

# 양면 가상 vPC 구성 및 확인

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## 소개

이 문서에서는 Nexus 9000에서 L2 이더넷 VPN(EVPN) VXLAN(Virtual Extensible LAN) 양면 가상 vPC를 구축하는 방법에 대해 설명합니다.

## 사전 요구 사항

### 요구 사항

다음 주제에 대한 지식을 보유하고 있으면 유용합니다.

- BGP(Border Gateway Protocol)
- OSPF(Open Shortest Path First)
- EVPN
- 가상 vPC
- vPC

### 사용되는 구성 요소

이 문서의 정보는 다음 소프트웨어 및 하드웨어 버전을 기반으로 합니다.

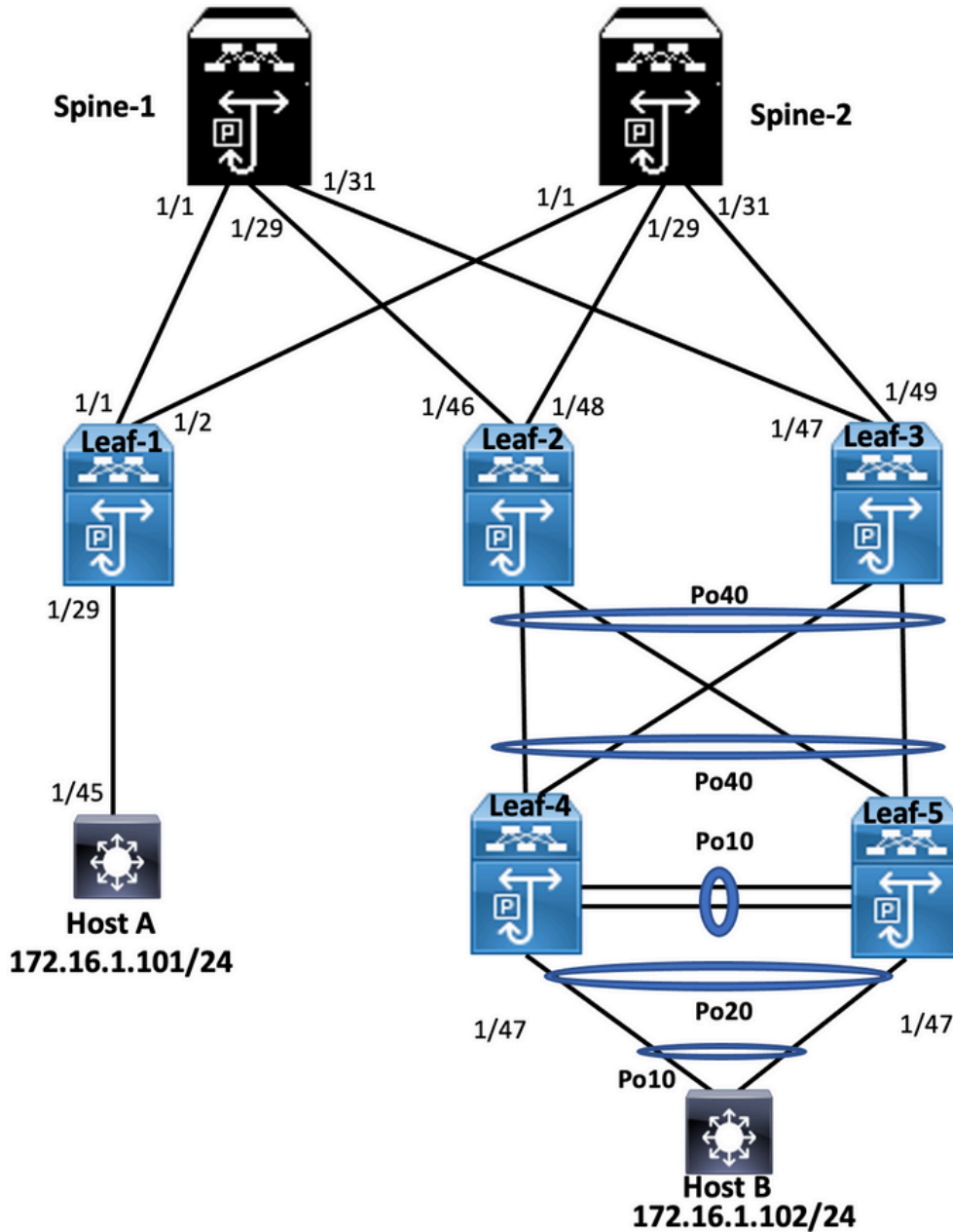
- 릴리스 10.2(3)를 실행하는 Cisco Nexus 93180YC-FX
- 릴리스 10.2(3)를 실행하는 Cisco Nexus 93180YC-FX

이 문서의 정보는 특정 랩 환경의 디바이스를 토대로 작성되었습니다. 이 문서에 사용된 모든 디바

이스는 초기화된(기본) 컨피그레이션으로 시작되었습니다. 현재 네트워크가 작동 중인 경우 모든 명령의 잠재적인 영향을 미리 숙지하시기 바랍니다.

