7E21:DFE:FEBD:2764, GigabitEthernet1/0/3
O   FC00:172:16:254::4/128 [110/1]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
O   FC00:172:16:254::5/128 [110/1]
    via FE80::7E21:DFE:FEBD:2764, GigabitEthernet1/0/3
LC  FC00:172:16:255::1/128 [0/0]
    via Loopback0, receive
O   FC00:172:16:255::2/128 [110/2]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
    via FE80::7E21:DFE:FEBD:2764, GigabitEthernet1/0/3
O   FC00:172:16:255::4/128 [110/1]
    via FE80::7E21:DFE:FEBD:9564, GigabitEthernet1/0/2
O   FC00:172:16:255::5/128 [110/1]

```

```

    via FE80::7E21:DFE:FEED:2764, GigabitEthernet1/0/3
LC FC00:172:16:255::255/128 [0/0]
    via Loopback2, receive
L FF00::/8 [0/0]
    via Null0, receive

```

Spine-01# **show ip mroute**

IP Multicast Routing Table

```

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report,
       Z - Multicast Tunnel, z - MDT-data group sender,
       Y - Joined MDT-data group, y - Sending to MDT-data group,
       G - Received BGP C-Mroute, g - Sent BGP C-Mroute,
       N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,
       Q - Received BGP S-A Route, q - Sent BGP S-A Route,
       V - RD & Vector, v - Vector, p - PIM Joins on route,
       x - VxLAN group, c - PFP-SA cache created entry,
       * - determined by Assert, # - iif-starg configured on rpf intf,
       e - encap-helper tunnel flag, l - LISP decap ref count contributor
Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join
                          t - LISP transit group

```

Timers: Uptime/Expires

Interface state: Interface, Next-Hop or VCD, State/Mode

```

(*, 224.0.1.40), 03:11:59/00:02:07, RP 172.16.255.255, flags: SPL
  Incoming interface: Null, RPF nbr 0.0.0.0
  Outgoing interface list: Null

(*, 225.0.0.101), 00:19:24/stopped, RP 172.16.255.255, flags: SP
  Incoming interface: Null, RPF nbr 0.0.0.0
  Outgoing interface list: Null

(172.16.254.4, 225.0.0.101), 00:01:27/00:01:32, flags: PA
  Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.14.4
  Outgoing interface list: Null

(172.16.254.5, 225.0.0.101), 00:01:56/00:01:03, flags: PA
  Incoming interface: GigabitEthernet1/0/3, RPF nbr 172.16.15.5
  Outgoing interface list: Null

```

Spine-01# **show ipv6 mroute**

Multicast Routing Table

```

Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, Y - Joined MDT-data group,
       y - Sending to MDT-data group
       g - BGP signal originated, G - BGP Signal received,
       N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,
       q - BGP Src-Active originated, Q - BGP Src-Active received
       E - Extranet

```

Timers: Uptime/Expires

Interface state: Interface, State

```

(*, FF0E:225::101), 03:11:56/00:02:40, RP FC00:172:16:255::255, flags: S
  Incoming interface: Tunnel2
  RPF nbr: FC00:172:16:255::255
  Immediate Outgoing interface list:

```

GigabitEthernet1/0/3, Forward, 03:11:54/00:02:40

```
Spine-01# show bgp l2vpn evpn summary
BGP router identifier 172.16.255.1, local AS number 65001
BGP table version is 33, main routing table version 33
32 network entries using 12288 bytes of memory
85 path entries using 19720 bytes of memory
24/22 BGP path/bestpath attribute entries using 7104 bytes of memory
3 BGP rrinfo entries using 120 bytes of memory
17 BGP extended community entries using 920 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 40152 total bytes of memory
BGP activity 32/0 prefixes, 85/0 paths, scan interval 60 secs
32 networks peaked at 15:31:23 Oct 31 2022 UTC (00:45:20.867 ago)

