

连结9000 : VXLAN Xconnect配置和验证

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简介

本文在VXLAN Xconnect功能的配置和验证方面将帮助提供一个快速参考。

Prerequisites

Requirements

Cisco建议您有VXLAN EVPN知识。

Components Used

本文档中的信息基于以下软件和硬件版本：

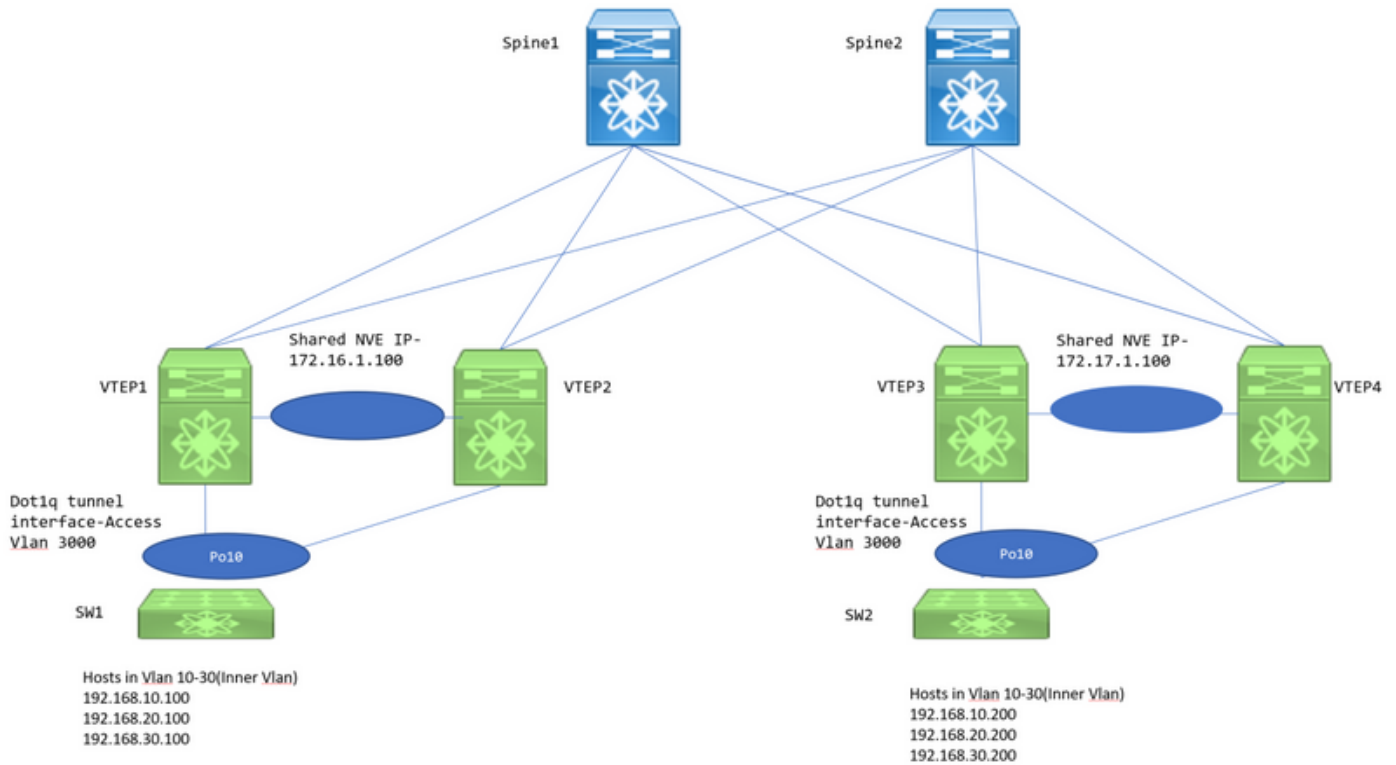
- N9K-C93180YC-EX
- NXOS 9.2(1)

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

概述

自写作本文，Q在VNI功能在溢出内只支持并且了解vxlan配置。Xconnect功能被介绍作为的一更换q在vni在连结的功能9000平台。技术支持为q在vni在将来版本可能被添加；