## 구성

### 네트워크 다이어그램



### 리프-1

```
Leaf-1# show run
hostname Leaf-1

cfs eth distribute
nv overlay evpn
feature ospf
feature bgp
feature pim
feature fabric forwarding
```

```
feature interface-vlan
feature vn-segment-vlan-based
feature lACP
feature nv overlay

fabric forwarding anycast-gateway-mac 0000.2222.3333
ip pim rp-address 10.10.10.10 group-list 224.0.0.0/4
ip pim ssm range 232.0.0.0/8

vlan 1-10
vlan 2
    vn-segment 10002
vlan 10
    vn-segment 10010

route-map PERMIT-ALL permit 10
vrf context test
    vni 10002
    rd auto
    address-family ipv4 unicast
        route-target both auto
        route-target both auto evpn

interface Vlan2
    no shutdown
    vrf member test
    no ip redirects
    ip forward
    no ipv6 redirects

interface Vlan10
    no shutdown
    vrf member test
    no ip redirects
    ip address 172.16.2.100/25
    fabric forwarding mode anycast-gateway

interface nve1
    no shutdown
    host-reachability protocol bgp
    source-interface loopback1
    member vni 10002 associate-vrf
    member vni 10010
        suppress-arp
        mcast-group 239.1.1.1

interface Ethernet1/1
    mtu 9216
    ip address 172.16.0.1/24
    ip ospf network point-to-point
    ip router ospf 100 area 0.0.0.0
    ip pim sparse-mode
    no shutdown

interface Ethernet1/29
    switchport
    switchport mode trunk
    no shutdown

interface loopback0
    ip address 10.1.1.1/32
    ip router ospf 100 area 0.0.0.0
    ip pim sparse-mode
```

```

interface loopback1
 ip address 10.2.1.1/32
 ip router ospf 100 area 0.0.0.0
 ip pim sparse-mode

router ospf 100
 router-id 10.1.1.1
router bgp 6500
 router-id 10.1.1.1
 address-family ipv4 unicast
 address-family l2vpn evpn
  advertise-pip
 neighbor 10.10.10.10
  remote-as 6500
  update-source loopback0
  address-family ipv4 unicast
  address-family l2vpn evpn
   send-community
   send-community extended
vrf test
  address-family ipv4 unicast
evpn
 vni 10010 12
  rd auto
  route-target import auto
  route-target export auto

```

## 스파인-1

```

Spine-1# show run
cfs eth distribute
nv overlay evpn
feature ospf
feature bgp
feature pim
feature fabric forwarding
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature vpc
feature nv overlay

fabric forwarding anycast-gateway-mac 0000.2222.3333
ip pim rp-address 10.10.10.10 group-list 224.0.0.0/4
ip pim ssm range 232.0.0.0/8
vlan 1,100

route-map PERMIT-ALL permit 10
vrf context management

interface Ethernet1/1
 mtu 9216
 ip address 172.16.0.2/24
 ip ospf network point-to-point
 ip router ospf 100 area 0.0.0.0
 ip pim sparse-mode
 no shutdown

interface Ethernet1/29
 mtu 9216
 ip address 172.16.2.2/24
 ip ospf network point-to-point

```

```

ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
no shutdown

interface Ethernet1/31
mtu 9216
ip address 172.16.1.2/24
ip ospf network point-to-point
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
no shutdown

interface loopback0
ip address 10.10.10.10/32
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode

router ospf 100
router-id 10.10.10.10
router bgp 6500
router-id 10.10.10.10
address-family ipv4 unicast
address-family l2vpn evpn
neighbor 10.1.1.1
remote-as 6500
update-source loopback0
address-family l2vpn evpn
send-community
send-community extended
route-reflector-client
neighbor 10.1.1.3
remote-as 6500
update-source loopback0
address-family l2vpn evpn
send-community
send-community extended
route-reflector-client
neighbor 10.1.1.4
remote-as 6500
update-source loopback0
address-family l2vpn evpn
send-community
send-community extended
route-reflector-client

```

## 리프-2

```

Leaf-2(config)# show run
hostname Leaf-2

cfs ipv4 distribute
nv overlay evpn
feature ospf
feature bgp
feature pim
feature fabric forwarding
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature vpc

