

Test Fabric Connectivity Between Virtual Tunnel End Points in VxLAN

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Introduction

This document describes how to test fabric connectivity between two Virtual Tunnel End Points (VTEPs) in Virtual Extensible LAN (VxLAN).

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Nexus NX-OS Software
- Border Gateway Protocol (BGP)
- VxLAN

Components Used

The information in this document is based on Cisco Nexus N9K-C93180YC-EX with NXOS version 10.3(3).

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

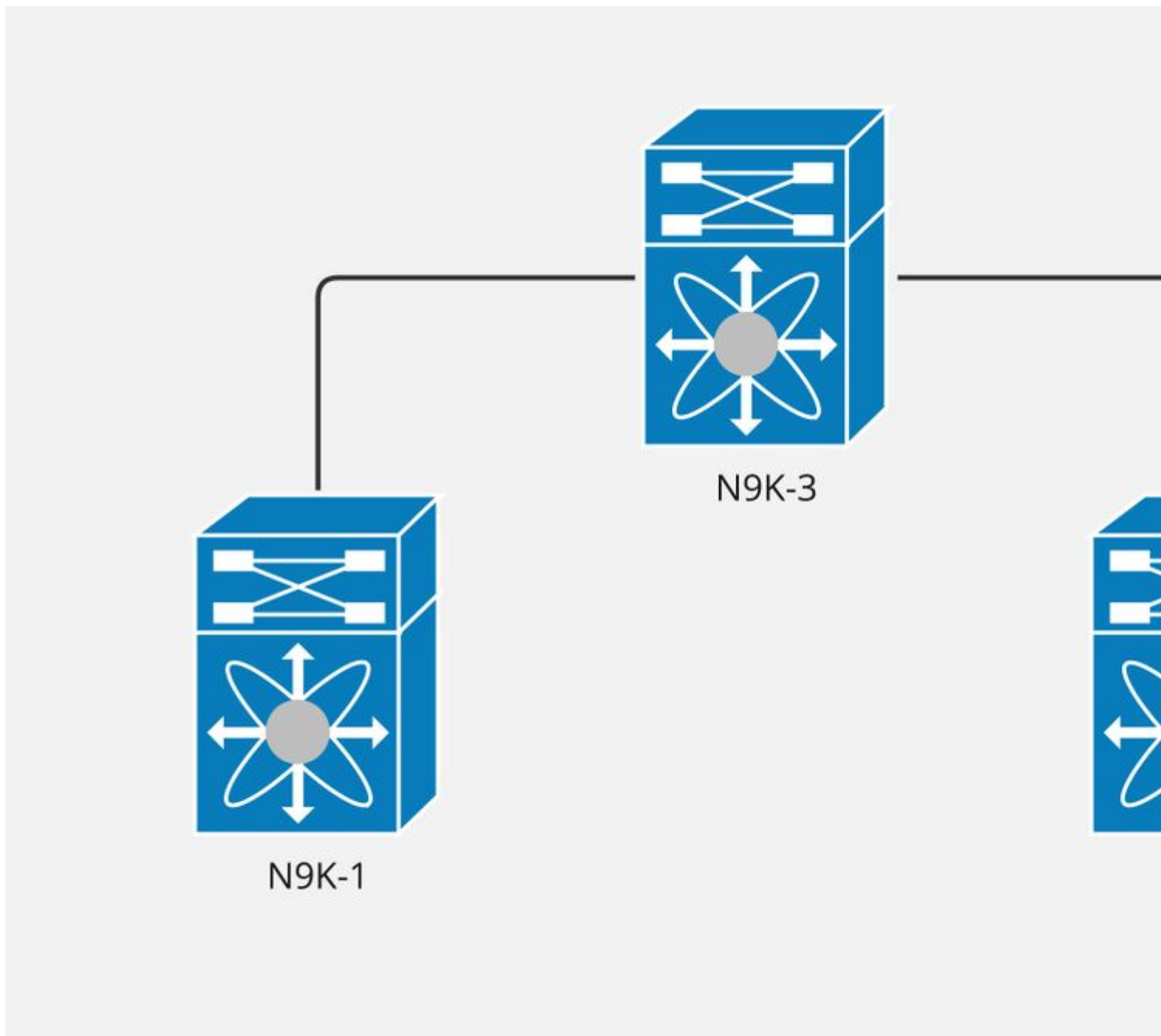
Configure

Once VxLAN is set up, users normally want to test if it works as expected. While the recommended way to do this is to do a ping test between two end hosts, which are connected to different VTEPs, it is also possible to test the fabric connectivity using loopback interfaces on the VTEPs.

Note: Using Switch Virtual Interface (SVI) as either the source or destination of the ping test is not

a valid test for fabric connectivity. The reason is we have the same IP on fabric SVIs due to the Anycast Gateway feature.

Network Diagram



Configurations

Nexus N9K-2 is configured as SPINE, while both N9K-1 and N9K-2 are configured as VTEPs in this VxLAN deployment.

Layer 3 is extended, so we have a layer 3 Virtual Network Interface (VNI) on both VTEPs for each Virtual Routing and Forwarding (VRF).

