



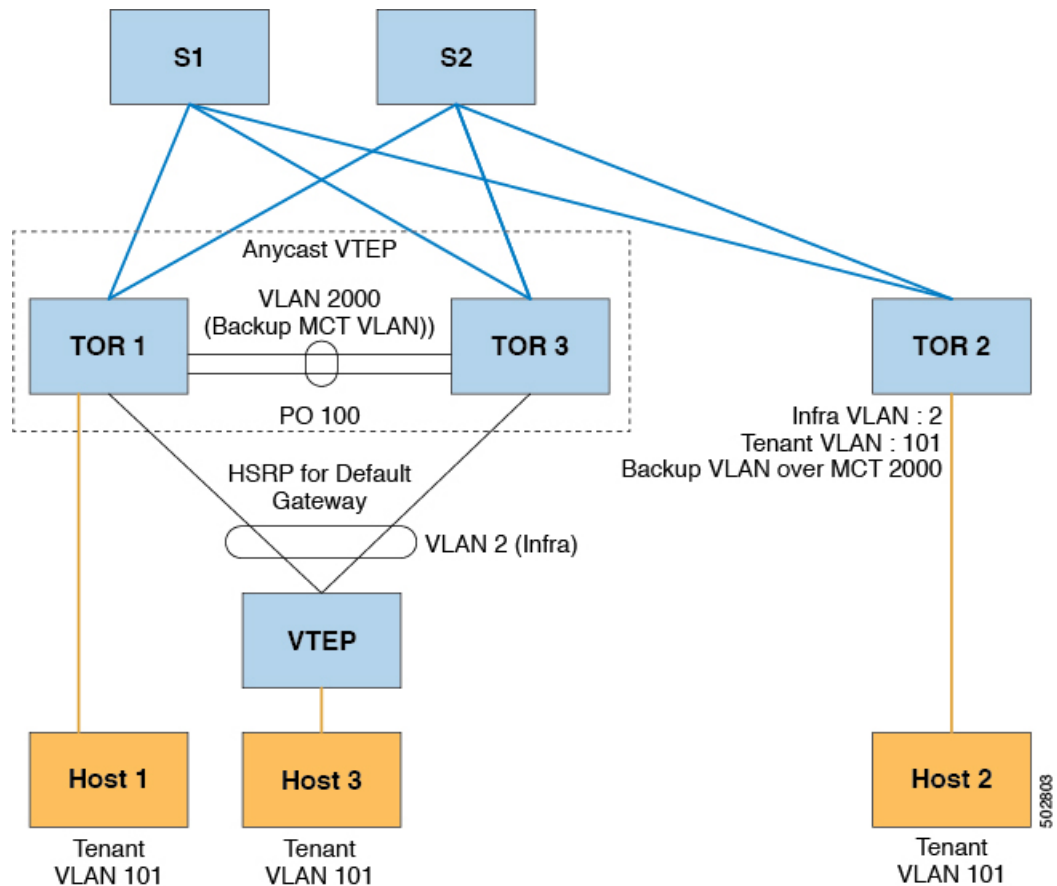
Configuring Bud Node

This chapter contains the following sections:

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VXLAN Bud Node Over vPC Overview

Figure 1: Underlay Network Based on PIM-SM and OSPF





Note For bud-node topologies, the source IP of the VTEP behind vPC must be in the same subnet as the infra VLAN. This SVI should have proxy ARP enabled. For example:

```
Interface Vlan2
ip proxy-arp
```



Note The **system nve infra-vlans** command specifies VLANs used for all SVI interfaces, for uplink interfaces with respect to bud-node topologies, and vPC peer-links in VXLAN as infra-VLANs. You must not configure certain combinations of infra-VLANs. For example, 2 and 514, 10 and 522, which are 512 apart.

For Cisco Nexus 9200, 9300-EX, and 9300-FX/FX2/FX3 and 9300-GX platform switches, use the **system nve infra-vlans** command to configure any VLANs that are used as infra-VLANs.