```

```
feature nv overlay

fabric forwarding anycast-gateway-mac 0000.2222.3333
ip pim rp-address 10.10.10.10 group-list 224.0.0.0/4
ip pim ssm range 232.0.0.0/8

vlan 1-2,10
vlan 2
    vn-segment 10002
vlan 10
    vn-segment 10010

route-map PERMIT-ALL permit 10
vrf context management
vrf context test
    vni 10002
        rd auto
    address-family ipv4 unicast
        route-target both auto
        route-target both auto evpn

vpc domain 1
    peer-switch
    peer-keepalive destination 10.201.182.26
    virtual peer-link destination 10.1.1.3 source 10.1.1.4 dscp 56
    peer-gateway
    ip arp synchronize

interface Vlan1
    no ip redirects
    no ipv6 redirects

interface Vlan2
    no shutdown
    vrf member test
    no ip redirects
    ip forward
    no ipv6 redirects

interface Vlan10
    no shutdown
    vrf member test
    no ip redirects
    ip address 172.16.2.100/25
    no ipv6 redirects
    fabric forwarding mode anycast-gateway

interface port-channel10
    switchport
    switchport mode trunk
    switchport trunk allowed vlan 10,20
    spanning-tree port type network
    vpc peer-link

interface port-channel20
    switchport
    switchport mode trunk
    switchport trunk allowed vlan 10,20
    vpc 20

interface port-channel40
    switchport
    switchport mode trunk
    switchport trunk allowed vlan 10,20
```

vpc 40

```
interface nve1
no shutdown
host-reachability protocol bgp
advertise virtual-rmac
source-interface loopback1
member vni 10002 associate-vrf
member vni 10010
    suppress-arp
    mcast-group 239.1.1.1
```

```
interface Ethernet1/7
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown
```

```
interface Ethernet1/8
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown
```

```
interface Ethernet1/46
mtu 9216
port-type fabric
ip address 172.16.2.1/24
ip ospf network point-to-point
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
no shutdown
```

```
interface loopback0
ip address 10.1.1.4/32
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
```

```
interface loopback1
ip address 10.2.1.4/32
ip address 10.2.1.10/32 secondary
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
icam monitor scale
```

```
router ospf 100
router-id 10.1.1.4
router bgp 6500
router-id 10.1.1.4
address-family ipv4 unicast
address-family l2vpn evpn
    advertise-pip
neighbor 10.10.10.10
    remote-as 6500
    update-source loopback0
    address-family l2vpn evpn
        send-community
        send-community extended
vrf test
    address-family ipv4 unicast
evpn
vni 10010 12
```

```
rd auto
route-target import auto
route-target export auto
```

## 리프-3

```
Leaf-3(config-if-range)# show run
hostname Leaf-3

cfs ipv4 distribute
nv overlay evpn
feature ospf
feature bgp
feature pim
feature fabric forwarding
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature vpc
feature nv overlay

fabric forwarding anycast-gateway-mac 0000.2222.3333
ip pim rp-address 10.10.10.10 group-list 224.0.0.0/4
ip pim ssm range 232.0.0.0/8

vlan 1-2,10
vlan 2
    vn-segment 10002
vlan 10
    vn-segment 10010

route-map PERMIT-ALL permit 10
vrf context management
vrf context test
    vni 10002
    rd auto
    address-family ipv4 unicast
        route-target both auto
        route-target both auto evpn

vpc domain 1
    peer-switch
    peer-keepalive destination 10.201.182.25
    virtual peer-link destination 10.1.1.4 source 10.1.1.3 dscp 56
    peer-gateway
    ip arp synchronize

interface Vlan1
    no ip redirects
    no ipv6 redirects

interface Vlan2
    no shutdown
    vrf member test
    no ip redirects
    ip forward
    no ipv6 redirects

interface Vlan10
    no shutdown
    vrf member test
    no ip redirects
```



```
ip address 172.16.2.100/25
no ipv6 redirects
fabric forwarding mode anycast-gateway
```

```
interface port-channel10
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
spanning-tree port type network
vpc peer-link
```

```
interface port-channel20
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
vpc 20
```

```
interface port-channel40
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
vpc 40
```

```
interface nve1
no shutdown
host-reachability protocol bgp
advertise virtual-rmac
source-interface loopback1
member vni 10002 associate-vrf
member vni 10010
  suppress-arp
  mcast-group 239.1.1.1
```

```
interface Ethernet1/7
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown
```

```
interface Ethernet1/8
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown
```

```
interface Ethernet1/47
mtu 9216
port-type fabric
ip address 172.16.1.1/24
ip ospf network point-t-point
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
no shutdown
```

```
interface Ethernet1/48
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 20 mode active
no shutdown
```

```
interface loopback0
```

```

ip address 10.1.1.3/32
ip router ospf 100 area 0.0.0.0
ip pim sparse-mod

interface loopback1
ip address 10.2.1.3/32
ip address 10.2.1.10/32 secondary
ip router ospf 100 area 0.0.0.0
ip pim sparse-mode
icam monitor scale

router ospf 100
router-id 10.1.1.3
router bgp 6500
router-id 10.1.1.3
address-family ipv4 unicast
address-family l2vpn evpn
advertise-pip
neighbor 10.10.10.10
remote-as 6500
update-source loopback0
address-family l2vpn evpn
send-community
send-community extended
vrf test
address-family ipv4 unicast
evpn
vni 10010 l2
rd auto
route-target import auto
route-target export auto

