VXLAN BGP EVPN MULTI-SITE (CLI) CONFIGURATION AND VERIFICATION

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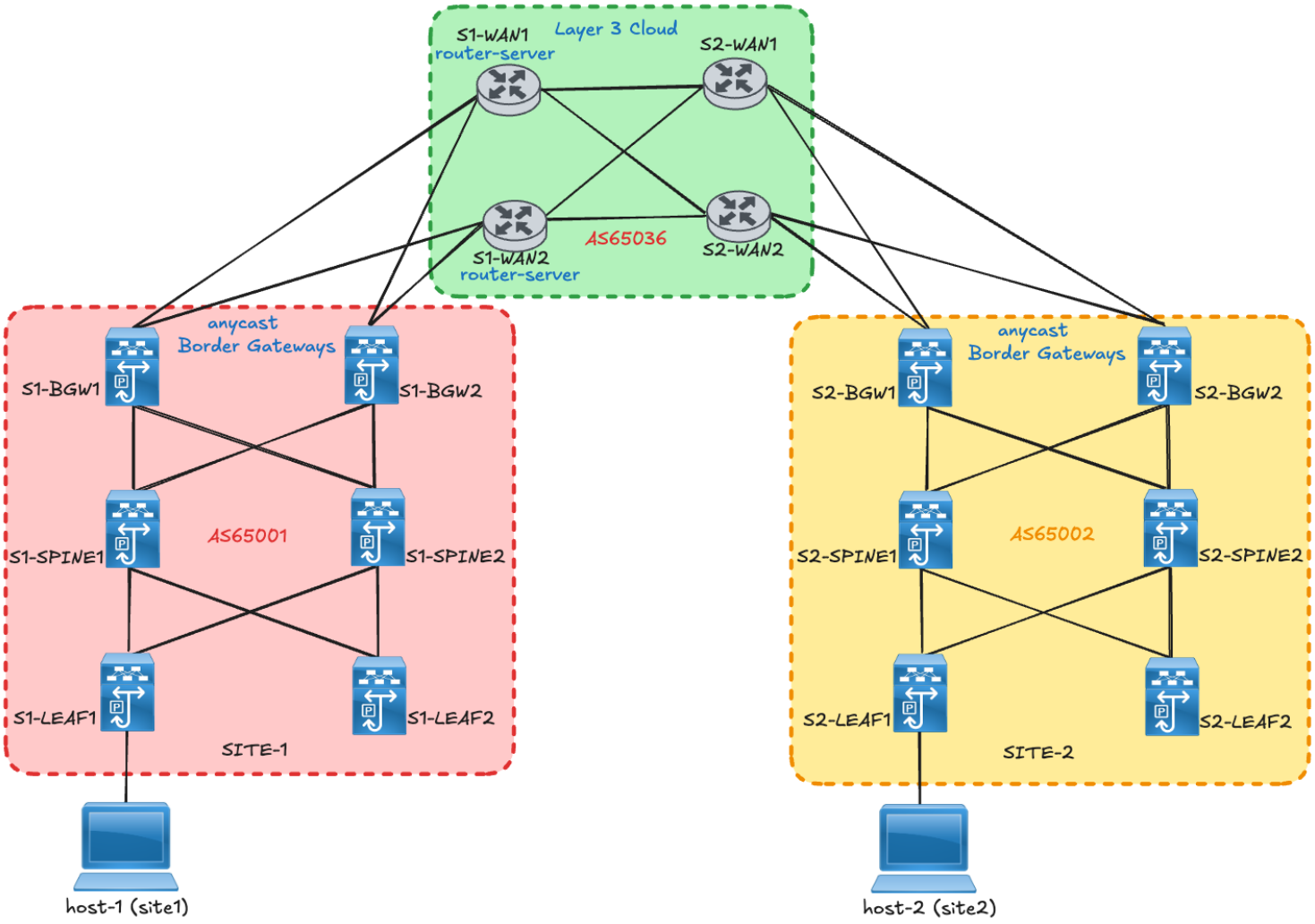


For more labs visit my GitHub repo: https://github.com/TitusM/Cisco-Data-Center

Note

This lab was conducted in a controlled environment. Any configurations in a production network should be implemented during a designated maintenance window. Additionally, always refer to official documentation relevant to your specific hardware and software.

"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison

Introduction

VXLAN EVPN Multi-Site architecture is a design for VXLAN BGP EVPN–based overlay networks that allows for the interconnection of multiple distinct VXLAN BGP EVPN fabrics or overlay domains. A VXLAN Multi-Site architecture enables seamless extension of Layer 2 and Layer 3 domains. This lab document showcases how to configure a VXLAN EVPN Multi-Site to allow communication of endpoints in different sites.

> **Note**
> This lab assumes that the reader has enough knowledge about basic VXLAN.
> Some configurations like bringing up a VXLAN site from scratch are intentionally omitted.

Solution Design – the Bigger Picture

I know it's tempting to jump straight into the configurations — I feel the same way. However, before we do that, let's establish a solid foundation and the correct mental model. This will ensure the rest of the lab is easier to follow and logically consistent. However if for some reason you want to see the entire configuration of this lab first jump straight to
To see the detailed configuration for this entire lab navigate to
Appendix: Full Configurations.

This lab consists of a VXLAN Multi-Site made up of 2 sites (Site-1 and Site-2). Each site consist of Anycast border gateways that are connected to a Layer 3 WAN in order to establish intersite connectivity.

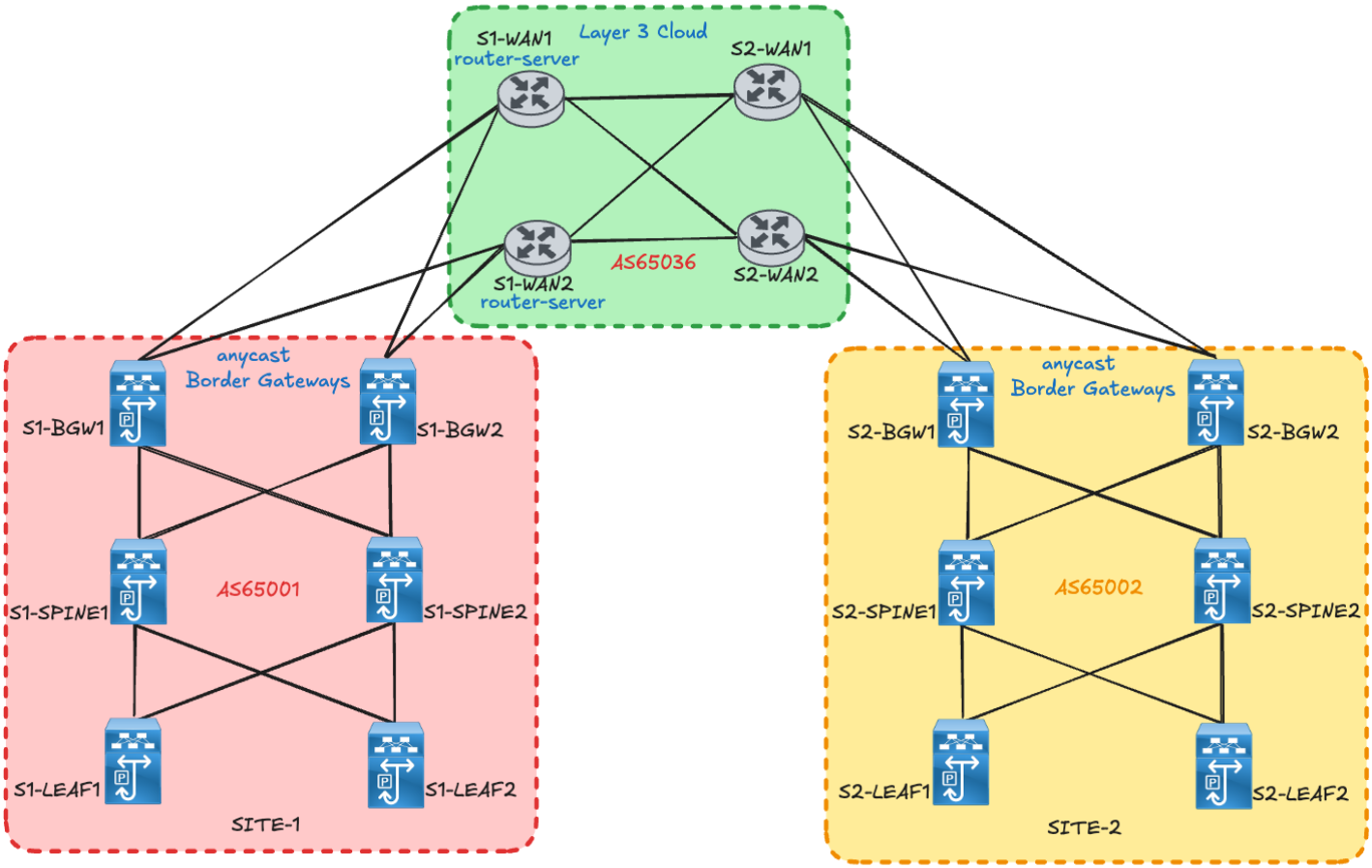
Connectivity between the border gateways and the spines will be referred to as "site-internal" and connectivity between the Border Gateways and the WAN will be referred to as "site-external".

Lab Topology Overview

This lab is made up of 2 VXLAN fabrics each with dedicated devices for leafs, spines and anycast border gateways (BGWs). These 2 sites interconnect using a Layer 3 cloud that runs pure IP routing. Each site and the Layer 3 cloud are in a different Autonomous System from a BGP perspective. S1-WAN1 and S1-WAN2 will serve as route-servers ("ebgp route reflectors").

	Site-1	**Site-2**	**Layer 3 cloud**
Internal site underlay routing protocol	OSPF	OSPF	OSPF
External site underlay routing protocol	eBGP	eBGP	eBGP
Internal site overlay routing protocol	iBGP	iBGP	iBGP
External site overlay routing protocol	eBGP	eBGP	eBGP
BGP ASN	65001	65002	65036
Internal site Replication mode	multicast	multicast	n/a
External site Replication mode	ingress replication	ingress replication	

Figure 1 Lab Topology



Border Gateway Overview

Before diving into the configurations, it is important to touch upon the concept of a Border Gateway (BGW). The BGW is critical as it is used to separate the fabric-side (site-internal fabric) from the network that interconnects the sites (site-external DC) and it abstracts the site-internal VTEPs. The BGW interacts with both site-internal and site-external nodes. Hence, the BGWs provide a network control boundary that is necessary for traffic enforcement and failure containment functionality.