Neighbor      V      AS MsgRcvd MsgSent  TblVer  InQ OutQ Up/Down  State/PfxRcd
172.16.255.3  4      65001   224    236     33    0   0 03:11:40    14
172.16.255.4  4      65001   222    234     33    0   0 03:11:41    13
FC00:172:16:255::2
4            65001   233    235     33    0   0 03:11:50    32
FC00:172:16:255::4
4            65001   219    234     33    0   0 03:11:52    13
FC00:172:16:255::5
4            65001   220    238     33    0   0 03:11:53    13
```

```
Spine-01# show bgp l2vpn evpn
BGP table version is 33, local router ID is 172.16.255.1
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
               t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found
```

```
Network      Next Hop      Metric LocPrf Weight Path
Route Distinguisher: 172.16.254.3:101
* i [2][172.16.254.3:101][0][48][10B3D56A8FC1][32][10.1.101.1]/24
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:101][0][48][10B3D56A8FC1][128][FD00:10:1:101::1]/36
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:101][0][48][F4CFE24334C1][0][*]/20
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:101][0][48][F4CFE24334C1][32][10.1.101.11]/24
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:101][0][48][F4CFE24334C1][128][FE80::F6CF:E2FF:FE43:34C1]/36
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][32][10.1.102.1]/24
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][0][*]/20
   172.16.254.3      0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][128][FE80::F6CF:E2FF:FE43:34C2]/36
```

```

172.16.254.3          0 100 0 ?
*>i 172.16.254.3      0 100 0 ?
Route Distinguisher: 172.16.254.4:101
* i [2][172.16.254.4:101][0][48][44D3CA286CC1][0][*]/20
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
* i [2][172.16.254.4:101][0][48][44D3CA286CC1][32][10.1.101.12]/24
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
* i [2][172.16.254.4:101][0][48][7C210DBD9541][32][10.1.101.1]/24
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
* i [2][172.16.254.4:101][0][48][7C210DBD9541][128][FD00:10:1:101::1]/36
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][0][*]/20
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][32][10.1.102.1]/24
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][128][FD00:10:1:102::1]/36
172.16.254.4          0 100 0 ?
* i 172.16.254.4      0 100 0 ?
*>i 172.16.254.4      0 100 0 ?
Route Distinguisher: 172.16.254.5:101
* i [2][172.16.254.5:101][0][48][44D3CA286CC3][0][*]/20
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
* i [2][172.16.254.5:101][0][48][44D3CA286CC3][32][10.1.101.13]/24
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
* i [2][172.16.254.5:101][0][48][7C210DBD2741][32][10.1.101.1]/24
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
* i [2][172.16.254.5:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][0][*]/20
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][32][10.1.102.1]/24
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
172.16.254.5          0 100 0 ?
*>i 172.16.254.5      0 100 0 ?
Route Distinguisher: 172.16.254.3:102
* i [3][172.16.254.3:102][0][32][172.16.254.3]/17

```



```

172.16.254.3          0    100    0 ?
*>i                  172.16.254.3          0    100    0 ?
Route Distinguisher: 172.16.254.4:102
* i [3][172.16.254.4:102][0][32][172.16.254.4]/17
172.16.254.4          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
*>i                  172.16.254.4          0    100    0 ?
Route Distinguisher: 172.16.254.5:102
* i [3][172.16.254.5:102][0][32][172.16.254.5]/17
172.16.254.5          0    100    0 ?
*>i                  172.16.254.5          0    100    0 ?
Route Distinguisher: 1:1
* i [5][1:1][0][24][10.1.101.0]/17
172.16.254.3          0    100    0 ?
* i                  172.16.254.5          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
*>i                  172.16.254.3          0    100    0 ?
* i [5][1:1][0][24][10.1.102.0]/17
172.16.254.3          0    100    0 ?
* i                  172.16.254.5          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
*>i                  172.16.254.3          0    100    0 ?
* i [5][1:1][0][64][FD00:10:1:101::]/29
172.16.254.3          0    100    0 ?
* i                  172.16.254.5          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
*>i                  172.16.254.3          0    100    0 ?
* i [5][1:1][0][64][FD00:10:1:102::]/29
172.16.254.3          0    100    0 ?
* i                  172.16.254.5          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
* i                  172.16.254.4          0    100    0 ?
*>i                  172.16.254.3          0    100    0 ?

```