```

## 리프-4

```

Leaf-4(config-if)# show run
hostname Leaf-4

cfs eth distribute
feature lacp
feature vpc

vlan 1,10,20

vpc domain 2
peer-switch
peer-keepalive destination 10.201.182.29 source 10.201.182.28
peer-gateway

interface port-channel10
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
spanning-tree port type network
vpc peer-link

interface port-channel20
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
vpc 20

interface port-channel40

```

```
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
vpc 40
```

```
interface Ethernet1/7
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown
```

```
interface Ethernet1/8
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown
```

```
interface Ethernet1/45
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 10 mode active
no shutdown
```

```
interface Ethernet1/47
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 20 mode active
no shutdown
```

## 리프-5

```
Leaf-5(config-if)# show run
```

```
cfs eth distribute
feature lacp
feature vpc
```

```
vlan 1,10,20
```

```
vpc domain 2
peer-switch
peer-keepalive destination 10.201.182.28 source 10.201.182.29
peer-gateway
```

```
interface port-channel10
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
spanning-tree port type network
vpc peer-link
```

```
interface port-channel20
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
vpc 20
```

```
interface port-channel40
switchport
```

```
switchport mode trunk
switchport trunk allowed vlan 10,20
vpc 40

interface Ethernet1/7
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown

interface Ethernet1/8
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 40 mode active
no shutdown

interface Ethernet1/45
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 10 mode active
no shutdown

interface Ethernet1/47
switchport
switchport mode trunk
switchport trunk allowed vlan 10,20
channel-group 20 mode active
no shutdown
```

## 호스트 A

```
Host-A(config-if)# show run
hostname Host-A

nv overlay evpn
feature ospf
feature bgp
feature pim
feature fabric forwarding
feature interface-vlan
feature vn-segment-vlan-based
feature lacp
feature nv overlay

vlan 1-2,10,20

vrf context test

interface Vlan10
no shutdown
vrf member test
ip address 172.16.1.101/25

interface Ethernet1/45
switchport
switchport mode trunk
no shutdown
```

## 호스트 B

```
HOST-B(config-if)# show run
hostname HOST-B

feature ospf
feature bgp
feature pim
feature interface-vlan
feature lacp

vlan 1-2,10,20

vrf context test

interface Vlan10
  no shutdown
  vrf member test
  ip address 172.16.1.102/25

interface port-channel10
  switchport
  switchport mode trunk

interface Ethernet1/3
  switchport
  switchport mode trunk
  channel-group 10 mode active
  no shutdown

interface Ethernet1/4
  switchport
  switchport mode trunk
  channel-group 10 mode active
  no shutdown
```

## 다음을 확인합니다.

구성이 올바르게 작동하는지 확인하려면 이 섹션을 활용하십시오.

```
HOST-B(config-if)# ping 172.16.1.101 vrf test
PING 172.16.1.101 (172.16.1.101): 56 data bytes
64 bytes from 172.16.1.101: icmp_seq=0 ttl=254 time=1.007 ms
64 bytes from 172.16.1.101: icmp_seq=1 ttl=254 time=0.608 ms
64 bytes from 172.16.1.101: icmp_seq=2 ttl=254 time=0.539 ms
64 bytes from 172.16.1.101: icmp_seq=3 ttl=254 time=0.522 ms
64 bytes from 172.16.1.101: icmp_seq=4 ttl=254 time=0.514 ms

--- 172.16.1.101 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 0.514/0.638/1.007 ms
```

```
HOST-B(config-if)# show ip arp 172.16.1.101 vrf test
Flags: * - Adjacencies learnt on non-active FHRP router
      + - Adjacencies synced via CFSOE
      # - Adjacencies Throttled for Glean
      CP - Added via L2RIB, Control plane Adjacencies
      PS - Added via L2RIB, Peer Sync
      RO - Re-Originated Peer Sync Entry
```

```

D - Static Adjacencies attached to down interface
IP ARP Table
Total number of entries: 1
Address      Age      MAC Address  Interface  Flags
172.16.1.101 00:00:04 4ce1.7638.2f37 Vlan10