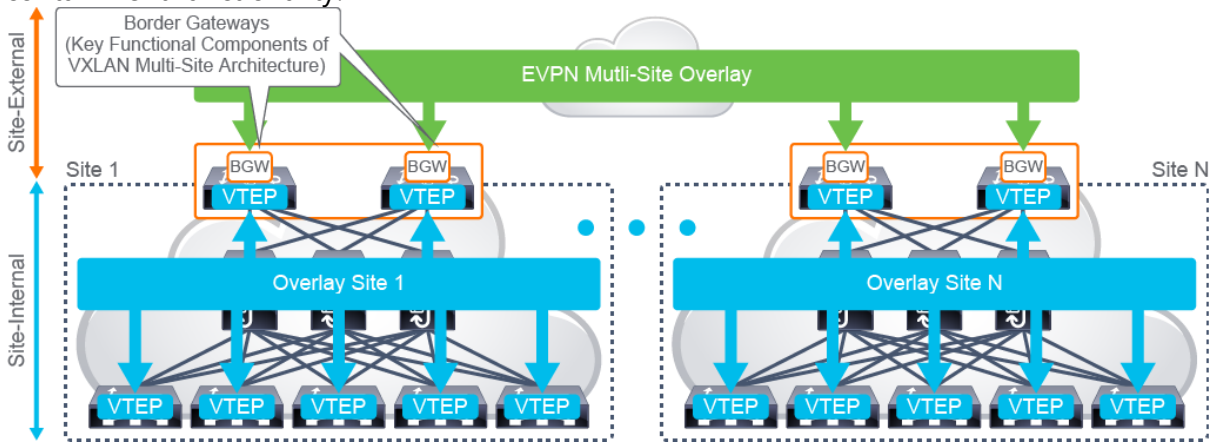


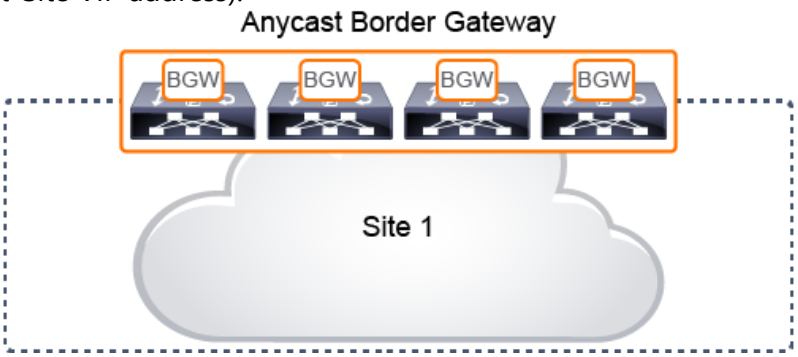
Image adopted from https://ondemandelearning.cisco.com/apollo-alpha/dc-nxa-02-multivxlanevpn-10/pages/2

"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison

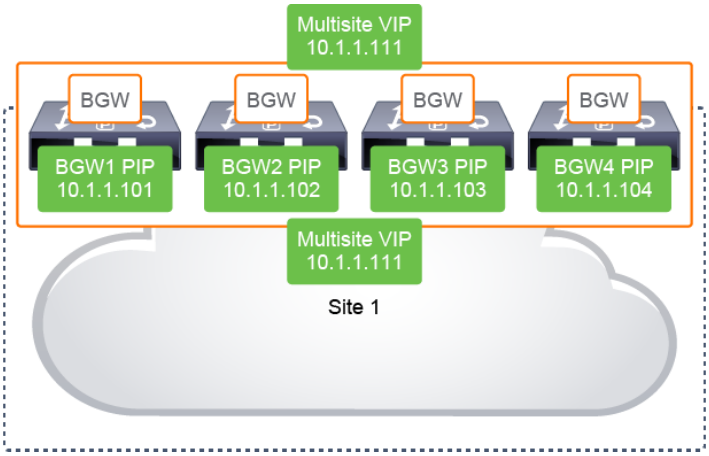
The Border Gateway is connected to the site-internal VTEPs through the VXLAN fabric's spine nodes.

Anycast Border Gateway

In an anycast Border Gateway setup, the BGWs in each site share a common anycast IP address (or Mult-Site VIP address).



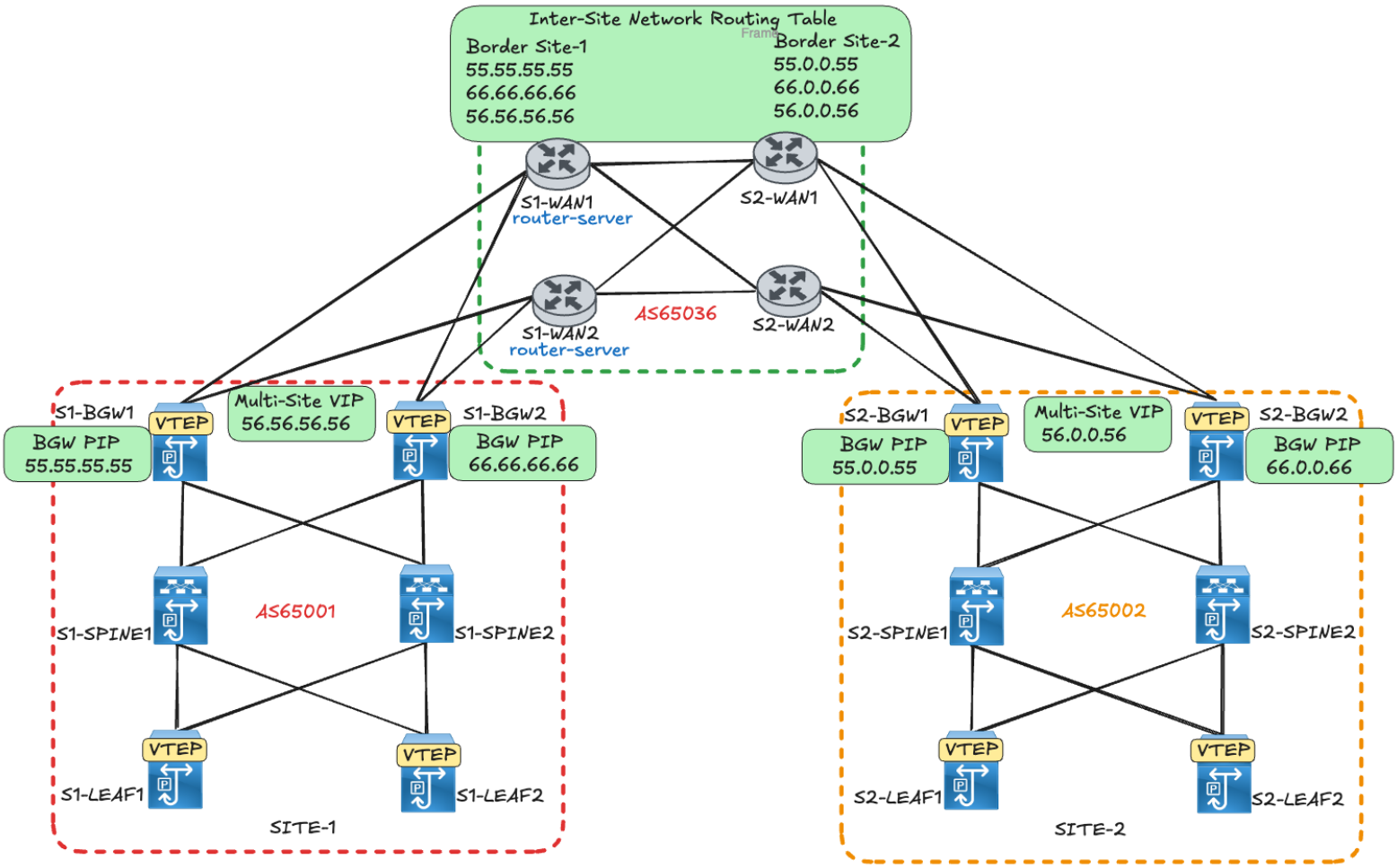
Example:



Images adopted from https://ondemandelearning.cisco.com/apollo-alpha/dc-nxa-02-multivxlanevpn-10/pages/4

The BGW VIP address is used for all data-plane communication leaving the site and between sites when the VXLAN EVPN Multi-Site extension is used to reach a remote site. The single VIP address is used both within the site to reach an exit point and between the sites, while the BGWs always use the PIP address to communicate with each other in the site. The Multi-Site VIP address is represented by a dedicated loopback interface associated with the Network Virtualization Endpoint (NVE) interface. The PIP address is used to handle BUM traffic between BGWs at different sites.

VTEPs are only aware of their overlay domain internal neighbors, including the BGWs' primary IP (PIP) address and virtual IP (VIP) address. All routes external to the fabric have a next hop on the BGWs for Layer 2 and Layer 3 traffic.



Border Gateway Configurations

The configurations in this chapter aim to achieve the connectivity required:

1. between the BGWs and site-internal devices.
2. between the BGWs and site-external devices.
3. between the local-site BGWs and the remote-site BGWs.

For the underlay control plane:

1. OSPF neighborship is established as the IGP between the BGWs and the site-internal devices.
2. eBGP is used as to peer with the site-external devices.

For the overlay control plane:

1. iBGP peering is established between the BGWs and the site-internal devices: **site-internal overlay.**
2. eBGP peering is established between the BGWs and the DC/Layer 3 cloud: **site-external overlay.**

The images below shows the peerings that will be formed:
Underlay Control Plane

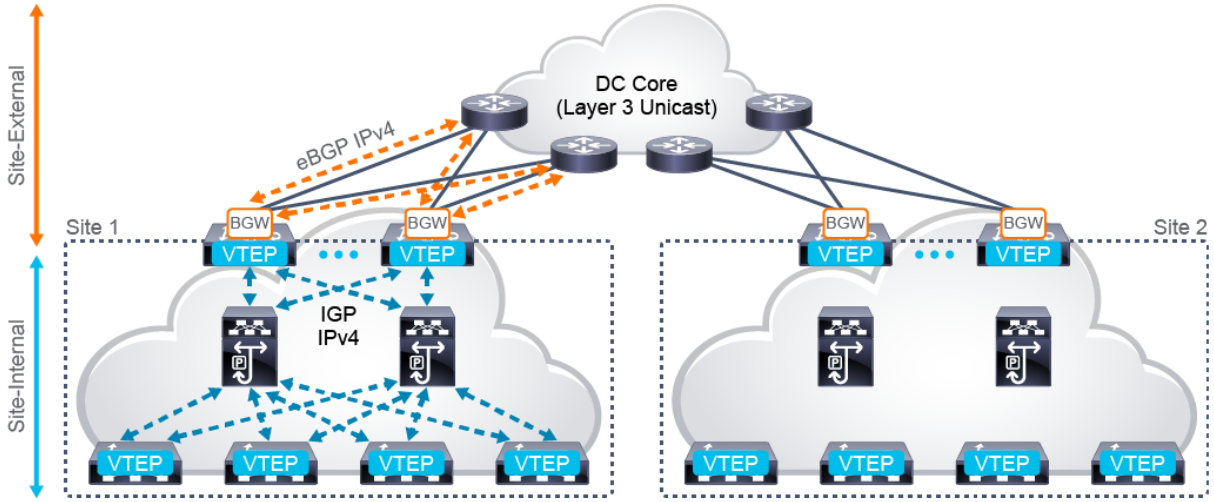
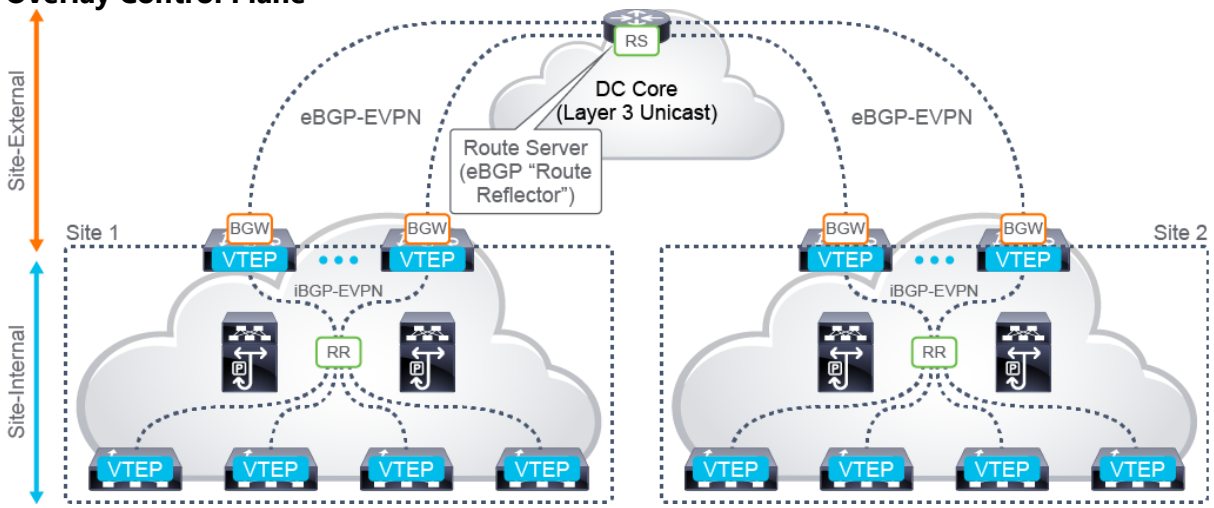


Image adopted from https://ondemandelearning.cisco.com/apollo-alpha/dc-nxa-02-multivxlanevpn-10/pages/6

Overlay Control Plane



BGW: Site-internal OSPF underlay

The configurations for a BGW with a site-internal OSPF underlay is shown below.