拓扑



VTEP1、VTEP2、VTEP3 & VTEP4是被配置的两个vPC VTEP对，在这种情况下从下行交换机的内在dot1q标记保留，并且，当vxlan封装，使用外面VLAN ID，VXLAN VNID发送到远程VTEP。所有VTEPs是N9K-C93180YC-EX。

下行交换机是配置有在各自的VLAN的SVIs仿造主机的连结3ks;

配置

1)用于此xconnect拓扑的外面VLAN是3000;这是那个与VNID和xconnect配置;

```
VTEP1# sh run vlan 3000

vlan 3000
  vn-segment 1003000
  xconnect
```

2) 功能NGOAM必须是启用的并且在配置之下需要;

```
VTEP1# sh run ngoam

feature ngoam

ngoam install acl
ngoam xconnect hb-interval 5000
```

3) 往下行交换机的dot1q隧道配置

```
VTEP1# sh run int po10

interface port-channel10
```

```
switchport
switchport mode dot1q-tunnel
switchport access vlan 3000
speed 40000
no negotiate auto
vpc 10
```

4) 组播组必须被定义在NVE接口下照料转发。

```
VTEP1# sh run int nve1

no shutdown
host-reachability protocol bgp
source-interface loopback1
member vni 1003000 mcast-group 239.30.30.30
```

5) 在下VLAN需要指定和允许作为在对等体链路内的本地VLAN

```
VTEP1# sh run span|infra
no spanning-tree vlan 3000
system nve infra-vlans 999
```

```
VTEP1# sh run int po1
```

```
interface port-channel1
switchport
switchport mode trunk
switchport trunk native vlan 999
spanning-tree port type network
vpc peer-link
```

6) BGP/evpn配置

```
feature bgp
```

```
router bgp 65000
router-id 192.168.100.3
neighbor 192.168.100.1
remote-as 65000
update-source loopback0
address-family l2vpn evpn
send-community
send-community extended
neighbor 192.168.100.2
remote-as 65000
update-source loopback0
address-family l2vpn evpn
```

```
evpn
vni 1003000 l2
rd auto
route-target import auto
route-target export auto
```

Note:STP必须是失效的在xconnect VLAN内。根本意味着的MAC学习不会在xconnect VLAN内发生没有为MAC地址的类型2 bgp l2vpn evpn更新由于此，从一vtep的数据流用为xconnect VLAN对Mcastgroup(239.30.30.30)的外面目的地IP地址集将封装定义的。

验证

1) BGP邻居

```
VTEP1# sh bgp l2vpn evpn sum
BGP summary information for VRF default, address family L2VPN EVPN
BGP router identifier 192.168.100.3, local AS number 65000
BGP table version is 14, L2VPN EVPN config peers 2, capable peers 1
4 network entries and 5 paths using 756 bytes of memory
BGP attribute entries [3/492], BGP AS path entries [0/0]
BGP community entries [0/0], BGP clusterlist entries [2/8]

Neighbor      V    AS MsgRcvd MsgSent  TblVer  InQ  OutQ  Up/Down  State/PfxRcd
192.168.100.1  4 65000    92     90     14   0    0  01:21:41  2
```

2) 接受Type3前缀

```
VTEP1# sh bgp l2vpn evpn
BGP routing table information for VRF default, address family L2VPN EVPN
BGP table version is 14, Local Router ID is 192.168.100.3
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
```

Network	Next Hop	Metric	LocPrf	Weight	Path
Route Distinguisher: 192.168.100.3:35767 (L2VNI 1003000)					
*>l[3]:[0]:[32]:[172.16.1.100]/88	172.16.1.100		100	32768	i
* i[3]:[0]:[32]:[172.17.1.100]/88<<< bgp type 3	172.17.1.100		100	0	i
*>i	172.17.1.100		100	0	i
Route Distinguisher: 192.168.100.5:35767					
*>i[3]:[0]:[32]:[172.17.1.100]/88	172.17.1.100		100	0	i
Route Distinguisher: 192.168.100.6:35767					
*>i[3]:[0]:[32]:[172.17.1.100]/88	172.17.1.100		100	0	i