```

```

Host-A(config-if)# ping 172.16.1.102 vrf tes
PING 172.16.1.102 (172.16.1.102): 56 data bytes
64 bytes from 172.16.1.102: icmp_seq=0 ttl=254 time=1.047 ms
64 bytes from 172.16.1.102: icmp_seq=1 ttl=254 time=0.86 ms
64 bytes from 172.16.1.102: icmp_seq=2 ttl=254 time=0.708 ms
64 bytes from 172.16.1.102: icmp_seq=3 ttl=254 time=0.509 ms
64 bytes from 172.16.1.102: icmp_seq=4 ttl=254 time=0.485 ms

```

```

--- 172.16.1.102 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 0.485/0.721/1.047 ms
Host-A(config-if)#

```

```

Host-A(config-if)# show ip arp 172.16.1.102 vrf test
Flags: * - Adjacencies learnt on non-active FHRP router
      + - Adjacencies synced via CFSOE
      # - Adjacencies Throttled for Glean
      CP - Added via L2RIB, Control plane Adjacencies
      PS - Added via L2RIB, Peer Sync
      RO - Re-Originated Peer Sync Entry
      D - Static Adjacencies attached to down interface

```

```

IP ARP Table
Total number of entries: 1
Address      Age      MAC Address  Interface  Flags
172.16.1.102 00:05:07 4ce1.7638.3257 Vlan10
Host-A(config-if)#

```

## 문제 해결

이 섹션에서는 컨피그레이션 문제를 해결하는 데 사용할 수 있는 정보를 제공합니다.

```

Leaf-2(config-if-range)# show spanning-tree
VLAN0001
Spanning tree enabled protocol rstp
Root ID      Priority      32769
Address      0023.04ee.be01
Cost         0
Port         0 ()
Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID    Priority      32769 (priority 32768 sys-id-ext 1)
Address      003a.9c28.2cc7
Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

```

```

Interface      Role Sts Cost      Prio.Nbr Type
-----
Eth1/47        Desg FWD 4          128.185 P2p

```

```

VLAN0002
Spanning tree enabled protocol rstp
Root ID      Priority      32770
Address      0023.04ee.be01
This bridge is the root
Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

```

```
Bridge ID Priority 32770 (priority 32768 sys-id-ext 2)
Address 0023.04ee.be01
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
Interface Role Sts Cost Prio.Nbr Type
-----
Eth1/47 Desg FWD 4 128.185 P2p
```

VLAN0010

```
Spanning tree enabled protocol rstp
Root ID Priority 32778
Address 0023.04ee.be01
This bridge is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
Address 0023.04ee.be01
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

```
Interface Role Sts Cost Prio.Nbr Type
-----
Po10 Desg FWD 4 128.4105 (vPC peer-link) Network P2p
Po40 Desg FWD 1 128.4135 (vPC) P2p
Eth1/47 Desg FWD 4 128.185 P2p
```

Leaf-2(config-if-range)# show port-channel summary

```
Flags: D - Down P - Up in port-channel (members)
I - Individual H - Hot-standby (LACP only)
s - Suspended r - Module-removed
b - BFD Session Wait
S - Switched R - Routed
U - Up (port-channel)
p - Up in delay-lACP mode (member)
M - Not in use. Min-links not met
```

```
-----
Group Port- Type Protocol Member Ports
channel
-----
10 Po10(SU) Eth NONE --
20 Po20(SD) Eth LACP Eth1/5(D)
40 Po40(SU) Eth LACP Eth1/7(P) Eth1/8(P)
```

Leaf-2(config-if-range)# show vpc brief

Legend:

(\*) - local vPC is down, forwarding via vPC peer-link

```
vPC domain id : 1
Peer status : peer adjacency formed ok
vPC keep-alive status : peer is alive
Configuration consistency status : success
Per-vlan consistency status : success
Type-2 consistency status : success
vPC role : primary
Number of vPCs configured : 2
Peer Gateway : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status : Disabled
Delay-restore status : Timer is off.(timeout = 30s)
Delay-restore SVI status : Timer is off.(timeout = 10s)
Delay-restore Orphan-port status : Timer is off.(timeout = 0s)
Operational Layer3 Peer-router : Disabled
Virtual-peerlink mode : Enabled
```

vPC Peer-link status