1. Enable OSPF for underlay IPv4 unicast routing and PIM for multicast-based BUM replication.

```
feature ospf
feature pim
```

> **Note**
> If ingress replication is used in the intra-site underlay, then PIM is not required on the BGW.

2. Define the OSPF process tag and router ID. The OSPF process tag is used for site-internal underlay routing.

```
router ospf UNDERLAY
   router-id <lo0 IP address>
```

3. Define the loopback0 interface that will be used for the routing protocol router-ID and for the overlay control-plane peering (BGP).

```
interface loopback0
   description RID and BGP Peering
   ip address <ip-address>/32 tag 54321
   ip router ospf UNDERLAY area 0.0.0.0
   ip pim sparse-mode
```

The IP address is extended with a tag to allow easy selection for redistribution.

Note
The loopback interface used for the router ID and BGP peering must be advertised to the site-internal underlay as well as to the site-external underlay.

4. Define the loopback1 interface as the NVE source interface (PIP VTEP).

```
interface loopback1
   description NVE INTERFACE (PIP VTEP)
   ip address <ip-address>/32 tag 54321
   ip router ospf UNDERLAY area 0.0.0.0
   ip pim sparse-mode
```

Note
The loopback interface used for the individual VTEP (PIP) must be advertised to the site-internal underlay as well as to the site-external underlay.

5. Define the loopback100 interface as the EVPN Multi-Site source interface (anycast and virtual IP VTEP).

```
interface loopback100
     description MULTI-SITE INTERFACE (VIP VTEP)
     ip address <ip-address>/32 tag 54321
     ip router ospf UNDERLAY area 0.0.0.0
```

Note
The loopback interface used for the EVPN Multi-Site anycast VTEP (virtual IP address) must be advertised to the site-internal underlay as well as to the site-external underlay.

6. Define the site-internal underlay interfaces facing the spines.

```
interface Ethernet1/<ID>
     description SITE-INTERNAL INTERFACE – connected to Spine1
     no switchport
     mtu 9216
     ip address <ip-address>/30
     ip ospf network point-to-point
     ip router ospf UNDERLAY area 0.0.0.0
     ip pim sparse-mode
     #evpn multisite fabric-tracking (don’t configure yet)
```

```
interface Ethernet1/<ID>
     description SITE-INTERNAL INTERFACE – connected to Spine2
     no switchport
     mtu 9216
     ip address <ip-address>/30
     ip ospf network point-to-point
     ip router ospf UNDERLAY area 0.0.0.0
     ip pim sparse-mode
     #evpn multisite fabric-tracking (don't configure yet)
```

Note: I am following the steps from the whitepaper guide and the **"evpn multisite fabric-tracking"** command was not working under the interface as required. At first glance it seems like this command doesn't exist (see output below):

```
S1-BGW1(config)# int e1/98
S1-BGW1(config-if)# evpn multisite border-gateway ?
*** No matching command found in current mode, matching in (config) mode ***
  <1-281474976710655>  Multisite Site-Id
```

However, after I used the **evpn multisite border-gateway <site-id>** command first, I was able to configure the evpn multisite fabric tracking under the interface.

7. Define the BGW as an EVPN Multi-Site BGW with the appropriate site ID.

```
evpn multisite border-gateway <site-id>
  delay-restore time 300
```

> **Note**
> All BGWs at the same site must have the same site ID.
>
> As a sub configuration of the BGW definition, a time-delayed restore operation for BGW virtual IP address advertisement can be set.

8. Specify the EVPN Multi-Site interface tracking for the site-internal underlay. The **evpn multisite fabric-tracking** command is mandatory to enable the Multi-Site virtual IP address on the BGW. At least one of the physical interfaces that are configured with fabric tracking must be up to enable the Multi-Site BGW function (keeping the virtual IP VTEP address active).

```
interface Ethernet1/<ID>
     evpn multisite fabric-tracking
```

Configuration template – site internal underlay

```
feature ospf
feature pim
!
evpn multisite border-gateway <site-id>
  delay-restore time 300
```

```
!
router ospf UNDERLAY
   router-id <lo0 IP address>
!
interface loopback0
   description RID and BGP Peering
   ip address <ip-address>/32 tag 54321
   ip router ospf UNDERLAY area 0.0.0.0
ip pim sparse-mode
!
interface loopback1
   description NVE INTERFACE (PIP VTEP)
   ip address <ip-address>/32 tag 54321
   ip router ospf UNDERLAY area 0.0.0.0
ip pim sparse-mode
!
interface loopback100
     description MULTI-SITE INTERFACE (VIP VTEP)
     ip address <ip-address>/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
!
interface Ethernet1/<ID>
     description SITE-INTERNAL INTERFACE – connected to Spine1
     no switchport
     mtu 9216
     ip address <ip-address>/30
     ip ospf network point-to-point
     ip router ospf UNDERLAY area 0.0.0.0
     ip pim sparse-mode
     evpn multisite fabric-tracking
!
interface Ethernet1/<ID>
     description SITE-INTERNAL INTERFACE – connected to Spine2
     no switchport
     mtu 9216
     ip address <ip-address>/30
     ip ospf network point-to-point
     ip router ospf UNDERLAY area 0.0.0.0
     ip pim sparse-mode
  evpn multisite fabric-tracking
```

BGW: Site-internal overlay

The configurations for a BGW with a site-internal iBGP overlay is shown below.

1. Enable the required features

```
feature bgp
feature nv overlay
nv overlay evpn
```

2. Define the NVE interface (VTEP) and extend it with EVPN (host-reachability protocol).
   Define the loopback1 interface as the NVE source interface (PIP VTEP).
   Define the loopback100 interface as the EVPN Multi-Site source interface (anycast and virtual IP VTEP).

```
interface nve1
  host-reachability protocol bgp
  source-interface loopback1
  multisite border-gateway interface loopback100
```

3. Define the BGP routing instance with site-specific autonomous system.

```
router bgp 65501
address-family l2vpn evpn
  neighbor <SPINE1-lo0-IP>
    remote-as 65501
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended

  neighbor <SPINE2-lo0-IP>
    remote-as 65501
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
```

Configuration template – site internal overlay

```
feature bgp
feature nv overlay
nv overlay evpn
!
interface nve1
  host-reachability protocol bgp
  source-interface loopback1
  multisite border-gateway interface loopback100
!
router bgp 65501
address-family l2vpn evpn
  neighbor <SPINE1-lo0-IP>
    remote-as 65501
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended

  neighbor <SPINE2-lo0-IP>
    remote-as 65501
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
```

Site-external underlay (DCI)
Connectivity between the Border Gateways and the Layer 3 Cloud.

The site-external underlay is the network that interconnects multiple VXLAN BGP EVPN fabrics. It is a transport network that allows reachability between all the EVPN Multi-Site BGWs and external VTEPs. In this document, eBGP is used to interconnect the BGWs and the WAN routers.

> **Note**
> For BUM replication between sites, EVPN Multi-Site architecture exclusively uses ingress replication to simplify the requirements of the site-external underlay network.

The configuration for a BGW with a site-external eBGP underlay is shown below.

1. Define the site-external underlay interfaces facing the external Layer 3 core.

```
interface Ethernet1/<ID>
  description Connection-to-wan1
  no switchport
  mtu 9216
  ip address <ip-address>/30 tag 54321
  evpn multisite dci-tracking

interface Ethernet1/2
  description Connection-to-wan2
  no switchport
  mtu 9216
  ip address <ip-address>/30 tag 54321
  evpn multisite dci-tracking
```

> **Note**
> EVPN Multi-Site interface tracking is used for the site-external underlay `(evpn multisite dci-tracking)`. This command is mandatory to enable the Multi-Site virtual IP address on the BGW. At least one of the physical interfaces that are configured with DCI tracking must be up to enable the Multi-Site BGW function.

2. Configure a route map that will redistribute tagged routes.

```
route-map RMAP-REDIST-DIRECT permit 10
  match tag 54321
```

3. Define the BGP routing instance with a site-specific autonomous system.

```
router bgp 65001
  router-id <BGW router-id>
  log-neighbor-changes
  address-family ipv4 unicast
    redistribute direct route-map RMAP-REDIST-DIRECT
    maximum-paths 4
neighbor <wan1-ip>
    remote-as 65036
    update-source Ethernet1/1
    address-family ipv4 unicast
```

```
  neighbor <wan2-ip>
    remote-as 65036
    update-source Ethernet1/2
    address-family ipv4 unicast
```

Configuration template – site external underlay DCI

```
interface Ethernet1/<ID>
  description Connection-to-wan1
  no switchport
  mtu 9216
  ip address <ip-address>/30 tag 54321
  evpn multisite dci-tracking

interface Ethernet1/2
  description Connection-to-wan2
  no switchport
  mtu 9216
  ip address <ip-address>/30 tag 54321
  evpn multisite dci-tracking
!
route-map RMAP-REDIST-DIRECT permit 10
  match tag 54321
!
router bgp 65001
  router-id <BGW router-id>
  log-neighbor-changes
  address-family ipv4 unicast
    redistribute direct route-map RMAP-REDIST-DIRECT
    maximum-paths 4
  neighbor <wan1(ip-address)>
    remote-as 65036
    update-source Ethernet1/<bgw interface towards wan1>
    address-family ipv4 unicast

  neighbor <wan2(ip-address)>
    remote-as 65036
    update-source Ethernet1/<bgw interface towards wan2>
    address-family ipv4 unicast
```

The configuration for the external Layer 3 cloud to establish eBGP underlay peering with the BGWs is shown below.

```
interface Ethernet1/<ID>
  description <connecting to BGW1>
  mtu 9216
  ip address <ip-address>/31
  no shutdown

interface Ethernet1/<ID>
  description <connecting to BGW2>
  mtu 9216
```

```
  ip address <ip-address>/31
  no shutdown
!
router bgp 65036
  router-id <Lo0>
  neighbor <BGW-1 ip-address>
    remote-as <site-AS>
    update-source Ethernet1/<ID>
    address-family ipv4 unicast
  neighbor <BGW-2 ip-address>
    remote-as <site-AS>
    update-source Ethernet1//<ID>
    address-family ipv4 unicast
```

Site-external overlay

In this lab, the BGP EVPN control-plane communication between the BGWs will be achieved using a route server.

"A route-server functions like a route-reflector (in iBGP setups) but in this case it is for eBGP. [IETF RFC 7947: Internet Exchange BGP Route Server https://datatracker.ietf.org/doc/html/rfc7947 "

Like a route reflector, a route server performs a pure control-plane function and doesn't need to be in the data path between any of the BGWs. The route server must be able to support the EVPN address family, reflect VPN routes, and manipulate the next-hop behaviour (next-hop unchanged).

The configuration for a BGW with a site-external eBGP overlay is shown below:

1. Configure the neighbor with the EVPN address family (L2VPN EVPN) for the site-external overlay control plane facing the route server.
    a. Configure the eBGP neighbor by specifying the source interface loopback0. This setting allows underlay ECMP reachability from BGW loopback0 to route-server loopback0.