VXLAN Bud Node Over vPC Topology Example

- Enable the required features:

```
feature ospf
feature pim
feature interface-vlan
feature vn-segment-vlan-based
feature hsrp
feature lacp
feature vpc
feature nv overlay
```

- Configuration for PIM anycast RP.

In this example, 1.1.1.1 is the anycast RP address.

```
ip pim rp-address 1.1.1.1 group-list 225.0.0.0/8
```

- VLAN configuration

In this example, tenant VLANs 101-103 are mapped to vn-segments.

```
vlan 1-4,101-103,2000
vlan 101
  vn-segment 10001
vlan 102
  vn-segment 10002
vlan 103
  vn-segment 10003
```

- vPC configuration

```
vpc domain 1
 peer-switch
 peer-keepalive destination 172.31.144.213
 delay restore 180
 peer-gateway
 ipv6 nd synchronize
 ip arp synchronize
```

- Infra VLAN SVI configuration

```
interface Vlan2
 no shutdown
 no ip redirects
 ip proxy-arp
 ip address 10.200.1.252/24
 no ipv6 redirects
 ip router ospf 1 area 0.0.0.0
 ip pim sparse-mode
 ip igmp static-oif route-map match-mcast-groups
 hsrp version 2
 hsrp 1
 ip 10.200.1.254
```

- Route-maps for matching multicast groups

Each VXLAN multicast group needs to have a static OIF on the backup SVI MCT.

```
route-map match-mcast-groups permit 1
 match ip multicast group 225.1.1.1/32
```

- Backup SVI over MCT configuration

- Configuration Option 1:

```
interface Vlan2000
 no shutdown
 ip address 20.20.20.1/24
 ip router ospf 1 area 0.0.0.0
 ip pim sparse-mode
```

- Configuration Option 2:

```
interface Vlan2000
 no shutdown
 ip address 20.20.20.1/24
 ip router ospf 1 area 0.0.0.0
 ip pim sparse-mode
```

- vPC interface configuration that carries the infra VLAN

```
interface port-channel1
  switchport mode trunk
  switchport trunk allowed vlan 2
  vpc 1
```

- MCT configuration

```
interface port-channel100
  switchport mode trunk
  spanning-tree port type network
  vpc peer-link
```



Note You can choose either of the following two command procedures for creating the NVE interfaces. Use the first one for a small number of VNIs. Use the second procedure to configure a large number of VNIs.

NVE configuration

Option 1

```
interface nve1
  no shutdown
  source-interface loopback0
  member vni 10001 mcast-group 225.1.1.1
  member vni 10002 mcast-group 225.1.1.1
  member vni 10003 mcast-group 225.1.1.1
```

Option 2

```
interface nve1
  no shutdown
  source-interface loopback0
  global mcast-group 225.1.1.1
  member vni 10001
  member vni 10002
  member vni 10003
```

- Loopback interface configuration

```
interface loopback0
  ip address 101.101.101.101/32
  ip address 99.99.99.99/32 secondary
  ip router ospf 1 area 0.0.0.0
  ip pim sparse-mode
```