```

Spine-01# show ip msdp peer
MSDP Peer 172.16.254.2 (?), AS 65001 (configured AS)
Connection status:
  State: Up, Resets: 0, Connection source: Loopback1 (172.16.254.1)
  Uptime(Downtime): 03:11:04, Messages sent/received: 249/260
  Output messages discarded: 0
  Connection and counters cleared 03:12:04 ago
SA Filtering:
  Input (S,G) filter: none, route-map: none
  Input RP filter: none, route-map: none
  Output (S,G) filter: none, route-map: none
  Output RP filter: none, route-map: none
SA-Requests:
  Input filter: none
Peer ttl threshold: 0
SAs learned from this peer: 3
Number of connection transitions to Established state: 1
  Input queue size: 0, Output queue size: 0
MD5 signature protection on MSDP TCP connection: not enabled
Message counters:
  RPF Failure count: 0
  SA Messages in/out: 249/156
  SA Requests in: 0
  SA Responses out: 0
  Data Packets in/out: 36/43

```

```
Spine-01# show ip msdp sa-cache
MSDP Source-Active Cache - 3 entries
(172.16.254.3, 225.0.0.101), RP 172.16.255.255, BGP/AS 0, 03:07:36/00:05:34, Peer 172.16.254.2
(172.16.254.4, 225.0.0.101), RP 172.16.255.255, BGP/AS 0, 00:04:37/00:03:42, Peer 172.16.254.2
(172.16.254.5, 225.0.0.101), RP 172.16.255.255, BGP/AS 0, 00:50:54/00:00:50, Peer 172.16.254.2
```

```
Spine-01# show ipv6 pim anycast-rp
Anycast RP Peers For FC00:172:16:255::255   Last Register/Register-Stop received
FC00:172:16:254::2 03:12:04/03:12:04
```

To return to the example configuration, click [Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay, on page 46](#).

## Outputs to Verify the Configuration on Spine 2

```
Spine-02# show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, m - OMP
n - NAT, Ni - NAT inside, No - NAT outside, Nd - NAT DIA
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default, U - per-user static route
H - NHRP, G - NHRP registered, g - NHRP registration summary
o - ODR, P - periodic downloaded static route, l - LISP
a - application route
+ - replicated route, % - next hop override, p - overrides from PFR
& - replicated local route overrides by connected
```

Gateway of last resort is not set

```
172.16.0.0/16 is variably subnetted, 20 subnets, 2 masks
O    172.16.13.0/24
     [110/2] via 172.16.23.3, 03:12:16, GigabitEthernet1/0/1
O    172.16.14.0/24
     [110/2] via 172.16.24.4, 03:12:17, GigabitEthernet1/0/2
O    172.16.15.0/24
     [110/2] via 172.16.25.5, 03:12:16, GigabitEthernet1/0/3
C    172.16.23.0/24 is directly connected, GigabitEthernet1/0/1
L    172.16.23.2/32 is directly connected, GigabitEthernet1/0/1
C    172.16.24.0/24 is directly connected, GigabitEthernet1/0/2
L    172.16.24.2/32 is directly connected, GigabitEthernet1/0/2
C    172.16.25.0/24 is directly connected, GigabitEthernet1/0/3
L    172.16.25.2/32 is directly connected, GigabitEthernet1/0/3
O    172.16.254.1/32
     [110/3] via 172.16.25.5, 03:12:16, GigabitEthernet1/0/3
     [110/3] via 172.16.24.4, 03:12:17, GigabitEthernet1/0/2
     [110/3] via 172.16.23.3, 03:12:16, GigabitEthernet1/0/1
C    172.16.254.2/32 is directly connected, Loopback1
O    172.16.254.3/32
     [110/2] via 172.16.23.3, 03:12:16, GigabitEthernet1/0/1
O    172.16.254.4/32
     [110/2] via 172.16.24.4, 03:12:17, GigabitEthernet1/0/2
O    172.16.254.5/32
     [110/2] via 172.16.25.5, 03:12:16, GigabitEthernet1/0/3
O    172.16.255.1/32
     [110/3] via 172.16.25.5, 03:12:16, GigabitEthernet1/0/3
```