> **Note**
> Site-external EVPN peering is always considered to use eBGP with the next hop the remote site BGWs.

    b. With the route server or remote BGW potentially multiple routing hops away, you must increase the BGP session Time-To-Live (TTL) setting to an appropriate value (ebgp-multihop).
    c. In defining the site-external BGP peering session (peer-type fabric external), rewrite and re-origination are enabled.
    d. The autonomous system portion of the automated route target (ASN:VNI) will be rewritten upon receipt from the site-external network (rewrite-evpn-rt-asn) without modification of any configurations on the site-internal VTEPs. The

route-target rewrite will help ensure that the ASN portion of the automated route target matches the destination autonomous system.

```
#Configuration on the BGWs
router bgp 65001
!
  neighbor #<RID of WAN1>
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
!
  neighbor #<RID of WAN2>
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
```

The configuration for a site-external route server is shown below.

1. Configure a route-map that enforces the policy to leave the overlay next hop unchanged when the route server is used.
    a. **Note:** The route server is not a VTEP or BGW and hence should not have the next hop pointing to itself.

```
route-map UNCHANGED permit 10
  set ip next-hop unchanged
```

2. Configure the required BGP configurations (iBGP between the layer 3 cloud and eBGP between Layer 3 cloud and BGWs).
    a. Ensure that all the received EVPN advertisements are reflected even if all the tenant VRF instances are not created on the route server. The route targets must be preserved while that function is performed (retain route-target all).

```
router bgp 65036
  address-family l2vpn evpn
    retain route-target all
template peer OVERLAY-PEERING
    update-source loopback0
    ebgp-multihop 5
    address-family l2vpn evpn
```

```
      send-community both
      route-map UNCHANGED out

  neighbor <site1-spine1> remote-as 65001
    inherit peer OVERLAY-PEERING
    address-family l2vpn evpn
      rewrite-evpn-rt-asn

  neighbor <site1-spine2> remote-as 65001
    inherit peer OVERLAY-PEERING
    address-family l2vpn evpn
      rewrite-evpn-rt-asn

 neighbor <site2-spine1> remote-as 65002
    inherit peer OVERLAY-PEERING
    address-family l2vpn evpn
      rewrite-evpn-rt-asn

  neighbor <site2-spine2> remote-as 65002
    inherit peer OVERLAY-PEERING
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
```

Note
This lab does not show the iBGP configurations within the Layer 3 cloud.

Tenant (L2VNI/L3VNI) Configurations

The EVPN Multi-Site architecture allows the extension of Layer 2 and Layer 3 segments beyond a single site. This section displays the configurations needed for the VNIs, for either Layer 2 or Layer 3 extension. A symmetric VNI configuration is used in this lab. Symmetric VNI means all deployed sites must follow a consistent assignment of VNIs for either Layer 2 or Layer 3 extension. Therefore, a VLAN or VRF instance at the local site must be mapped to the same VNI that is used at the remote site.

BGW Layer 3 extension configuration
The configuration shown below is configured across all BGWs in Site1 and Site2.

1. Define the Layer 3 VNI and attach it to a BGW local VLAN

```
vlan 10
  vn-segment 50000
```

2. Define the VRF context and use the Layer 3 VNI (vn-segment) from the previous configuration step.

```
vrf context Tenant-1
  vni 50000
  rd auto
```

```
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn
```

The route-distinguisher and the route-target are derived automatically. The route-targets are enabled for the IPv4 address family and EVPN.

3. Define a Layer 3 interface to enable the previously defined VNI to become a fully functional Layer 3 VNI.

```
interface Vlan10
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip forward
```

4. Associate the Layer 3 VNI with the NVE interface (VTEP) and associate it with the VRF type.

```
interface nve1
  member vni 50001 associate-vrf
```

BGW Layer 2 extension configuration
The configuration shown below is configured across all BGWs in Site1 and Site2.

1. Define the Layer 2 VNI and attach it to a BGW local VLAN.

```
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012
```

2. Associate the Layer 2 VNI with the NVE interface (VTEP) and configure the relevant site-internal and site-external BUM replication modes

```
interface nve1
  member vni 10011
    multisite ingress-replication
    mcast-group 239.1.1.11
  member vni 10012
    multisite ingress-replication
    mcast-group 239.1.1.12
```

3. Define a VRF context (MAC VRF instance) with the appropriate Layer 2 VNI and the forwarding mode (L2).

```
evpn
  vni 10011 l2
    rd auto
```

```
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

4. Define the SVIs IP addresses

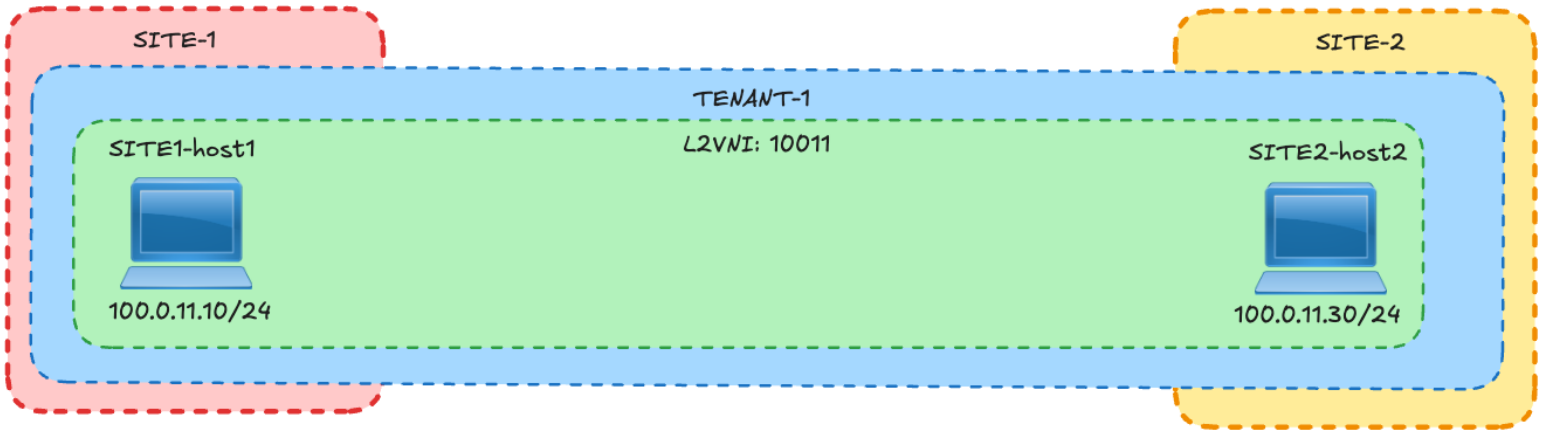
```
interface Vlan11
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.11.1/24
  fabric forwarding mode anycast-gateway

interface Vlan12
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.12.1/24
  fabric forwarding mode anycast-gateway
```

To see the detailed configuration for this entire lab navigate to
Appendix: Full Configurations

Endpoint Communication

Before getting into deep verifications on the VXLAN multi-site fabric, let's verify that east-west traffic flow is operational between endpoints in Site-1 and Site-2.



host1 to host2 ping

```
ping 100.0.11.30
PING 100.0.11.30 (100.0.11.30): 56 data bytes
64 bytes from 100.0.11.30: icmp_seq=0 ttl=254 time=1.267 ms
64 bytes from 100.0.11.30: icmp_seq=1 ttl=254 time=0.75 ms
```

host2 to host1 ping

```
ping 100.0.11.10
PING 100.0.11.10 (100.0.11.10): 56 data bytes
64 bytes from 100.0.11.10: icmp_seq=0 ttl=254 time=1.04 ms
64 bytes from 100.0.11.10: icmp_seq=1 ttl=254 time=0.707 ms
```

"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison

```
64 bytes from 100.0.11.30: icmp_seq=2 ttl=254 time=0.664 ms
64 bytes from 100.0.11.30: icmp_seq=3 ttl=254 time=0.685 ms
64 bytes from 100.0.11.30: icmp_seq=4 ttl=254 time=0.637 ms
```

```
64 bytes from 100.0.11.10: icmp_seq=2 ttl=254 time=0.495 ms
64 bytes from 100.0.11.10: icmp_seq=3 ttl=254 time=0.703 ms
64 bytes from 100.0.11.10: icmp_seq=4 ttl=254 time=0.529 ms
```

Verify the routing table of S1-LEAF1 and S2-LEAF2

```
S1-LEAF1# show ip route vrf Tenant-1
IP Route Table for VRF "Tenant-1"

100.0.11.0/24, ubest/mbest: 1/0, attached
    *via 100.0.11.1, Vlan11, [0/0], 04:24:04, direct
100.0.11.1/32, ubest/mbest: 1/0, attached
    *via 100.0.11.1, Vlan11, [0/0], 04:24:04, local
100.0.11.10/32, ubest/mbest: 1/0, attached
    *via 100.0.11.10, Vlan11, [190/0], 03:05:43, hmm
100.0.11.30/32, ubest/mbest: 1/0
    *via 56.56.56.56%default, [200/0], 04:15:26, bgp-65001, internal, tag 65036, segid: 50000 tunnelid:
0x38383838 encap: VXLAN (SITE2 endpoint)
```

```
S2-LEAF1# show ip route vrf Tenant-1
IP Route Table for VRF "Tenant-1"
'*' denotes best ucast next-hop
'**' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>

100.0.11.0/24, ubest/mbest: 1/0, attached
    *via 100.0.11.1, Vlan11, [0/0], 1w3d, direct
100.0.11.1/32, ubest/mbest: 1/0, attached
    *via 100.0.11.1, Vlan11, [0/0], 1w3d, local
100.0.11.10/32, ubest/mbest: 1/0
    *via 56.0.0.56%default, [200/0], 03:08:06, bgp-65002, internal, tag 65036, segid: 50000 tunnelid:
0x38000038 encap: VXLAN (SITE1 endpoint)

100.0.11.30/32, ubest/mbest: 1/0, attached
    *via 100.0.11.30, Vlan11, [190/0], 04:42:11, hmm
```

Verify the ARP suppression-cache table of S1-LEAF1 and S2-LEAF2

```
S1-LEAF1#  show ip arp suppression-cache  vlan 11

Flags: + - Adjacencies synced via CFSoE
       L - Local Adjacency
       R - Remote Adjacency

Ip Address      Age      Mac Address    Vlan Physical-ifindex    Flags    Remote Vtep Addrs

100.0.11.10     00:14:57 f04a.02b5.780f   11 Ethernet1/33        L
100.0.11.30     06:06:31 0003.0003.0003   11 (null)              R        56.56.56.56
```

```
S2-LEAF1# show ip arp suppression-cache  vlan 11

Flags: + - Adjacencies synced via CFSoE
       L - Local Adjacency
       R - Remote Adjacency

Ip Address      Age      Mac Address    Vlan Physical-ifindex    Flags    Remote Vtep Addrs

100.0.11.30     00:11:26 0003.0003.0003   11 Ethernet1/33        L
100.0.11.10     04:53:16 f04a.02b5.780f   11 (null)              R        56.0.0.56
```

Verify the MAC address-table of S1-LEAF1 and S2-LEAF2

```
S1-LEAF1# show mac address-table dynamic
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since last seen,+ - primary entry using vPC Peer-Link,
        (T) - True, (F) - False, C - ControlPlane MAC, ~ - vsan,
        (NA)- Not Applicable A - ESI Active Path, S - ESI Standby Path
        TL - True Learned, PS - Peer Sync, RO - Re-originate
   VLAN     MAC Address      Type      age     Secure NTFY Ports
---------+-----------------+--------+---------+------+----+------------------
C    11     0003.0003.0003   dynamic  NA         F      F    nve1(56.56.56.56)
*    11     f04a.02b5.780f   dynamic  NA         F      F    Eth1/33
```

```
S2-LEAF1# show mac address-table dynamic
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
        age - seconds since last seen,+ - primary entry using vPC Peer-Link,
        (T) - True, (F) - False, C - ControlPlane MAC, ~ - vsan,
        (NA)- Not Applicable A - ESI Active Path, S - ESI Standby Path
        TL - True Learned, PS - Peer Sync, RO - Re-originate
   VLAN     MAC Address      Type      age     Secure NTFY Ports
---------+-----------------+--------+---------+------+----+------------------
*    11     0003.0003.0003   dynamic  NA         F      F    Eth1/33
C    11     f04a.02b5.780f   dynamic  NA         F      F    nve1(56.0.0.56)
```

VXLAN Multi-Site Verifications

Most verifications will be shown for 1 site, however the same set of checks applies for both sites.

Verify the VTEP interface status on the BGWs.

S1-BGW1