```
-----  
id   Port   Status Active vlans  
--   ----   -  
1    Po10   up    10
```

vPC status

```
-----  
Id   Port           Status Consistency Reason           Active vlans  
--   -  
20   Po20           down*  success    success    -  
40   Po40           up     success    success    10
```

Leaf-3(config-if-range)# show spanning-tree

VLAN0010

Spanning tree enabled protocol rstp

Root ID Priority 32778  
Address 0023.04ee.be01  
This bridge is the root  
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)  
Address 0023.04ee.be01  
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

```
-----  
Interface      Role Sts Cost      Prio.Nbr Type  
-----  
Po10           Root FWD 4         128.4105 (vPC peer-link) Network P2p  
Po40           Desg FWD 1         128.4135 (vPC) P2p
```

Leaf-3(config-if-range)# show vpc brief

Legend:

(\* ) - local vPC is down, forwarding via vPC peer-link

vPC domain id : 1  
Peer status : peer adjacency formed ok  
vPC keep-alive status : peer is alive  
Configuration consistency status : success  
Per-vlan consistency status : success  
Type-2 consistency status : success  
vPC role : secondary  
Number of vPCs configured : 2  
Peer Gateway : Enabled  
Dual-active excluded VLANs : -  
Graceful Consistency Check : Enabled  
Auto-recovery status : Disabled  
Delay-restore status : Timer is off.(timeout = 30s)  
Delay-restore SVI status : Timer is off.(timeout = 10s)  
Delay-restore Orphan-port status : Timer is off.(timeout = 0s)  
Operational Layer3 Peer-router : Disabled  
Virtual-peerlink mode : Enabled

vPC Peer-link status

```
-----  
id   Port   Status Active vlans  
--   ----   -  
1    Po10   up    10
```

vPC status

```
-----  
Id   Port           Status Consistency Reason           Active vlans  
--   -  
20   Po20           down*  success    success    -  
40   Po40           up     success    success    10
```



Please check "show vpc consistency-parameters vpc <vpc-num>" for the consistency reason of down vpc and for type-2 consistency reasons for any vpc.

Leaf-4(config-if)# show spanning-tree

VLAN0010

Spanning tree enabled protocol rstp

Root ID Priority 32778  
Address 0023.04ee.be01  
Cost 5  
Port 4105 (port-channel10)  
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)  
Address 0023.04ee.be02  
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Interface	Role	Sts	Cost	Prio.Nbr	Type
Po10	Root	FWD	4	128.4105	(vPC peer-link) Network P2p
Po20	Desg	FWD	1	128.4115	(vPC) P2p
Po40	Root	FWD	1	128.4135	(vPC) P2p

VLAN0020

Spanning tree enabled protocol rstp

Root ID Priority 32788  
Address 0023.04ee.be02  
This bridge is the root  
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)  
Address 0023.04ee.be02  
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Interface	Role	Sts	Cost	Prio.Nbr	Type
Po10	Root	FWD	4	128.4105	(vPC peer-link) Network P2p
Po20	Desg	FWD	1	128.4115	(vPC) P2p
Po40	Desg	FWD	1	128.4135	(vPC) P2p

Leaf-4(config-if)# show vpc brief

Legend:

(\*) - local vPC is down, forwarding via vPC peer-link

vPC domain id : 2  
Peer status : peer adjacency formed ok  
vPC keep-alive status : peer is alive  
Configuration consistency status : success  
Per-vlan consistency status : success  
Type-2 consistency status : success  
vPC role : secondary  
Number of vPCs configured : 2  
Peer Gateway : Enabled  
Dual-active excluded VLANs : -  
Graceful Consistency Check : Enabled  
Auto-recovery status : Disabled  
Delay-restore status : Timer is off.(timeout = 30s)  
Delay-restore SVI status : Timer is off.(timeout = 10s)  
Operational Layer3 Peer-router : Disabled  
Virtual-peerlink mode : Disabled

vPC Peer-link status

-----

```

id      Port      Status Active vlans
--      -
1       Po10     up      10,20

```

vPC status

```

-----
Id      Port      Status Consistency Reason      Active vlans
--      -
20     Po20     up      success  success  10,20
40     Po40     up      success  success  10,20

```

Please check "show vpc consistency-parameters vpc <vpc-num>" for the consistency reason of down vpc and for type-2 consistency reasons for any vpc.

Leaf-4(config-if)# show port-channel summary

```

Flags:  D - Down          P - Up in port-channel (members)
        I - Individual    H - Hot-standby (LACP only)
        s - Suspended     r - Module-removed
        b - BFD Session Wait
        S - Switched      R - Routed
        U - Up (port-channel)
        p - Up in delay-lacp mode (member)
        M - Not in use. Min-links not met

```