The Layer 3 VNI configured for VRF evpn_a is 50100.

N9K-1

Step 1. We configure a loopback as part of the VRF we want to test.

```
N9K-1(config)# interface loopback50
N9K-1(config-if)# vrf member evpn_a
Message reported by command ::                vrf member evpn_a
Warning: Deleted all L3 config on interface loopback50
N9K-1(config-if)# ip address 10.255.255.1/32
```

Step 2. We advertise this loopback into the fabric. Otherwise, even if the ICMP request reaches the destination, the destination itself is unable to send back the ICMP reply.

```
N9K-1(config)# router bgp 65522
N9K-1(config-router)# vrf evpn_a
N9K-1(config-router-vrf)# address-family ipv4 unicast
N9K-1(config-router-vrf-af)# network 10.255.255.1/32
```

N9K-2

Step 1. We configure a loopback as part of the VRF we want to test.

```
N9K-2(config)# interface loopback50
N9K-2(config-if)# vrf member evpn_a
Message reported by command ::                vrf member evpn_a
Warning: Deleted all L3 config on interface loopback50
N9K-2(config-if)# ip address 10.255.255.2/32
```

Step 2. We advertise this loopback into the fabric. Otherwise, even if the ICMP request reaches the destination, the destination itself is unable to send back the ICMP reply.

```
N9K-2(config)# router bgp 65522
N9K-2(config-router)# vrf evpn_a
N9K-2(config-router-vrf)# address-family ipv4 unicast
N9K-2(config-router-vrf-af)# network 10.255.255.2/32
```

Verify

Step 1. Confirm loopback is present in the local BGP table for the address family IPv4 Unicast.

```
N9K-1# show ip bgp 10.255.255.1/32 vrf evpn_a
```

```
BGP routing table information for VRF evpn_a, address family IPv4 Unicast
BGP routing table entry for 10.255.255.1/32, version 732
Paths: (1 available, best #1)
Flags: (0x80c0002) (high32 0x000020) on xmit-list, is not in urib, exported
  vpn: version 1053, (0x00000000100002) on xmit-list
Multipath: eBGP iBGP
```

```
  Advertised path-id 1, VPN AF advertised path-id 1
  Path type: local, path is valid, is best path, no labeled nexthop, is extd
  AS-Path: NONE, path locally originated
    0.0.0.0 (metric 0) from 0.0.0.0 (10.2.254.100)
      Origin IGP, MED not set, localpref 100, weight 32768
      Extcommunity: RT:65522:50100
```

```
VRF advertise information:
Path-id 1 not advertised to any peer
```

```
VPN AF advertise information:
Path-id 1 not advertised to any peer
```

```
N9K-2# show ip bgp 10.255.255.2/32 vrf evpn_a
BGP routing table information for VRF evpn_a, address family IPv4 Unicast
BGP routing table entry for 10.255.255.2/32, version 241
Paths: (1 available, best #1)
Flags: (0x80c0002) (high32 0x000020) on xmit-list, is not in urib, exported
  vpn: version 417, (0x00000000100002) on xmit-list
Multipath: eBGP iBGP
```

```
  Advertised path-id 1, VPN AF advertised path-id 1
  Path type: local, path is valid, is best path, no labeled nexthop, is extd
  AS-Path: NONE, path locally originated
    0.0.0.0 (metric 0) from 0.0.0.0 (10.2.254.100)
      Origin IGP, MED not set, localpref 100, weight 32768
      Extcommunity: RT:65522:50100
```

```
VRF advertise information:
Path-id 1 not advertised to any peer
```

```
VPN AF advertise information:
Path-id 1 not advertised to any peer
```

Step 2. Confirm loopback is present in the local BGP table for the address family L2VPN EVPN and is advertised to the expected Network Virtual Interface (NVE) peers.

```
N9K-1# show bgp l2vpn evpn 10.255.255.1 vrf evpn_a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 10.2.0.49:4 (L3VNI 50100)
BGP routing table entry for [5]:[0]:[0]:[32]:[10.255.255.1]/224, version 36993
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

```
  Advertised path-id 1
  Path type: local, path is valid, is best path, no labeled nexthop
  Gateway IP: 0.0.0.0
  AS-Path: NONE, path locally originated
    10.2.1.49 (metric 0) from 0.0.0.0 (10.2.0.49)
      Origin IGP, MED not set, localpref 100, weight 32768
      Received label 50100
```

Extcommunity: RT:65522:50100 ENCAP:8 Router MAC:a0e0.af67.511d

Path-id 1 advertised to peers:
10.2.0.33 10.2.0.34

N9K-2#

```
LEAF48# show bgp l2vpn evpn 10.255.255.2 vrf evpn_a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 10.2.0.48:4    (L3VNI 50100)
BGP routing table entry for [5]:[0]:[0]:[32]:[10.255.255.2]/224, version 13373
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn
```

```
Advertised path-id 1
Path type: local, path is valid, is best path, no labeled nexthop
Gateway IP: 0.0.0.0
AS-Path: NONE, path locally originated
 10.2.1.48 (metric 0) from 0.0.0.0 (10.2.0.48)
  Origin IGP, MED not set, localpref 100, weight 32768
  Received label 50100
  Extcommunity: RT:65522:50100 ENCAP:8 Router MAC:6cb2.aaaa.5a97
```

Path-id 1 advertised to peers:
10.2.0.33 10.2.0.34

Step 3. Confirm update was received from remote NVE peer.