```
show nve interface nve 1
Interface: nve1, State: Up, encapsulation: VXLAN
 VPC Capability: VPC-VIP-Only [not-notified]
 Local Router MAC: e41f.7b68.6407
 Host Learning Mode: Control-Plane
 Source-Interface: loopback1
           (primary: 55.55.55.55, secondary: 0.0.0.0)
```

S2-BGW1

```
show nve interface nve 1
Interface: nve1, State: Up, encapsulation: VXLAN
 VPC Capability: VPC-VIP-Only [not-notified]
 Local Router MAC: 9077.ee36.4847
 Host Learning Mode: Control-Plane
 Source-Interface: loopback1
           (primary: 55.0.0.55, secondary: 0.0.0.0)
```

Verify the VTEP interface details on the BGWs.

S1-BGW1

```
show nve interface nve 1 detail
Interface: nve1, State: Up, encapsulation: VXLAN
 VPC Capability: VPC-VIP-Only [not-notified]
 Local Router MAC: e41f.7b68.6407
 Host Learning Mode: Control-Plane
 Source-Interface: loopback1
       (primary: 55.55.55.55, secondary: 0.0.0.0)
 Source Interface State: Up
 Virtual RMAC Advertisement: No
 NVE Flags:
 Interface Handle: 0x49000001
 Source Interface hold-down-time: 180
 Source Interface hold-up-time: 30
 Remaining hold-down time: 0 seconds
 Virtual Router MAC: N/A
 Virtual Router MAC Re-origination: 0200.3838.3838
 Interface state: nve-intf-add-complete
 Fabric convergence time: 135 seconds
 Fabric convergence time left: 0 seconds
 Multisite delay-restore time: 300 seconds
 Multisite delay-restore time left: 0 seconds
 Multisite dci-advertise-pip configured: False
 Multisite fabric-advertise-pip l3 configured: False
 Multisite bgw-if: loopback100
               (ip: 56.56.56.56, admin: Up, oper: Up)
 Multisite bgw-if oper down reason:
```

S2-BGW1

```
show nve interface nve 1 detail
Interface: nve1, State: Up, encapsulation: VXLAN
 VPC Capability: VPC-VIP-Only [not-notified]
 Local Router MAC: 9077.ee36.4847
 Host Learning Mode: Control-Plane
 Source-Interface: loopback1
             (primary: 55.0.0.55, secondary: 0.0.0.0)
 Source Interface State: Up
 Virtual RMAC Advertisement: No
 NVE Flags:
 Interface Handle: 0x49000001
 Source Interface hold-down-time: 180
 Source Interface hold-up-time: 30
 Remaining hold-down time: 0 seconds
 Virtual Router MAC: N/A
 Virtual Router MAC Re-origination: 0200.3800.0038
 Interface state: nve-intf-add-complete
 Fabric convergence time: 135 seconds
 Fabric convergence time left: 0 seconds
 Multisite delay-restore time: 300 seconds
 Multisite delay-restore time left: 0 seconds
 Multisite dci-advertise-pip configured: False

Multisite bgw-if: loopback100
                (ip: 56.0.0.56, admin: Up, oper: Up
Multisite bgw-if oper down reason:
```

Verify the status of Multi-site dci-links

S1-BGW1

```
show nve multisite dci-links
Interface       State
---------       -----
Ethernet1/1     Up
Ethernet1/2     Up
```

S2-BGW1

```
show nve multisite dci-links
Interface       State
---------       -----
Ethernet1/47    Up
Ethernet1/48    Up
```

Verify the status of Multi-site fabric-links

S1-BGW1

```
show nve multisite fabric-links
Interface       State
---------       -----
Ethernet1/98    Up
Ethernet1/99    Up
```

S2-BGW1

```
show nve multisite fabric-links
Interface       State
---------       -----
Ethernet1/99    Up
Ethernet1/100   Up
```

Verify nve peers on the BGWs
S1-BGW1:

```
S1-BGW1# show nve peer
```

"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison

```
Interface Peer-IP                                State LearnType Uptime   Router-Mac
--------- -------------------------------------  ----- --------- -------- -----------------
nve1      11.11.11.11                            Up    CP        08:53:45 f8a7.3a39.3cb3
nve1      22.22.22.22                            Up    CP        08:53:45 f8a7.3a2e.9311
nve1      55.0.0.55                              Up    CP        08:53:42 n/a
nve1      56.0.0.56                              Up    CP        08:53:42 0200.3800.0038
nve1      66.0.0.66                              Up    CP        08:53:42 n/a
nve1      66.66.66.66                            Up    CP        08:06:42 n/a
```

S2-BGW1

```
S2-BGW1# show nve peer
Interface Peer-IP                                State LearnType Uptime   Router-Mac
--------- -------------------------------------  ----- --------- -------- -----------------
nve1      11.0.0.11                              Up    CP        5d20h    f8a7.3a2e.a30f
nve1      22.0.0.22                              Up    CP        5d19h    f8a7.3a39.3d6b
nve1      55.55.55.55                            Up    CP        08:56:46 n/a
nve1      56.56.56.56                            Up    CP        08:52:03 0200.3838.3838
nve1      66.0.0.66                              Up    CP        5d23h    n/a
nve1      66.66.66.66                            Up    CP        08:09:56 n/a
```

S1-BGW1：

```
S1-BGW1# show nve peer detail
Details of nve Peers:
----------------------------------------
Peer-Ip: 11.11.11.11
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:53:50
    Router-Mac          : f8a7.3a39.3cb3
    Peer First VNI      : 50000
    Time since Create   : 08:53:50
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011,50000
    vni assignment mode : SYMMETRIC
    Peer Location       : FABRIC
    Group policy capable: no
----------------------------------------
Peer-Ip: 22.22.22.22
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:53:50
    Router-Mac          : f8a7.3a2e.9311
    Peer First VNI      : 50000
    Time since Create   : 08:53:50
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 50000
    vni assignment mode : SYMMETRIC
    Peer Location       : FABRIC
    Group policy capable: no
----------------------------------------
Peer-Ip: 55.0.0.55
```

S2-BGW1

```
S2-BGW1# show nve peer detail
Details of nve Peers:
----------------------------------------
Peer-Ip: 11.0.0.11
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 5d20h
    Router-Mac          : f8a7.3a2e.a30f
    Peer First VNI      : 10011
    Time since Create   : 5d20h
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011,50000
    vni assignment mode : SYMMETRIC
    Peer Location       : FABRIC


Peer-Ip: 22.0.0.22
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 5d19h
    Router-Mac          : f8a7.3a39.3d6b
    Peer First VNI      : 50000
    Time since Create   : 5d19h
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 50000
    vni assignment mode : SYMMETRIC
    Peer Location       : FABRIC


Peer-Ip: 55.55.55.55
```

```
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:53:47
    Router-Mac          : n/a
    Peer First VNI      : 10011
    Time since Create   : 08:53:47
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012
    vni assignment mode : SYMMETRIC
    Peer Location       : DCI
    Group policy capable: no
---------------------------------------
Peer-Ip: 56.0.0.56
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:53:47
    Router-Mac          : 0200.3800.0038
    Peer First VNI      : 10011
    Time since Create   : 08:53:47
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012,50000
    vni assignment mode : SYMMETRIC
    Peer Location       : DCI
    Group policy capable: no
---------------------------------------
Peer-Ip: 66.0.0.66
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:53:47
    Router-Mac          : n/a
    Peer First VNI      : 10011
    Time since Create   : 08:53:47
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012
    vni assignment mode : SYMMETRIC
    Peer Location       : DCI
    Group policy capable: no
---------------------------------------
Peer-Ip: 66.66.66.66
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:06:48
    Router-Mac          : n/a
    Peer First VNI      : 10011
    Time since Create   : 08:06:48
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012
    vni assignment mode : SYMMETRIC
    Peer Location       : FABRIC
    Group policy capable: no
---------------------------------------
```

```
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:58:39
    Router-Mac          : n/a
    Peer First VNI      : 10011
    Time since Create   : 08:58:39
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012
    vni assignment mode : SYMMETRIC
    Peer Location       : DCI

Peer-Ip: 56.56.56.56
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:53:55
    Router-Mac          : 0200.3838.3838
    Peer First VNI      : 50000
    Time since Create   : 08:53:55
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012,50000
    vni assignment mode : SYMMETRIC
    Peer Location       : DCI

Peer-Ip: 66.0.0.66
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 5d23h
    Router-Mac          : n/a
    Peer First VNI      : 10011
    Time since Create   : 5d23h
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012
    vni assignment mode : SYMMETRIC
    Peer Location       : FABRIC

Peer-Ip: 66.66.66.66
    NVE Interface       : nve1
    Peer State          : Up
    Peer Uptime         : 08:11:49
    Router-Mac          : n/a
    Peer First VNI      : 10011
    Time since Create   : 08:11:49
    Configured VNIs     : 10011-10012,50000
    Provision State     : peer-add-complete
    Learnt CP VNIs      : 10011-10012
    vni assignment mode : SYMMETRIC
    Peer Location       : DCI
```

Verify BGP EVPN neighborship between spines and BGWs.

```
S1-SPINE1# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 3.3.3.3, local AS number 65001
BGP table version is 182, L2VPN EVPN config peers 4, capable peers 4
24 network entries and 26 paths using 6096 bytes of memory
BGP attribute entries [22/3784], BGP AS path entries [1/10]
BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
5.5.5.5         4 65001    2746    2715      182    0    0    1d03h 7
6.6.6.6         4 65001    2797    2736      182    0    0    1d03h 11
!
S1-SPINE2# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 4.4.4.4, local AS number 65001
BGP table version is 172, L2VPN EVPN config peers 4, capable peers 4
24 network entries and 26 paths using 8944 bytes of memory
BGP attribute entries [22/8096], BGP AS path entries [1/10]
BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor        V    AS    MsgRcvd    MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
5.5.5.5         4 65001       2746       2716      172    0    0    1d03h 7
6.6.6.6         4 65001       2802       2735      172    0    0    1d03h 11
```

```
S1-BGW1# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 5.5.5.5, local AS number 65001
BGP table version is 496, L2VPN EVPN config peers 4, capable peers 4
58 network entries and 91 paths using 21840 bytes of memory
BGP attribute entries [64/23552], BGP AS path entries [1/10]
BGP community entries [0/0], BGP clusterlist entries [6/24]

Neighbor        V    AS    MsgRcvd    MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
3.3.3.3         4 65001       2813       2713      496    0    0    1d03h 13
4.4.4.4         4 65001       2814       2717      496    0    0    1d03h 13
!
S1-BGW2# sh bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 6.6.6.6, local AS number 65001
BGP table version is 798, L2VPN EVPN config peers 4, capable peers 4
58 network entries and 91 paths using 14992 bytes of memory
BGP attribute entries [62/10664], BGP AS path entries [1/10]
BGP community entries [0/0], BGP clusterlist entries [6/24]

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
3.3.3.3         4 65001    2922    2716      798    0    0    1d03h 13
4.4.4.4         4 65001    2927    2724      798    0    0    1d03h 13
```

Verify eBGP neighborship between the BGWs and the Route-Server.