```

        [110/3] via 172.16.24.4, 03:12:17, GigabitEthernet1/0/2
        [110/3] via 172.16.23.3, 03:12:16, GigabitEthernet1/0/1
C    172.16.255.2/32 is directly connected, Loopback0
O    172.16.255.3/32
        [110/2] via 172.16.23.3, 03:12:16, GigabitEthernet1/0/1
O    172.16.255.4/32
        [110/2] via 172.16.24.4, 03:12:17, GigabitEthernet1/0/2
O    172.16.255.5/32
        [110/2] via 172.16.25.5, 03:12:16, GigabitEthernet1/0/3
C    172.16.255.255/32 is directly connected, Loopback2

```

Spine-02# **show ipv6 route**

IPv6 Routing Table - default - 19 entries

Codes: C - Connected, L - Local, S - Static, U - Per-user Static route

B - BGP, R - RIP, H - NHRP, I1 - ISIS L1

I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary, D - EIGRP

EX - EIGRP external, ND - ND Default, NDp - ND Prefix, DCE - Destination

NDr - Redirect, RL - RPL, O - OSPF Intra, OI - OSPF Inter

OE1 - OSPF ext 1, OE2 - OSPF ext 2, ON1 - OSPF NSSA ext 1

ON2 - OSPF NSSA ext 2, la - LISP alt, lr - LISP site-registrations

ld - LISP dyn-eid, la - LISP away, le - LISP extranet-policy

lp - LISP publications, ls - LISP destinations-summary

```

O    FC00:172:16:13::/64 [110/3]
        via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
        via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
O    FC00:172:16:14::/64 [110/2]
        via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
O    FC00:172:16:15::/64 [110/2]
        via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
C    FC00:172:16:23::/64 [0/0]
        via GigabitEthernet1/0/1, directly connected
L    FC00:172:16:23::2/128 [0/0]
        via GigabitEthernet1/0/1, receive
C    FC00:172:16:24::/64 [0/0]
        via GigabitEthernet1/0/2, directly connected
L    FC00:172:16:24::2/128 [0/0]
        via GigabitEthernet1/0/2, receive
C    FC00:172:16:25::/64 [0/0]
        via GigabitEthernet1/0/3, directly connected
L    FC00:172:16:25::2/128 [0/0]
        via GigabitEthernet1/0/3, receive
O    FC00:172:16:254::1/128 [110/2]
        via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
        via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
LC   FC00:172:16:254::2/128 [0/0]
        via Loopback1, receive
O    FC00:172:16:254::4/128 [110/1]
        via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
O    FC00:172:16:254::5/128 [110/1]
        via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
O    FC00:172:16:255::1/128 [110/2]
        via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
        via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
LC   FC00:172:16:255::2/128 [0/0]
        via Loopback0, receive
O    FC00:172:16:255::4/128 [110/1]
        via FE80::7E21:DFE:FEBD:9556, GigabitEthernet1/0/2
O    FC00:172:16:255::5/128 [110/1]
        via FE80::7E21:DFE:FEBD:2756, GigabitEthernet1/0/3
LC   FC00:172:16:255::255/128 [0/0]
        via Loopback2, receive
L    FF00::/8 [0/0]
        via Null0, receive

```

```

Spine-02# show ip mroute
IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry, E - Extranet,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report,
       Z - Multicast Tunnel, z - MDT-data group sender,
       Y - Joined MDT-data group, y - Sending to MDT-data group,
       G - Received BGP C-Mroute, g - Sent BGP C-Mroute,
       N - Received BGP Shared-Tree Prune, n - BGP C-Mroute suppressed,
       Q - Received BGP S-A Route, q - Sent BGP S-A Route,
       V - RD & Vector, v - Vector, p - PIM Joins on route,
       x - VxLAN group, c - PFP-SA cache created entry,
       * - determined by Assert, # - iif-starg configured on rpf intf,
       e - encap-helper tunnel flag, l - LISP decap ref count contributor
Outgoing interface flags: H - Hardware switched, A - Assert winner, p - PIM Join
                          t - LISP transit group