- Show commands

```

tor1# sh nve vni
Codes: CP - Control Plane      DP - Data Plane
      UC - Unconfigured        SA - Suppress ARP

Interface VNI      Multicast-group  State Mode Type [BD/VRF]  Flags
-----
nve1     10001      225.1.1.1        Up   DP   L2 [101]
nve1     10002      225.1.1.1        Up   DP   L2 [102]
nve1     10003      225.1.1.1        Up   DP   L2 [103]

tor1# sh nve peers
Interface Peer-IP      State LearnType Uptime  Router-Mac
-----
nve1     10.200.1.1    Up   DP          00:07:23 n/a
nve1     10.200.1.2    Up   DP          00:07:18 n/a
nve1     102.102.102.102 Up   DP          00:07:23 n/a

tor1# sh ip mroute 225.1.1.1
IP Multicast Routing Table for VRF "default"

(*, 225.1.1.1/32), uptime: 00:07:41, ip pim nve static igmp
  Incoming interface: Ethernet2/1, RPF nbr: 10.1.5.2
  Outgoing interface list: (count: 3)
    Vlan2, uptime: 00:07:23, igmp
    Vlan2000, uptime: 00:07:31, static
    nve1, uptime: 00:07:41, nve

(10.200.1.1/32, 225.1.1.1/32), uptime: 00:07:40, ip mrib pim nve
  Incoming interface: Vlan2, RPF nbr: 10.200.1.1
  Outgoing interface list: (count: 3)
    Vlan2, uptime: 00:07:23, mrib, (RPF)
    Vlan2000, uptime: 00:07:31, mrib
    nve1, uptime: 00:07:40, nve

(10.200.1.2/32, 225.1.1.1/32), uptime: 00:07:41, ip mrib pim nve
  Incoming interface: Vlan2, RPF nbr: 10.200.1.2
  Outgoing interface list: (count: 3)
    Vlan2, uptime: 00:07:23, mrib, (RPF)
    Vlan2000, uptime: 00:07:31, mrib
    nve1, uptime: 00:07:41, nve

(99.99.99.99/32, 225.1.1.1/32), uptime: 00:07:41, ip mrib pim nve
  Incoming interface: loopback0, RPF nbr: 99.99.99.99
  Outgoing interface list: (count: 3)
    Vlan2, uptime: 00:07:23, mrib
    Vlan2000, uptime: 00:07:31, mrib
    Ethernet2/5, uptime: 00:07:39, pim

(102.102.102.102/32, 225.1.1.1/32), uptime: 00:07:40, ip mrib pim nve
  Incoming interface: Ethernet2/1, RPF nbr: 10.1.5.2
  Outgoing interface list: (count: 1)
    nve1, uptime: 00:07:40, nve

tor1# sh vpc
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, operational primary
Number of vPCs configured : 4
Peer Gateway            : Enabled
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status    : Disabled
Delay-restore status     : Timer is off.(timeout = 180s)
Delay-restore SVI status : Timer is off.(timeout = 10s)

```

vPC Peer-link status

```

-----
id   Port   Status Active vlans
--   ---   -----
1    Po100  up     1-4,101-103,2000
-----

```

vPC status

```

-----
id   Port   Status Consistency Reason           Active vlans
--   ---   -----
1    Po1    up     success    success                       2
-----
2    Po2    up     success    success                       2
-----

```

```
tor1# sh vpc consistency-parameters global
```

Legend:

Type 1 : vPC will be suspended in case of mismatch

| Name | Type | Local Value | Peer Value |
|---|------|---------------------|---------------------|
| Vlan to Vn-segment Map | 1 | 3 Relevant Map(s) | 3 Relevant Map(s) |
| STP Mode | 1 | Rapid-PVST | Rapid-PVST |
| STP Disabled | 1 | None | None |
| STP MST Region Name | 1 | "" | "" |
| STP MST Region Revision | 1 | 0 | 0 |
| STP MST Region Instance to VLAN Mapping | 1 | Disabled | Disabled |
| STP Loopguard | 1 | Enabled | Enabled |
| STP Bridge Assurance | 1 | Normal, Disabled, | Normal, Disabled, |
| STP Port Type, Edge BPDUGuard | 1 | Disabled | Disabled |
| STP MST Simulate PVST | 1 | Enabled | Enabled |
| Nve Oper State, Secondary IP, Host Reach Mode | 1 | Up, 99.99.99.99, DP | Up, 99.99.99.99, DP |
| Nve Vni Configuration | 1 | 10001-10003 | 10001-10003 |
| Interface-vlan admin up | 2 | 2,2000 | 2,2000 |
| Interface-vlan routing capability | 2 | 1-4,2000 | 1-4,2000 |
| Allowed VLANs | - | 1-4,101-103,2000 | 1-4,101-103,2000 |
| Local suspended VLANs | - | - | - |