```
S1-BGW1# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 5.5.5.5, local AS number 65001
BGP table version is 106, L2VPN EVPN config peers 4, capable peers 4
53 network entries and 84 paths using 20124 bytes of memory
BGP attribute entries [57/20976], BGP AS path entries [1/10]
BGP community entries [0/0], BGP clusterlist entries [6/24]

Neighbor        V    AS    MsgRcvd    MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
200.1.1.1       4 65036        566        526      106    0    0 08:41:57 16
200.1.1.2       4 65036        566        526      106    0    0 08:41:58 16
!
S2-BGW1# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 5.0.0.5, local AS number 65002
BGP table version is 812, L2VPN EVPN config peers 4, capable peers 4
51 network entries and 78 paths using 15468 bytes of memory
BGP attribute entries [55/19800], BGP AS path entries [1/10]
BGP community entries [0/0], BGP clusterlist entries [6/24]

Neighbor        V    AS    MsgRcvd    MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
200.1.1.1       4 65036       5039       4946      812    0    0 08:59:08 14
200.1.1.2       4 65036       5003       4920      812    0    0 08:59:04 14
```

```
S1-WAN1# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 200.1.1.1, local AS number 65036
BGP table version is 232, L2VPN EVPN config peers 4, capable peers 4
38 network entries and 50 paths using 10712 bytes of memory
BGP attribute entries [34/5848], BGP AS path entries [2/12]
BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
5.0.0.5         4 65002    3594    3575      232    0    0 09:00:58 13
5.5.5.5         4 65001    3579    3563      232    0    0 08:44:50 11
6.0.0.6         4 65002    3593    3573      232    0    0 08:59:18 13
6.6.6.6         4 65001    3496    3477      232    0    0 07:57:50 13
!
S1-WAN2# show bgp l2vpn evpn summary
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 200.1.1.2, local AS number 65036
BGP table version is 240, L2VPN EVPN config peers 4, capable peers 4
38 network entries and 50 paths using 10712 bytes of memory
BGP attribute entries [34/5848], BGP AS path entries [2/12]
BGP community entries [0/0], BGP clusterlist entries [0/0]

Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down  State/PfxRcd
5.0.0.5         4 65002    3581    3561      240    0    0 09:01:27 13
5.5.5.5         4 65001    3580    3565      240    0    0 08:45:23 11
6.0.0.6         4 65002    3580    3559      240    0    0 09:00:09 13
6.6.6.6         4 65001    3500    3480      240    0    0 07:58:33 13
```

Verify the EVPN IPv4 address (host IP) on S1-BGW1

```
S1-BGW1# show bgp l2vpn evpn 100.0.11.10
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 1.1.1.1:32778
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 102
Paths: (2 available, best #1)
Flags: (0x000202) (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 to 3 destination(s)
             Imported paths list: Tenant-1 L3-50000 L2-10011
  AS-Path: NONE, path sourced internal to AS
    11.11.11.11 (metric 3) from 3.3.3.3 (3.3.3.3)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65001:10011 RT:65001:50000 ENCAP:8 Router MAC:f8a7.3a39.3cb3
      Originator: 1.1.1.1 Cluster list: 3.3.3.3

  Path type: internal, path is valid, not best reason: Neighbor Address, no labeled nexthop
  AS-Path: NONE, path sourced internal to AS
    11.11.11.11 (metric 3) from 4.4.4.4 (4.4.4.4)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65001:10011 RT:65001:50000 ENCAP:8 Router MAC:f8a7.3a39.3cb3
      Originator: 1.1.1.1 Cluster list: 4.4.4.4

  Path-id 1 not advertised to any peer

Route Distinguisher: 5.5.5.5:32778    (L2VNI 10011)
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 103
Paths: (1 available, best #1)
Flags: (0x000212) (high32 0x000400) on xmit-list, is in l2rib/evpn, is not in HW

  Advertised path-id 1
  Path type: internal, path is valid, is best path, no labeled nexthop, in rib
             Imported from 1.1.1.1:32778:[2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272
  AS-Path: NONE, path sourced internal to AS
    11.11.11.11 (metric 3) from 3.3.3.3 (3.3.3.3)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65001:10011 RT:65001:50000 ENCAP:8 Router MAC:f8a7.3a39.3cb3
      Originator: 1.1.1.1 Cluster list: 3.3.3.3

  Path-id 1 (dual) advertised to peers:
    200.1.1.1          200.1.1.2

Route Distinguisher: 5.5.5.5:4    (L3VNI 50000)
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 104
Paths: (1 available, best #1)
Flags: (0x000202) (high32 0x000400) 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 1.1.1.1:32778:[2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272
  AS-Path: NONE, path sourced internal to AS
```

```
    11.11.11.11 (metric 3) from 3.3.3.3 (3.3.3.3)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65001:10011 RT:65001:50000 ENCAP:8 Router MAC:f8a7.3a39.3cb3
      Originator: 1.1.1.1 Cluster list: 3.3.3.3

  Path-id 1 (dual) not advertised to any peer
```

Verify the EVPN IPv4 address (host IP) on S1-WAN1 (route-server)

```
S1-WAN1# show bgp l2vpn evpn 100.0.11.10
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 1:10011
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 231
Paths: (2 available, best #2)
Flags: (0x000202) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW

  Path type: external, path is valid, not best reason: newer EBGP path, no labeled nexthop
  AS-Path: 65001 , path sourced external to AS
    56.56.56.56 (metric 0) from 6.6.6.6 (6.6.6.6)
      Origin IGP, MED 2000, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65036:10011 RT:65036:50000 ENCAP:8 Router MAC:0200.3838.3838

  Advertised path-id 1
  Path type: external, path is valid, is best path, no labeled nexthop
  AS-Path: 65001 , path sourced external to AS
    56.56.56.56 (metric 0) from 5.5.5.5 (5.5.5.5)
      Origin IGP, MED 2000, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65036:10011 RT:65036:50000 ENCAP:8 hex:03100000:00000001
          Router MAC:0200.3838.3838

  Path-id 1 advertised to peers:
    5.0.0.5           6.0.0.6
```

Verify the EVPN IPv4 address (host IP) on the S2-BGW1

```
S2-BGW1#  show bgp l2vpn evpn 100.0.11.10
BGP routing table information for VRF default, address family L2VPN EVPN
Route Distinguisher: 1:10011
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 809
Paths: (2 available, best #2)
Flags: (0x000202) (high32 00000000) on xmit-list, is not in l2rib/evpn, is not in HW

  Path type: external, path is valid, not best reason: newer EBGP path, no labeled nexthop
  AS-Path: 65036 65001 , path sourced external to AS
    56.56.56.56 (metric 0) from 200.1.1.1 (200.1.1.1)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65002:10011 RT:65002:50000 ENCAP:8 51380224:00000001
          Router MAC:0200.3838.3838

  Advertised path-id 1
  Path type: external, path is valid, is best path, no labeled nexthop
             Imported to 3 destination(s)
```

```
            Imported paths list: Tenant-1 L3-50000 L2-10011
  AS-Path: 65036 65001 , path sourced external to AS
    56.56.56.56 (metric 0) from 200.1.1.2 (200.1.1.2)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65002:10011 RT:65002:50000 ENCAP:8 51380224:00000001
          Router MAC:0200.3838.3838

  Path-id 1 not advertised to any peer

Route Distinguisher: 5.0.0.5:32778    (L2VNI 10011)
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 807
Paths: (1 available, best #1)
Flags: (0x000212) (high32 0x000400) on xmit-list, is in l2rib/evpn, is not in HW

  Advertised path-id 1
  Path type: external, path is valid, is best path, no labeled nexthop, in rib
            Imported from 1:10011:[2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272
  AS-Path: 65036 65001 , path sourced external to AS
    56.56.56.56 (metric 0) from 200.1.1.2 (200.1.1.2)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65002:10011 RT:65002:50000 ENCAP:8 51380224:00000001
          Router MAC:0200.3838.3838

  Path-id 1 (dual) advertised to peers:
    3.0.0.3           4.0.0.4

Route Distinguisher: 5.0.0.5:4    (L3VNI 50000)
BGP routing table entry for [2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272, version 808
Paths: (1 available, best #1)
Flags: (0x000202) (high32 0x000400) on xmit-list, is not in l2rib/evpn, is not in HW

  Advertised path-id 1
  Path type: external, path is valid, is best path, no labeled nexthop
            Imported from 1:10011:[2]:[0]:[0]:[48]:[f04a.02b5.780f]:[32]:[100.0.11.10]/272
  AS-Path: 65036 65001 , path sourced external to AS
    56.56.56.56 (metric 0) from 200.1.1.2 (200.1.1.2)
      Origin IGP, MED not set, localpref 100, weight 0
      Received label 10011 50000
      Extcommunity: RT:65002:10011 RT:65002:50000 ENCAP:8 51380224:00000001
          Router MAC:0200.3838.3838

  Path-id 1 (dual) not advertised to any peer
```

Appendix: Full Configurations

SITE-1 FULL CONFIGURATIONS

S1-LEAF1

```
hostname S1-LEAF1

feature nxapi
nv overlay evpn
```

S1-LEAF2

```
hostname S1-LEAF2

feature nxapi
nv overlay evpn
```

```
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lldp
feature nv overlay


fabric forwarding anycast-gateway-mac 1234.5678.9000
ip pim rp-address 34.34.34.34 group-list 239.0.0.0/24
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map PERMIT-ALL permit 10
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward

interface Vlan11
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.11.1/24
  fabric forwarding mode anycast-gateway

interface Vlan12
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.12.1/24
  fabric forwarding mode anycast-gateway

interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  member vni 10011
    suppress-arp
    mcast-group 239.0.0.11
  member vni 10012
    suppress-arp
    mcast-group 239.0.0.12
```

```
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lldp
feature nv overlay


fabric forwarding anycast-gateway-mac 1234.5678.9000
ip pim rp-address 34.34.34.34 group-list 239.0.0.0/24
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map PERMIT-ALL permit 10
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward

interface Vlan11
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.11.1/24
  fabric forwarding mode anycast-gateway

interface Vlan12
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.12.1/24
  fabric forwarding mode anycast-gateway

interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  member vni 10011
    suppress-arp
    mcast-group 239.0.0.11
  member vni 10012
    suppress-arp
    mcast-group 239.0.0.12
```

```
  member vni 50000 associate-vrf

interface Ethernet1/32
  description S1-LEAF1 TO S1-SPINE1
  mtu 9216
  ip address 10.1.1.0/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/34
  description S1-LEAF1 TO S1-SPINE2
  mtu 9216
  ip address 10.1.1.2/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S1-LEAF1 Loopback0
  ip address 1.1.1.1/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S1-LEAF1 Loopback1
  ip address 11.11.11.11/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 1.1.1.1
router bgp 65001
  router-id 1.1.1.1
  address-family l2vpn evpn
  neighbor 3.3.3.3
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.4.4.4
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  vrf Tenant-1
    address-family ipv4 unicast
      advertise l2vpn evpn
      redistribute direct route-map PERMIT-ALL
evpn
  vni 10011 l2
    rd auto
```

```
  member vni 50000 associate-vrf

interface Ethernet1/32
  description S1-LEAF2 TO S1-SPINE2
  mtu 9216
  ip address 10.1.1.6/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/33
  description S1-LEAF2 TO S1-SPINE2
  mtu 9216
  ip address 10.1.1.4/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S1-LEAF2 Loopback0
  ip address 2.2.2.2/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S1-LEAF2 Loopback1
  ip address 22.22.22.22/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 2.2.2.2
router bgp 65001
  router-id 2.2.2.2
  address-family l2vpn evpn
  neighbor 3.3.3.3
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.4.4.4
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  vrf Tenant-1
    address-family ipv4 unicast
      advertise l2vpn evpn
      redistribute direct route-map PERMIT-ALL
evpn
  vni 10011 l2
    rd auto
```

```
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

```
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

S1-SPINE1

```
hostname S1-SPINE1

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature lldp
feature nv overlay

ip pim rp-address 34.34.34.34 group-list 239.0.0.0/24
ip pim anycast-rp 34.34.34.34 33.33.33.33
ip pim anycast-rp 34.34.34.34 44.44.44.44

interface Ethernet1/1
  description S1-SPINE1 TO S1-LEAF2
  mtu 9216
  ip address 10.1.1.5/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/97
  description S1-SPINE1 TO S1-LEAF1
  mtu 9216
  ip address 10.1.1.1/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/98
  description S1-SPINE1 TO S1-BGW1
  mtu 9216
  ip address 10.1.1.8/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/99
  description S1-SPINE1 TO S1-BGW2
  mtu 9216
```

S1-SPINE2