Timers: Uptime/Expires
Interface state: Interface, Next-Hop or VCD, State/Mode

(*, 224.0.1.40), 03:12:27/00:03:29, RP 172.16.255.255, flags: SJCL
Incoming interface: Null, RPF nbr 0.0.0.0
Outgoing interface list:
  GigabitEthernet1/0/3, Forward/Sparse, 03:12:16/00:03:29, flags:
  GigabitEthernet1/0/2, Forward/Sparse, 03:12:16/00:03:17, flags:
  GigabitEthernet1/0/1, Forward/Sparse, 03:12:27/00:03:14, flags:

(*, 225.0.0.101), 03:12:26/00:03:19, RP 172.16.255.255, flags: S
Incoming interface: Null, RPF nbr 0.0.0.0
Outgoing interface list:
  GigabitEthernet1/0/1, Forward/Sparse, 03:12:13/00:03:19, flags:
  GigabitEthernet1/0/3, Forward/Sparse, 03:12:16/00:02:39, flags:
  GigabitEthernet1/0/2, Forward/Sparse, 03:12:16/00:02:31, flags:

(172.16.254.3, 225.0.0.101), 03:05:05/00:02:26, flags: TA
Incoming interface: GigabitEthernet1/0/1, RPF nbr 172.16.23.3
Outgoing interface list:
  GigabitEthernet1/0/2, Forward/Sparse, 03:05:05/00:02:37, flags:
  GigabitEthernet1/0/3, Forward/Sparse, 03:05:05/00:02:39, flags:

(172.16.254.5, 225.0.0.101), 03:05:06/00:03:09, flags: T
Incoming interface: GigabitEthernet1/0/3, RPF nbr 172.16.25.5
Outgoing interface list:
  GigabitEthernet1/0/2, Forward/Sparse, 03:05:06/00:03:23, flags:
  GigabitEthernet1/0/1, Forward/Sparse, 03:05:06/00:03:19, flags:

(172.16.254.4, 225.0.0.101), 03:09:13/00:00:15, flags: T
Incoming interface: GigabitEthernet1/0/2, RPF nbr 172.16.24.4
Outgoing interface list:
  GigabitEthernet1/0/3, Forward/Sparse, 03:09:13/00:02:43, flags:
  GigabitEthernet1/0/1, Forward/Sparse, 03:09:13/00:03:19, flags:

```

```

Spine-02# show ipv6 mroute
Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group,
       C - Connected, L - Local, I - Received Source Specific Host Report,
       P - Pruned, R - RP-bit set, F - Register flag, T - SPT-bit set,
       J - Join SPT, Y - Joined MDT-data group,
       y - Sending to MDT-data group
       g - BGP signal originated, G - BGP Signal received,
       N - BGP Shared-Tree Prune received, n - BGP C-Mroute suppressed,
       q - BGP Src-Active originated, Q - BGP Src-Active received

```

```

E - Extranet
Timers: Uptime/Expires
Interface state: Interface, State

(*, FF0E:225::101), 03:12:23/00:03:11, RP FC00:172:16:255::255, flags: S
  Incoming interface: Tunnel2
  RPF nbr: FC00:172:16:255::255
  Immediate Outgoing interface list:
    GigabitEthernet1/0/2, Forward, 03:12:23/00:03:11

```

