



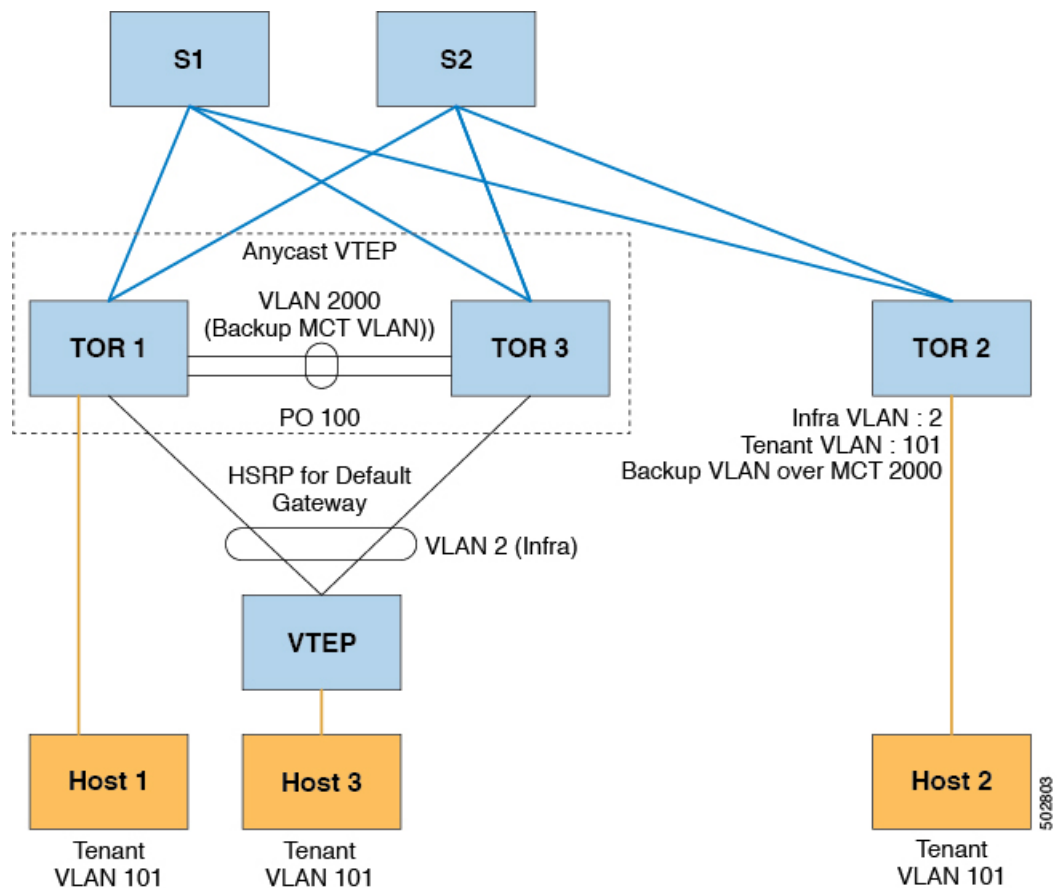
# Configuring Bud Node

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## VXLAN Bud Nodes

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






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**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.

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## VXLAN Bud Node Over vPC Topology Examples

VXLAN Bud Node over vPC topology provides a configuration example for deploying VXLAN with vPC and Bud Node functionality.

- 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		
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 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	-	-	-