```
hostname S1-SPINE2

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature lldp
feature nv overlay

ip pim rp-address 34.34.34.34 group-list 239.0.0.0/24
ip pim anycast-rp 34.34.34.34 33.33.33.33
ip pim anycast-rp 34.34.34.34 44.44.44.44

interface Ethernet1/2
  description S1-SPINE2 TO S1-LEAF1
  mtu 9216
  ip address 10.1.1.3/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/97
  description S1-SPINE2 TO S1-LEAF2
  mtu 9216
  ip address 10.1.1.7/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/98
  description S1-SPINE2 TO S1-BGW2
  mtu 9216
  ip address 10.1.1.14/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/99
  description S1-SPINE2 TO S1-BGW1
  mtu 9216
```

```
  ip address 10.1.1.10/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S1-SPINE1 Loopback0
  ip address 3.3.3.3/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S1-SPINE1 Loopback1
  ip address 33.33.33.33/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 3.3.3.3
router bgp 65001
  router-id 3.3.3.3
  address-family l2vpn evpn
  neighbor 1.1.1.1
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 2.2.2.2
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 5.5.5.5
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 6.6.6.6
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
```

S1-BGW1

```
  ip address 10.1.1.12/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S1-SPINE2 Loopback0
  ip address 4.4.4.4/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S1-SPINE2 Loopback1
  ip address 44.44.44.44/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 4.4.4.4
router bgp 65001
  router-id 4.4.4.4
  address-family l2vpn evpn
  neighbor 1.1.1.1
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 2.2.2.2
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 5.5.5.5
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 6.6.6.6
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
```

S1-BGW2

```
hostname S1-BGW1

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lldp
feature nv overlay
evpn multisite border-gateway 1
  delay-restore time 300

ip pim rp-address 34.34.34.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map RMAP-REDIST-DIRECT permit 10
  match tag 54321
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward

interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  multisite border-gateway interface loopback100
  member vni 10011
    multisite ingress-replication
    mcast-group 239.1.1.11
  member vni 10012
    multisite ingress-replication
    mcast-group 239.1.1.12
  member vni 50000 associate-vrf

interface Ethernet1/1
  description S1-BGW1 TO S1-WAN1
  mtu 9216
  ip address 100.1.1.1/31 tag 54321
  no shutdown
```

```
hostname S1-BGW2

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lldp
feature nv overlay
evpn multisite border-gateway 1
  delay-restore time 300

ip pim rp-address 34.34.34.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map RMAP-REDIST-DIRECT permit 10
  match tag 54321
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward

interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  multisite border-gateway interface loopback100
  member vni 10011
    multisite ingress-replication
    mcast-group 239.1.1.11
  member vni 10012
    multisite ingress-replication
    mcast-group 239.1.1.12
  member vni 50000 associate-vrf

interface Ethernet1/1
  description S1-BGW2 TO S1-WAN2
  mtu 9216
  ip address 100.1.1.3/31 tag 54321
  no shutdown
```

```
  evpn multisite dci-tracking

interface Ethernet1/2
  description S1-BGW1 TO S1-WAN2
  mtu 9216
  ip address 100.1.1.5/31 tag 54321
  no shutdown
  evpn multisite dci-tracking

interface Ethernet1/98
  description S1-BGW1 TO S1-SPINE1
  mtu 9216
  ip address 10.1.1.9/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface Ethernet1/99
  description S1-BGW1 TO S1-SPINE2
  mtu 9216
  ip address 10.1.1.13/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface loopback0
  description S1-BGW1 Loopback0
  ip address 5.5.5.5/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S1-BGW1 Loopback1
  ip address 55.55.55.55/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback100
  description MULTI-SITE INTERFACE (VIP VTEP)
  ip address 56.56.56.56/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 5.5.5.5
router bgp 65001
  router-id 5.5.5.5
  log-neighbor-changes
  address-family ipv4 unicast
    redistribute direct route-map RMAP-REDIST-DIRECT
    maximum-paths 4
  address-family l2vpn evpn
```

```
  evpn multisite dci-tracking

interface Ethernet1/2
  description S1-BGW2 TO S1-WAN1
  mtu 9216
  ip address 100.1.1.7/31 tag 54321
  no shutdown
  evpn multisite dci-tracking

interface Ethernet1/98
  description S1-BGW2 TO S1-SPINE2
  mtu 9216
  ip address 10.1.1.15/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface Ethernet1/99
  description S1-BGW2 TO S1-SPINE1
  mtu 9216
  ip address 10.1.1.11/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface loopback0
  description S1-BGW2 Loopback0
  ip address 6.6.6.6/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S1-BGW2 Loopback1
  ip address 66.66.66.66/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback100
  description MULTI-SITE INTERFACE (VIP VTEP)
  ip address 56.56.56.56/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 6.6.6.6
router bgp 65001
  router-id 6.6.6.6
  log-neighbor-changes
  address-family ipv4 unicast
    redistribute direct route-map RMAP-REDIST-DIRECT
    maximum-paths 4
  address-family l2vpn evpn
```

```
  neighbor 3.3.3.3
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.4.4.4
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 100.1.1.0
    remote-as 65036
    update-source Ethernet1/1
    address-family ipv4 unicast
  neighbor 100.1.1.4
    remote-as 65036
    update-source Ethernet1/2
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
evpn
  vni 10011 l2
    rd auto
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

```
  neighbor 3.3.3.3
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.4.4.4
    remote-as 65001
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 100.1.1.2
    remote-as 65036
    update-source Ethernet1/1
    address-family ipv4 unicast
  neighbor 100.1.1.6
    remote-as 65036
    update-source Ethernet1/2
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
evpn
  vni 10011 l2
    rd auto
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

LAYER 3 CLOUD FULL CONFIGURATIONS

S1-WAN1

```
hostname S1-WAN1
```

S1-WAN2

```
hostname S1-WAN2
```

```
feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature lldp
feature nv overlay

route-map UNCHANGED permit 10
  set ip next-hop unchanged

interface Ethernet1/3
  description S1-WAN1 TO S2-WAN1
  mtu 9216
  ip address 200.0.0.0/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/4
  description S1-WAN1 TO S2-WAN2
  mtu 9216
  ip address 200.0.0.2/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/47
  description S1-WAN1 TO S1-BGW1
  mtu 9216
  ip address 100.1.1.0/31
  no shutdown

interface Ethernet1/48
  description S1-WAN1 TO S1-BGW2
  mtu 9216
  ip address 100.1.1.2/31
  no shutdown

interface loopback0
  ip address 200.1.1.1/32
  ip router ospf WAN area 0.0.0.0

router ospf WAN
router bgp 65036
  address-family ipv4 unicast
    network 200.1.1.1/32
  address-family l2vpn evpn
    retain route-target all
  template peer OVERLAY-PEERING
    update-source loopback0
    ebgp-multihop 5
    address-family l2vpn evpn
      send-community
      send-community extended
      route-map UNCHANGED out
  neighbor 5.0.0.5
```

```
feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature lldp
feature nv overlay

route-map UNCHANGED permit 10
  set ip next-hop unchanged

interface Ethernet1/3
  description S1-WAN2 TO S2-WAN1
  mtu 9216
  ip address 200.0.0.4/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/4
  description S1-WAN2 TO S2-WAN2
  mtu 9216
  ip address 200.0.0.6/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/47
  description S1-WAN2 TO S1-BGW2
  mtu 9216
  ip address 100.1.1.6/31
  no shutdown

interface Ethernet1/48
  description S1-WAN2 TO S1-BGW1
  mtu 9216
  ip address 100.1.1.4/31
  no shutdown

interface loopback0
  ip address 200.1.1.2/32
  ip router ospf WAN area 0.0.0.0

router ospf WAN
router bgp 65036
  address-family ipv4 unicast
    network 200.1.1.2/32
  address-family l2vpn evpn
    retain route-target all
  template peer OVERLAY-PEERING
    update-source loopback0
    ebgp-multihop 5
    address-family l2vpn evpn
      send-community
      send-community extended
      route-map UNCHANGED out
  neighbor 5.0.0.5
```

```
    inherit peer OVERLAY-PEERING
    remote-as 65002
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 5.5.5.5
    inherit peer OVERLAY-PEERING
    remote-as 65001
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 6.0.0.6
    inherit peer OVERLAY-PEERING
    remote-as 65002
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 6.6.6.6
    inherit peer OVERLAY-PEERING
    remote-as 65001
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 100.1.1.1
    remote-as 65001
    update-source Ethernet1/47
    address-family ipv4 unicast
  neighbor 100.1.1.3
    remote-as 65001
    update-source Ethernet1/48
    address-family ipv4 unicast
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.2.2.1
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.2.2.2
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
```

```
    inherit peer OVERLAY-PEERING
    remote-as 65002
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 5.5.5.5
    inherit peer OVERLAY-PEERING
    remote-as 65001
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 6.0.0.6
    inherit peer OVERLAY-PEERING
    remote-as 65002
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 6.6.6.6
    inherit peer OVERLAY-PEERING
    remote-as 65001
    address-family l2vpn evpn
      rewrite-evpn-rt-asn
  neighbor 100.1.1.5
    remote-as 65001
    update-source Ethernet1/48
    address-family ipv4 unicast
  neighbor 100.1.1.7
    remote-as 65001
    update-source Ethernet1/47
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.2.2.1
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.2.2.2
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
```

S2-WAN1

```
hostname S2-WAN1

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature lldp
feature nv overlay
```

S2-WAN2

```
hostname S2-WAN2

feature nxapi
feature ospf
feature bgp
feature lldp
```

```
interface Ethernet1/3
  description S2-WAN1 TO S1-WAN1
  mtu 9216
  ip address 200.0.0.1/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/4
  description S2-WAN1 TO S1-WAN2
  mtu 9216
  ip address 200.0.0.7/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/47
  description S2-WAN1 TO S2-BGW1
  mtu 9216
  ip address 100.2.2.0/31
  no shutdown

interface Ethernet1/48
  description S2-WAN1 TO S2-BGW2
  mtu 9216
  ip address 100.2.2.2/31
  no shutdown

interface loopback0
  ip address 200.2.2.1/32
  ip router ospf WAN area 0.0.0.0

router ospf WAN
router bgp 65036
  router-id 200.2.2.1
  address-family ipv4 unicast
    network 200.2.2.1/32
  neighbor 100.2.2.1
    remote-as 65002
    update-source Ethernet1/47
    address-family ipv4 unicast
  neighbor 100.2.2.3
    remote-as 65002
    update-source Ethernet1/48
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.2.2.2
```

```
interface Ethernet1/3
  description S2-WAN2 TO S1-WAN1
  mtu 9216
  ip address 200.0.0.5/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/4
  description S2-WAN2 TO S1-WAN2
  mtu 9216
  ip address 200.0.0.3/31
  ip ospf network point-to-point
  ip router ospf WAN area 0.0.0.0
  no shutdown

interface Ethernet1/47
  description S2-WAN1 TO S2-BGW2
  mtu 9216
  ip address 100.2.2.6/31
  no shutdown

interface Ethernet1/48
  description S2-WAN2 TO S2-BGW1
  mtu 9216
  ip address 100.2.2.4/31
  no shutdown

interface loopback0
  ip address 200.2.2.2/32
  ip router ospf WAN area 0.0.0.0

router ospf WAN
router bgp 65036
  router-id 200.2.2.2
  address-family ipv4 unicast
    network 200.2.2.2/32
  neighbor 100.2.2.5
    remote-as 65002
    update-source Ethernet1/48
    address-family ipv4 unicast
  neighbor 100.2.2.7
    remote-as 65002
    update-source Ethernet1/47
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
  neighbor 200.2.2.1
```