```

Spine-02# show bgp l2vpn evpn summary
BGP router identifier 172.16.255.2, local AS number 65001
BGP table version is 33, main routing table version 33
32 network entries using 12288 bytes of memory
85 path entries using 19720 bytes of memory
24/22 BGP path/bestpath attribute entries using 7104 bytes of memory
3 BGP rrinfo entries using 120 bytes of memory
17 BGP extended community entries using 920 bytes of memory
0 BGP route-map cache entries using 0 bytes of memory
0 BGP filter-list cache entries using 0 bytes of memory
BGP using 40152 total bytes of memory
BGP activity 32/0 prefixes, 85/0 paths, scan interval 60 secs
32 networks peaked at 15:31:23 Oct 31 2022 UTC (00:45:53.775 ago)

```

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
172.16.255.3	4	65001	224	237	33	0	0	03:12:12	14
172.16.255.4	4	65001	223	235	33	0	0	03:12:10	13
FC00:172:16:255::1	4	65001	235	234	33	0	0	03:12:22	32
FC00:172:16:255::4	4	65001	220	236	33	0	0	03:12:22	13
FC00:172:16:255::5	4	65001	220	237	33	0	0	03:12:19	13

```

Spine-02# show bgp l2vpn evpn
BGP table version is 33, local router ID is 172.16.255.2
Status codes: s suppressed, d damped, h history, * valid, > best, i - internal,
               r RIB-failure, S Stale, m multipath, b backup-path, f RT-Filter,
               x best-external, a additional-path, c RIB-compressed,
               t secondary path, L long-lived-stale,
Origin codes: i - IGP, e - EGP, ? - incomplete
RPKI validation codes: V valid, I invalid, N Not found

```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 172.16.254.3:101					
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [32] [10.1.101.1]/24	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i [2] [172.16.254.3:101] [0] [48] [10B3D56A8FC1] [128] [FD00:10:1:101::1]/36	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [0] [*]/20	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [32] [10.1.101.11]/24	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
* i [2] [172.16.254.3:101] [0] [48] [F4CFE24334C1] [128] [FE80::F6CF:E2FF:FE43:34C1]/36	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?
Route Distinguisher: 172.16.254.3:102					
* i [2] [172.16.254.3:102] [0] [48] [10B3D56A8FCD] [32] [10.1.102.1]/24	172.16.254.3	0	100	0	?
*>i	172.16.254.3	0	100	0	?

```

* i [2][172.16.254.3:102][0][48][10B3D56A8FCD][128][FD00:10:1:102::1]/36
      172.16.254.3 0 100 0 ?
*>i 172.16.254.3 0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][0][*]/20
      172.16.254.3 0 100 0 ?
*>i 172.16.254.3 0 100 0 ?
* i [2][172.16.254.3:102][0][48][F4CFE24334C2][128][FE80::F6CF:E2FF:FE43:34C2]/36
      172.16.254.3 0 100 0 ?
*>i 172.16.254.3 0 100 0 ?
Route Distinguisher: 172.16.254.4:101
* i [2][172.16.254.4:101][0][48][44D3CA286CC1][0][*]/20
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2][172.16.254.4:101][0][48][44D3CA286CC1][32][10.1.101.12]/24
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2][172.16.254.4:101][0][48][7C210DBD9541][32][10.1.101.1]/24
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2][172.16.254.4:101][0][48][7C210DBD9541][128][FD00:10:1:101::1]/36
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
Route Distinguisher: 172.16.254.4:102
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][0][*]/20
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2][172.16.254.4:102][0][48][44D3CA286CC2][32][10.1.102.12]/24
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][32][10.1.102.1]/24
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
* i [2][172.16.254.4:102][0][48][7C210DBD954D][128][FD00:10:1:102::1]/36
      172.16.254.4 0 100 0 ?
* i 172.16.254.4 0 100 0 ?
*>i 172.16.254.4 0 100 0 ?
Route Distinguisher: 172.16.254.5:101
* i [2][172.16.254.5:101][0][48][44D3CA286CC3][0][*]/20
      172.16.254.5 0 100 0 ?
*>i 172.16.254.5 0 100 0 ?
* i [2][172.16.254.5:101][0][48][44D3CA286CC3][32][10.1.101.13]/24
      172.16.254.5 0 100 0 ?
*>i 172.16.254.5 0 100 0 ?
* i [2][172.16.254.5:101][0][48][7C210DBD2741][32][10.1.101.1]/24
      172.16.254.5 0 100 0 ?
*>i 172.16.254.5 0 100 0 ?
* i [2][172.16.254.5:101][0][48][7C210DBD2741][128][FD00:10:1:101::1]/36
      172.16.254.5 0 100 0 ?
*>i 172.16.254.5 0 100 0 ?
Route Distinguisher: 172.16.254.5:102
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][0][*]/20
      172.16.254.5 0 100 0 ?
*>i 172.16.254.5 0 100 0 ?
* i [2][172.16.254.5:102][0][48][44D3CA286CC4][32][10.1.102.13]/24
      172.16.254.5 0 100 0 ?
*>i 172.16.254.5 0 100 0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][32][10.1.102.1]/24

```

