Configuring Bud Node

This chapter contains the following sections:

VXLAN Bud Node Over vPC Overview

Figure 1: Underlay Network Based on PIM-SM and OSPF
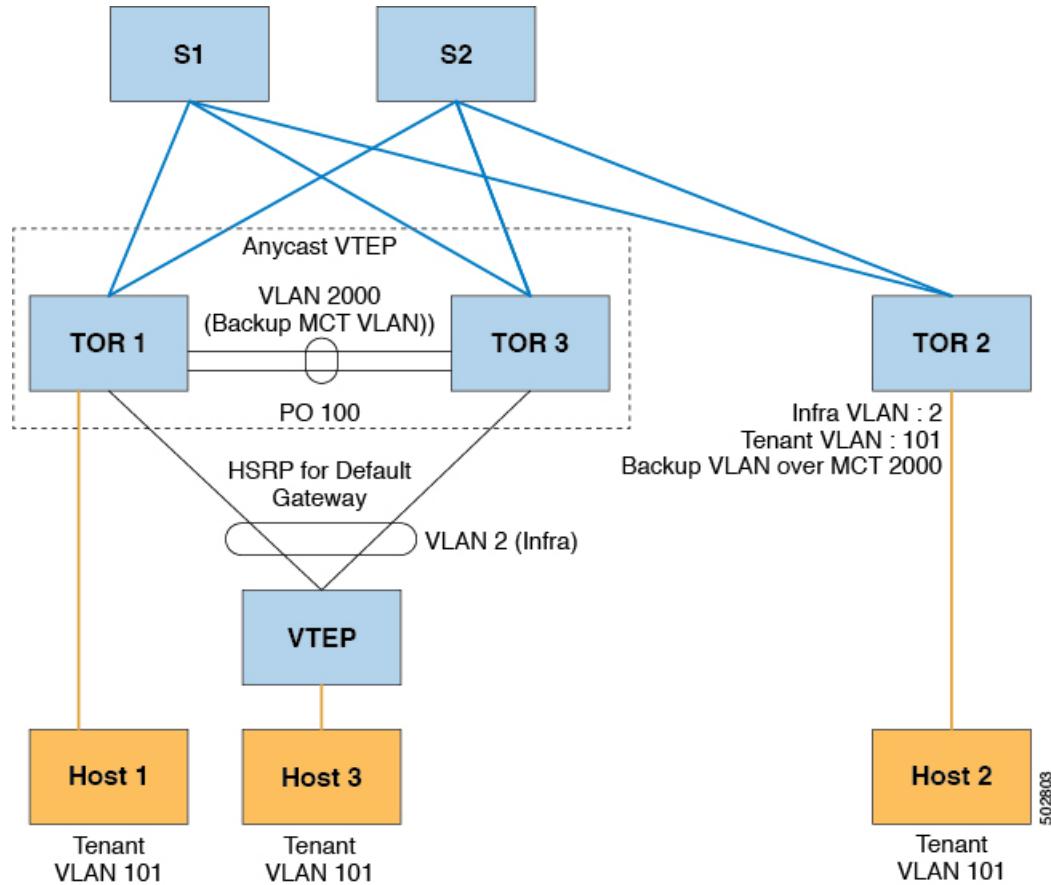
Note   For bud-node topologies, the source IP of the VTEP behind vPC must be in the same subnet as the infra VLAN. This SVI should have proxy ARP enabled. For example:

```
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 1
 VLAN Mapping
STP Loopguard            1      Disabled               Disabled
STP Bridge Assurance     1      Enabled                Enabled
STP Port Type, Edge      1      Normal, Disabled,      Normal, Disabled,
BPDUFilter, Edge BPDUGuard      Disabled               Disabled
STP MST Simulate PVST    1      Enabled                Enabled
Nve Oper State, Secondary 1     Up, 99.99.99.99, DP    Up, 99.99.99.99, DP
IP, Host Reach Mode
Nve Vni Configuration    1      10001-10003            10001-10003
Interface-vlan admin up  2      2,2000                 2,2000
Interface-vlan routing   2      1-4,2000               1-4,2000
capability
Allowed VLANs            -      1-4,101-103,2000       1-4,101-103,2000
Local suspended VLANs    -      -
```