```
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
```

```
    remote-as 65036
    update-source loopback0
    address-family ipv4 unicast
      next-hop-self
```

SITE-2 FULL CONFIGURATIONS

S2-LEAF1

```
hostname S2-LEAF1

feature nxapi
cfs eth distribute
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature dhcp
feature lldp
feature nv overlay
feature ngoam

fabric forwarding anycast-gateway-mac 1234.5678.9000
ip pim rp-address 34.0.0.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map PERMIT-ALL permit 10
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward

interface Vlan11
  no shutdown
  mtu 9216
  vrf member Tenant-1
```

S2-LEAF2

```
hostname S2-LEAF2

feature nxapi
cfs eth distribute
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature dhcp
feature lldp
feature nv overlay
feature ngoam

fabric forwarding anycast-gateway-mac 1234.5678.9000
ip pim rp-address 34.0.0.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map PERMIT-ALL permit 10
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward

interface Vlan11
  no shutdown
  mtu 9216
  vrf member Tenant-1
```

```
  ip address 100.0.11.1/24
  fabric forwarding mode anycast-gateway

interface Vlan12
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.12.1/24
  fabric forwarding mode anycast-gateway

interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  member vni 10011
    suppress-arp
    mcast-group 239.0.0.11
  member vni 10012
    suppress-arp
    mcast-group 239.0.0.12
  member vni 50000 associate-vrf

interface Ethernet1/3
  description S2-LEAF1 TO S2-SPINE1
  mtu 9216
  ip address 20.2.2.0/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/34
  description S2-LEAF1 TO S2-SPINE2
  mtu 9216
  ip address 20.2.2.2/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S2-LEAF1 Loopback0
  ip address 1.0.0.1/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S2-LEAF1 Loopback1
  ip address 11.0.0.11/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 1.0.0.1
router bgp 65002
  router-id 1.0.0.1
```

```
  ip address 100.0.11.1/24
  fabric forwarding mode anycast-gateway

interface Vlan12
  no shutdown
  mtu 9216
  vrf member Tenant-1
  ip address 100.0.12.1/24
  fabric forwarding mode anycast-gateway

interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  member vni 10011
    suppress-arp
    mcast-group 239.0.0.11
  member vni 10012
    suppress-arp
    mcast-group 239.0.0.12
  member vni 50000 associate-vrf

interface Ethernet1/3
  description S2-LEAF2 TO S2-SPINE2
  mtu 9216
  ip address 20.2.2.6/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/34
  description S2-LEAF2 TO S2-SPINE1
  mtu 9216
  ip address 20.2.2.4/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S2-LEAF2 Loopback0
  ip address 2.0.0.2/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S2-LEAF2 Loopback1
  ip address 22.0.0.22/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 2.0.0.2
router bgp 65002
  router-id 2.0.0.2
```

```
  address-family l2vpn evpn
  neighbor 3.0.0.3
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.0.0.4
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  vrf Tenant-1
    address-family ipv4 unicast
      advertise l2vpn evpn
      redistribute direct route-map PERMIT-ALL
evpn
  vni 10011 l2
    rd auto
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

```
  address-family l2vpn evpn
  neighbor 3.0.0.3
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.0.0.4
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  vrf Tenant-1
    address-family ipv4 unicast
      advertise l2vpn evpn
      redistribute direct route-map PERMIT-ALL
evpn
  vni 10011 l2
    rd auto
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
```

S2-SPINE1

```
hostname S2-SPINE1

nv overlay evpn
feature ospf
feature bgp
feature pim
feature lldp
feature nv overlay

ip pim rp-address 34.0.0.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
ip pim anycast-rp 34.0.0.34 33.0.0.33
ip pim anycast-rp 34.0.0.34 44.0.0.44

interface Ethernet1/48
  description S2-SPINE1 TO S2-LEAF2
  mtu 9216
  ip address 20.2.2.5/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/99
  description S2-SPINE1 TO S2-BGW2
```

S2-SPINE2

```
hostname S2-SPINE2

nv overlay evpn
feature ospf
feature bgp
feature pim
feature lldp
feature nv overlay

ip pim rp-address 34.0.0.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
ip pim anycast-rp 34.0.0.34 33.0.0.33
ip pim anycast-rp 34.0.0.34 44.0.0.44

interface Ethernet1/48
  description S2-SPINE2 TO S2-LEAF1
  mtu 9216
  ip address 20.2.2.3/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/99
  description S2-SPINE2 TO S2-BGW1
```

```
  mtu 9216
  ip address 20.2.2.10/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/100
  description S2-SPINE1 TO S2-BGW1
  mtu 9216
  ip address 20.2.2.8/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/101
  description S2-SPINE1 TO S2-LEAF1
  mtu 9216
  ip address 20.2.2.1/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S2-SPINE1 Loopback0
  ip address 3.0.0.3/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S2-SPINE1 Loopback1
  ip address 33.0.0.33/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 3.0.0.3
router bgp 65002
  router-id 3.0.0.3
  address-family l2vpn evpn
  neighbor 1.0.0.1
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 2.0.0.2
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
```

```
  mtu 9216
  ip address 20.2.2.12/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/100
  description S2-SPINE2 TO S2-BGW2
  mtu 9216
  ip address 20.2.2.14/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface Ethernet1/101
  description S2-SPINE2 TO S2-LEAF2
  mtu 9216
  ip address 20.2.2.7/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown

interface loopback0
  description S2-SPINE2 Loopback0
  ip address 4.0.0.4/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback1
  description S2-SPINE2 Loopback1
  ip address 44.0.0.44/32
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 4.0.0.4
router bgp 65002
  router-id 4.0.0.4
  address-family l2vpn evpn
  neighbor 1.0.0.1
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 2.0.0.2
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
```

```
  neighbor 5.0.0.5
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 6.0.0.6
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
```

```
  neighbor 5.0.0.5
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
  neighbor 6.0.0.6
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
      route-reflector-client
```

S2-BGW1

```
hostname S2-BGW1

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lldp
feature nv overlay
evpn multisite border-gateway 2
  delay-restore time 300

ip pim rp-address 34.0.0.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map RMAP-REDIST-DIRECT permit 10
  match tag 54321
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward
```

S2-BGW2

```
hostname S2-BGW2

feature nxapi
nv overlay evpn
feature ospf
feature bgp
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature lldp
feature nv overlay
evpn multisite border-gateway 2
  delay-restore time 300

ip pim rp-address 34.0.0.34 group-list 239.0.0.0/24
ip pim ssm range 232.0.0.0/8
vlan 1,10-12
vlan 10
  vn-segment 50000
vlan 11
  vn-segment 10011
vlan 12
  vn-segment 10012

route-map RMAP-REDIST-DIRECT permit 10
  match tag 54321
vrf context Tenant-1
  vni 50000
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn

interface Vlan10
  no shutdown
  vrf member Tenant-1
  ip forward
```

```
interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  multisite border-gateway interface loopback100
  member vni 10011
    multisite ingress-replication
    mcast-group 239.1.1.11
  member vni 10012
    multisite ingress-replication
    mcast-group 239.1.1.12
  member vni 50000 associate-vrf


interface Ethernet1/47
  description S2-BGW1 TO S2-WAN1
  mtu 9216
  ip address 100.2.2.5/31 tag 54321
  no shutdown
  evpn multisite dci-tracking

interface Ethernet1/48
  description S2-BGW1 TO S2-WAN2
  mtu 9216
  ip address 100.2.2.1/31 tag 54321
  no shutdown
  evpn multisite dci-tracking


interface Ethernet1/99
  description S2-BGW1 TO S2-SPINE2
  mtu 9216
  ip address 20.2.2.13/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface Ethernet1/100
  description S2-BGW1 TO S2-SPINE1
  mtu 9216
  ip address 20.2.2.9/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface loopback0
  description S2-BGW1 Loopback0
  ip address 5.0.0.5/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
```

```
interface nve1
  no shutdown
  host-reachability protocol bgp
  source-interface loopback1
  multisite border-gateway interface loopback100
  member vni 10011
    multisite ingress-replication
    mcast-group 239.1.1.11
  member vni 10012
    multisite ingress-replication
    mcast-group 239.1.1.12
  member vni 50000 associate-vrf


interface Ethernet1/47
  description S2-BGW2 TO S2-WAN2
  mtu 9216
  ip address 100.2.2.7/31 tag 54321
  no shutdown
  evpn multisite dci-tracking

interface Ethernet1/48
  description S2-BGW2 TO S2-WAN1
  mtu 9216
  ip address 100.2.2.3/31 tag 54321
  no shutdown
  evpn multisite dci-tracking


interface Ethernet1/99
  description S2-BGW2 TO S2-SPINE1
  mtu 9216
  ip address 20.2.2.11/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface Ethernet1/100
  description S2-BGW2 TO S2-SPINE2
  mtu 9216
  ip address 20.2.2.15/31
  ip ospf network point-to-point
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
  no shutdown
  evpn multisite fabric-tracking

interface loopback0
  description S2-BGW2 Loopback0
  ip address 6.0.0.6/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode
```

```
interface loopback1
  description S2-BGW1 Loopback1
  ip address 55.0.0.55/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback100
  description MULTI-SITE INTERFACE (VIP VTEP)
  ip address 56.0.0.56/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 5.0.0.5
router bgp 65002
  router-id 5.0.0.5
  log-neighbor-changes
  address-family ipv4 unicast
    redistribute direct route-map RMAP-REDIST-DIRECT
    maximum-paths 4
  address-family l2vpn evpn
  neighbor 3.0.0.3
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.0.0.4
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 100.2.2.0
    remote-as 65036
    update-source Ethernet1/48
    address-family ipv4 unicast
  neighbor 100.2.2.4
    remote-as 65036
    update-source Ethernet1/47
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
```

```
interface loopback1
  description S2-BGW2 Loopback1
  ip address 66.0.0.66/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

interface loopback100
  description MULTI-SITE INTERFACE (VIP VTEP)
  ip address 56.0.0.56/32 tag 54321
  ip router ospf UNDERLAY area 0.0.0.0
  ip pim sparse-mode

router ospf UNDERLAY
  router-id 6.0.0.6
router bgp 65002
  router-id 6.0.0.6
  log-neighbor-changes
  address-family ipv4 unicast
    redistribute direct route-map RMAP-REDIST-DIRECT
    maximum-paths 4
  address-family l2vpn evpn
  neighbor 3.0.0.3
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 4.0.0.4
    remote-as 65002
    update-source loopback0
    address-family l2vpn evpn
      send-community
      send-community extended
  neighbor 100.2.2.2
    remote-as 65036
    update-source Ethernet1/47
    address-family ipv4 unicast
  neighbor 100.2.2.6
    remote-as 65036
    update-source Ethernet1/48
    address-family ipv4 unicast
  neighbor 200.1.1.1
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
      send-community
      send-community extended
      rewrite-evpn-rt-asn
  neighbor 200.1.1.2
    remote-as 65036
    update-source loopback0
    ebgp-multihop 5
    peer-type fabric-external
    address-family l2vpn evpn
```

"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison

```
      send-community
      send-community extended
      rewrite-evpn-rt-asn
evpn
  vni 10011 l2
    rd auto
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
vrf context Tenant-1
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn
```

```
      send-community
      send-community extended
      rewrite-evpn-rt-asn
evpn
  vni 10011 l2
    rd auto
    route-target import auto
    route-target export auto
  vni 10012 l2
    rd auto
    route-target import auto
    route-target export auto
vrf context Tenant-1
  rd auto
  address-family ipv4 unicast
    route-target both auto
    route-target both auto evpn
```

For more labs visit my GitHub repo: https://github.com/TitusM/Cisco-Data-Center

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"I have not failed. I've just found 10,000 ways that won't work." - Thomas Edison