```

172.16.254.5          0    100    0 ?
*>i          172.16.254.5          0    100    0 ?
* i [2][172.16.254.5:102][0][48][7C210DBD274D][128][FD00:10:1:102::1]/36
172.16.254.5          0    100    0 ?
*>i          172.16.254.5          0    100    0 ?
Route Distinguisher: 172.16.254.3:102
* i [3][172.16.254.3:102][0][32][172.16.254.3]/17
172.16.254.3          0    100    0 ?
*>i          172.16.254.3          0    100    0 ?
Route Distinguisher: 172.16.254.4:102
* i [3][172.16.254.4:102][0][32][172.16.254.4]/17
172.16.254.4          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
*>i          172.16.254.4          0    100    0 ?
Route Distinguisher: 172.16.254.5:102
* i [3][172.16.254.5:102][0][32][172.16.254.5]/17
172.16.254.5          0    100    0 ?
*>i          172.16.254.5          0    100    0 ?
Route Distinguisher: 1:1
* i [5][1:1][0][24][10.1.101.0]/17
172.16.254.3          0    100    0 ?
* i          172.16.254.5          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
*>i          172.16.254.3          0    100    0 ?
* i [5][1:1][0][24][10.1.102.0]/17
172.16.254.3          0    100    0 ?
* i          172.16.254.5          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
*>i          172.16.254.3          0    100    0 ?
* i [5][1:1][0][64][FD00:10:1:101::]/29
172.16.254.3          0    100    0 ?
* i          172.16.254.5          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
*>i          172.16.254.3          0    100    0 ?
* i [5][1:1][0][64][FD00:10:1:102::]/29
172.16.254.3          0    100    0 ?
* i          172.16.254.5          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
* i          172.16.254.4          0    100    0 ?
*>i          172.16.254.3          0    100    0 ?

```

Spine-02# **show ip msdp peer**

MSDP Peer 172.16.254.1 (?), AS 65001 (configured AS)

Connection status:

State: Up, Resets: 0, Connection source: Loopback1 (172.16.254.2)

Uptime(Downtime): 03:11:40, Messages sent/received: 261/250

Output messages discarded: 0

Connection and counters cleared 03:12:35 ago

SA Filtering:

Input (S,G) filter: none, route-map: none

Input RP filter: none, route-map: none

Output (S,G) filter: none, route-map: none

Output RP filter: none, route-map: none

SA-Requests:

Input filter: none

Peer ttl threshold: 0

SAs learned from this peer: 2

Number of connection transitions to Established state: 1

Input queue size: 0, Output queue size: 0

MD5 signature protection on MSDP TCP connection: not enabled

Message counters:

```
RPF Failure count: 0
SA Messages in/out: 200/196
SA Requests in: 0
SA Responses out: 0
Data Packets in/out: 37/54
```

```
Spine-02# show ip msdp sa-cache
MSDP Source-Active Cache - 2 entries
(172.16.254.4, 225.0.0.101), RP 172.16.255.255, BGP/AS 0, 01:18:26/00:05:40, Peer 172.16.254.1
(172.16.254.5, 225.0.0.101), RP 172.16.255.255, BGP/AS 0, 00:02:33/00:05:40, Peer 172.16.254.1
```

```
Spine-02# show ipv6 pim anycast-rp
Anycast RP Peers For FC00:172:16:255::255 Last Register/Register-Stop received
FC00:172:16:254::2 03:12:35/03:12:35
```

To return to the example configuration, click [Example: Configuring BGP EVPN VXLAN with Dual Stack Underlay, on page 46](#).