```

-----
Group Port-      Type      Protocol  Member Ports
      Channel
-----
10    Po10(SU)    Eth       LACP      Eth1/45(P)
20    Po20(SU)    Eth       LACP      Eth1/47(P)
40    Po40(SU)    Eth       LACP      Eth1/7(P)   Eth1/8(P)

```

Leaf-5(config-if)# show spanning-tree

VLAN0010

```

Spanning tree enabled protocol rstp
Root ID      Priority      32778
             Address      0023.04ee.be01
             Cost        1
             Port        4135 (port-channel40)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID    Priority      32778 (priority 32768 sys-id-ext 10)
             Address      0023.04ee.be02
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

```

```

Interface      Role Sts Cost      Prio.Nbr Type
-----
Po10           Desg FWD 4          128.4105 (vPC peer-link) Network P2p
Po20           Desg FWD 1          128.4115 (vPC) P2p
Po40           Root FWD 1          128.4135 (vPC) P2p

```

VLAN0020

```

Spanning tree enabled protocol rstp
Root ID      Priority      32788
             Address      0023.04ee.be02
             This bridge is the root
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID    Priority      32788 (priority 32768 sys-id-ext 20)
             Address      0023.04ee.be02
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

```

```

Interface      Role Sts Cost      Prio.Nbr Type
-----

```

```
Po10      Desg FWD 4      128.4105 (vPC peer-link) Network P2p
Po20      Desg FWD 1      128.4115 (vPC) P2p
Po40      Desg FWD 1      128.4135 (vPC) P2p
```

Leaf-5(config-if)# show vpc brief

Legend:

(\* ) - local vPC is down, forwarding via vPC peer-link

```
vPC domain id          : 2
Peer status            : peer adjacency formed ok
vPC keep-alive status  : peer is alive
Configuration consistency status : success
Per-vlan consistency status : success
Type-2 consistency status : success
vPC role               : primary
Number of vPCs configured : 2
Peer Gateway           : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status   : Disabled
Delay-restore status   : Timer is off.(timeout = 30s)
Delay-restore SVI status : Timer is off.(timeout = 10s)
Operational Layer3 Peer-router : Disabled
Virtual-peerlink mode  : Disabled
```

vPC Peer-link status

```
-----
id   Port   Status Active vlans
--   -
1    Po10   up     10,20
```

vPC status

```
-----
Id   Port   Status Consistency Reason          Active vlans
--   -
20   Po20   up     success    success          10,20
40   Po40   up     success    success          10,20
```

Please check "show vpc consistency-parameters vpc <vpc-num>" for the consistency reason of down vpc and for type-2 consistency reasons for any vpc.

Leaf-1# show bgp l2vpn evpn

```
BGP routing table information for VRF default, address family L2VPN EVPN
BGP table version is 558, Local Router ID is 10.1.1.1
Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, *-valid, >-best
Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected
Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2
```

```

Network          Next Hop          Metric   LocPrf   Weight Path
Route Distinguisher: 10.1.1.1:32777 (L2VNI 10010)
*>i[2]:[0]:[0]:[48]:[003a.9c28.2cc7]:[0]:[0.0.0.0]/216
    10.2.1.10          100          0 i
*>i[2]:[0]:[0]:[48]:[003a.9c28.2f67]:[0]:[0.0.0.0]/216
    10.2.1.10          100          0 i
*>l[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[0]:[0.0.0.0]/216
    10.2.1.1          100          32768 i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[0]:[0.0.0.0]/216
    10.2.1.10          100          0 i
* i                  10.2.1.10          100          0 i
*>l[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272
```

```

10.2.1.1 100 32768 i
* i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[32]:[172.16.1.102]/272
10.2.1.10 100 0 i
*>i 10.2.1.10 100 0 i

```

Route Distinguisher: 10.1.1.3:3

```

*>i[2]:[0]:[0]:[48]:[003a.9c28.2f67]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i

```

Route Distinguisher: 10.1.1.3:32777

```

*>i[2]:[0]:[0]:[48]:[003a.9c28.2f67]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[32]:[172.16.1.102]/272
10.2.1.10 100 0 i

```

Route Distinguisher: 10.1.1.4:3

```

*>i[2]:[0]:[0]:[48]:[003a.9c28.2cc7]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i

```

Route Distinguisher: 10.1.1.4:32777

```

*>i[2]:[0]:[0]:[48]:[003a.9c28.2cc7]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[32]:[172.16.1.102]/272
10.2.1.10 100 0 i

```

Route Distinguisher: 10.1.1.1:3 (L3VNI 10002)