```
N9K-1# show bgp l2vpn evpn 10.255.255.2 vrf evpn_a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 10.2.0.49:4    (L3VNI 50100)
BGP routing table entry for [5]:[0]:[0]:[32]:[10.255.255.2]/224, version 36995
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW
```

```
Advertised path-id 1
Path type: internal, path is valid, is best path, no labeled nexthop
  Imported from 10.2.0.48:4:[5]:[0]:[0]:[32]:[10.255.255.2]/224
Gateway IP: 0.0.0.0
AS-Path: NONE, path sourced internal to AS
 10.2.1.48 (metric 6) from 10.2.0.33 (10.2.0.33)
  Origin IGP, MED not set, localpref 100, weight 0
  Received label 50100
  Extcommunity: RT:65522:50100 Route-Import:10.2.1.147:3100 Source AS:65522:0
  ENCAP:8 Router MAC:6cb2.aaaa.5a97
  Originator: 10.2.0.48 Cluster list: 0.0.255.242
```

Path-id 1 not advertised to any peer

```
N9K-2# show bgp l2vpn evpn 10.255.255.1 vrf evpn_a
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 10.2.0.48:4    (L3VNI 50100)
BGP routing table entry for [5]:[0]:[0]:[32]:[10.255.255.1]/224, version 13372
Paths: (1 available, best #1)
Flags: (0x000002) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW
```

```
Advertised path-id 1
Path type: internal, path is valid, is best path, no labeled nexthop
```

```
Imported from 10.2.0.49:4:[5]:[0]:[0]:[32]:[10.255.255.1]/224
Gateway IP: 0.0.0.0
AS-Path: NONE, path sourced internal to AS
 10.2.1.49 (metric 6) from 10.2.0.33 (10.2.0.33)
  Origin IGP, MED not set, localpref 100, weight 0
  Received label 50100
  Extcommunity: RT:65522:50100 Route-Import:10.2.1.49:3100 Source AS:65522:0
  ENCAP:8 Router MAC:a0e0.af67.511d
  Originator: 10.2.0.49 Cluster list: 0.0.255.242
```

```
Path-id 1 not advertised to any peer
```

Step 4. Confirm there is a route for remote loopback in the routing table and next-hop is the expected NVE peer.

```
N9K-1# show ip route 10.255.255.2 vrf evpn_a
IP Route Table for VRF "evpn_a"
 '*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

10.255.255.2/32, ubest/mbest: 1/0
  *via 10.2.1.48%default, [200/0], 00:12:39, bgp-65522, internal, tag 65522, segid: 50100 tunnelid: 0x
```

```
N9K-2# show ip route 10.255.255.1 vrf evpn_a
IP Route Table for VRF "evpn_a"
 '*' denotes best ucast next-hop
 '**' denotes best mcast next-hop
 '[x/y]' denotes [preference/metric]
 '%<string>' in via output denotes VRF <string>

10.255.255.1/32, ubest/mbest: 1/0
  *via 10.2.1.49%default, [200/0], 00:15:36, bgp-65522, internal, tag 65522, segid: 50100 tunnelid: 0x
```

Step 5. Send ICMP request to remote loopback, using as source the local loopback.

```
N9K-1# ping 10.255.255.2 source-interface loopback 50
PING 10.255.255.2 (10.255.255.2): 56 data bytes
64 bytes from 10.255.255.2: icmp_seq=0 ttl=254 time=2.009 ms
64 bytes from 10.255.255.2: icmp_seq=1 ttl=254 time=1.26 ms
64 bytes from 10.255.255.2: icmp_seq=2 ttl=254 time=1.231 ms
64 bytes from 10.255.255.2: icmp_seq=3 ttl=254 time=1.142 ms
64 bytes from 10.255.255.2: icmp_seq=4 ttl=254 time=1.127 ms

--- 10.255.255.2 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 1.127/1.353/2.009 ms
```

```
N9K-2# ping 10.255.255.1 source-interface loopback 50
PING 10.255.255.1 (10.255.255.1): 56 data bytes
64 bytes from 10.255.255.1: icmp_seq=0 ttl=254 time=1.47 ms
64 bytes from 10.255.255.1: icmp_seq=1 ttl=254 time=1.396 ms
```

```
64 bytes from 10.255.255.1: icmp_seq=2 ttl=254 time=1.327 ms
64 bytes from 10.255.255.1: icmp_seq=3 ttl=254 time=1.451 ms
64 bytes from 10.255.255.1: icmp_seq=4 ttl=254 time=1.366 ms
```

```
--- 10.255.255.1 ping statistics ---
```

```
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 1.327/1.402/1.47 ms
```

Related Information

[Configuring VXLAN BGP EVPN](#)