```

*>i[2]:[0]:[0]:[48]:[003a.9c28.2cc7]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i
*>i[2]:[0]:[0]:[48]:[003a.9c28.2f67]:[0]:[0.0.0.0]/216
10.2.1.10 100 0 i
*>l[2]:[0]:[0]:[48]:[005d.73b2.9647]:[0]:[0.0.0.0]/216
10.2.1.1 100 32768 i
* i[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[32]:[172.16.1.102]/272
10.2.1.10 100 0 i
*>i 10.2.1.10 100 0 i

```

Leaf-1#

Leaf-1# show mac address-table

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

VLAN	MAC Address	Type	age	Secure	NTFY	Ports
* 10	4ce1.7638.2f37	dynamic	NA	F	F	Eth1/29
<b>C 10</b>	<b>4ce1.7638.3257</b>	<b>dynamic</b>	<b>NA</b>	<b>F</b>	<b>F</b>	<b>nve1(10.2.1.10)</b>
G -	0000.2222.3333	static	-	F	F	sup-eth1(R)
G -	005d.73b2.9647	static	-	F	F	sup-eth1(R)
G 2	005d.73b2.9647	static	-	F	F	sup-eth1(R)
G 10	005d.73b2.9647	static	-	F	F	sup-eth1(R)

Leaf-1#

Leaf-2(config-if-range)#

Leaf-2(config-if-range)# show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN

BGP table version is 45, Local Router ID is 10.1.1.4

Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best

Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 10.1.1.1:3					
*>i[2]:[0]:[0]:[48]:[005d.73b2.9647]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i

Route Distinguisher: 10.1.1.1:32777					
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272	10.2.1.1		100	0	i

Route Distinguisher: 10.1.1.4:32777 (L2VNI 10010)					
*>l[2]:[0]:[0]:[48]:[003a.9c28.2cc7]:[0]:[0.0.0.0]/216	10.2.1.10		100	32768	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i
*>l[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[0]:[0.0.0.0]/216	10.2.1.10		100	32768	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272	10.2.1.1		100	0	i
<b>*&gt;l[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[32]:[172.16.1.102]/272</b>	10.2.1.10		100	32768	i

Route Distinguisher: 10.1.1.4:3 (L3VNI 10002)					
*>l[2]:[0]:[0]:[48]:[003a.9c28.2cc7]:[0]:[0.0.0.0]/216	10.2.1.10		100	32768	i
*>i[2]:[0]:[0]:[48]:[005d.73b2.9647]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272	10.2.1.1		100	0	i

Leaf-2(config-if-range)#

Leaf-3(config-if-range)# show bgp l2vpn evpn

BGP routing table information for VRF default, address family L2VPN EVPN

BGP table version is 89, Local Router ID is 10.1.1.3

Status: s-suppressed, x-deleted, S-stale, d-dampened, h-history, \*-valid, >-best

Path type: i-internal, e-external, c-confed, l-local, a-aggregate, r-redist, I-injected

Origin codes: i - IGP, e - EGP, ? - incomplete, | - multipath, & - backup, 2 - best2

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 10.1.1.1:3					
*>i[2]:[0]:[0]:[48]:[005d.73b2.9647]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i

Route Distinguisher: 10.1.1.1:32777					
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272	10.2.1.1		100	0	i

Route Distinguisher: 10.1.1.3:32777 (L2VNI 10010)					
*>l[2]:[0]:[0]:[48]:[003a.9c28.2f67]:[0]:[0.0.0.0]/216	10.2.1.10		100	32768	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[0]:[0.0.0.0]/216	10.2.1.1		100	0	i
*>l[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[0]:[0.0.0.0]/216	10.2.1.10		100	32768	i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272	10.2.1.1		100	0	i
<b>*&gt;l[2]:[0]:[0]:[48]:[4ce1.7638.3257]:[32]:[172.16.1.102]/272</b>	10.2.1.10		100	32768	i

Route Distinguisher: 10.1.1.3:3 (L3VNI 10002)					
---	--	--	--	--	--

```
*>l[2]:[0]:[0]:[48]:[003a.9c28.2f67]:[0]:[0.0.0.0]/216
    10.2.1.10                100      32768 i
*>i[2]:[0]:[0]:[48]:[005d.73b2.9647]:[0]:[0.0.0.0]/216
    10.2.1.1                100          0 i
*>i[2]:[0]:[0]:[48]:[4ce1.7638.2f37]:[32]:[172.16.1.101]/272
    10.2.1.1                100          0 i
```

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