3) NVE同位体

```
VTEP1# sh nve peer
Interface Peer-IP      State LearnType Uptime  Router-Mac
-----
nve1      172.17.1.100      Up     CP           00:58:06 n/a
```

```
VTEP1# show nve vni
Codes: CP - Control Plane      DP - Data Plane
       UC - Unconfigured       SA - Suppress ARP
       SU - Suppress Unknown Unicast
```

Interface	VNI	Multicast-group	State	Mode	Type [BD/VRF]	Flags
nve1	1003000	239.30.30.30	Up	CP	L2 [3000]	Xconn <<<

4) NGOAM检查

```
VTEP1# show ngoam xconnect sess all
```

```
States: LD = Local interface down, RD = Remote interface Down
        HB = Heartbeat lost, DB = Database/Routes not present
        * - Showing Vpc-peer interface info
```

Vlan	Peer-ip/vni	XC-State	Local-if/State	Rmt-if/State
3000	172.17.1.100 / 1003000	Active	Po10 / UP	Po10 / UP

```
VTEP1# show ngoam xconnect sess 3000
```

```
Vlan ID: 3000
```

```
Peer IP: 172.17.1.100 VNI : 1003000
```

```
State: Active
```

```
<<< State should be active
```

```
Last state update: 12/10/2018 17:13:45.337
```

```
Local interface: Po10 State: UP
```

```
Local vpc interface Po10 State: UP
```

```
Remote interface: Po10 State: UP
```

```
Remote vpc interface: Po10 State: UP
```

一旦ngoam会话是UP，N3k在CDP将互相看到,STP BPDU也被建立隧道，因此交换机也是同意根网桥安置。

5) 在下行交换机的验证

```
SW1(config)# sh span vl 10
```

```
VLAN0010
```

```
Spanning tree enabled protocol rstp
```

```
Root ID Priority 32778
```

```
Address 7079.b348.6cb7
```

```
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 7079.b348.6cb7
```

```
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Po10	Desg	FWD	1	128.4105	P2p

```
SW2(config)# sh span vl 10
```

```
VLAN0010
```

```
Spanning tree enabled protocol rstp
```

```
Root ID Priority 32778
```

```
Address 7079.b348.6cb7
```

```
Cost 1
```

```
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 707d.b964.9441
```

```
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Po10	Root	FWD	1	128.4105	P2p

```
SW1(config)# show ip int b
```

```
IP Interface Status for VRF "default"(1)
```

Interface	IP Address	Interface Status
Vlan10	192.168.10.100	protocol-up/link-up/admin-up
Vlan20	192.168.20.100	protocol-up/link-up/admin-up
Vlan30	192.168.30.100	protocol-up/link-up/admin-up

```
SW2(config)# show ip int b
IP Interface Status for VRF "default" (1)
Interface      IP Address      Interface Status
Vlan10         192.168.10.200 protocol-up/link-up/admin-up
Vlan20         192.168.20.200 protocol-up/link-up/admin-up
Vlan30         192.168.30.200 protocol-up/link-up/admin-up
```

```
SW1(config)# ping 192.168.10.200
PING 192.168.10.200 (192.168.10.200): 56 data bytes
64 bytes from 192.168.10.200: icmp_seq=0 ttl=254 time=0.826 ms
64 bytes from 192.168.10.200: icmp_seq=1 ttl=254 time=0.531 ms
64 bytes from 192.168.10.200: icmp_seq=2 ttl=254 time=0.54 ms
64 bytes from 192.168.10.200: icmp_seq=3 ttl=254 time=0.522 ms
64 bytes from 192.168.10.200: icmp_seq=4 ttl=254 time=0.571 ms
```

警告

1. 如果在vPC交换机内的配置不一致，dot1q隧道接口在xconnect vxlan设置的**错误禁用状态**将被滞留。下面某些案件，错误将被禁用的接口；

- 如果VLAN VN分段在两没有被定义vPC交换
- 如果对组播组的NVE在两没有被定义vPC交换
- 如果NGOAM心跳线没有被接受(我们能以filter=cfm使用ethanalyzer)捉住ngoam心跳信息包
- 即使dot1q隧道接口是在vPC设置联络的孤立行，仍然要求配置组播组在是xconnect的一部分在两交换机的VN分段的NVE接口下。
- 处理/vPC主要的交换机发送NGOAM心跳线。在vPC第二登陆的心跳线消息将是sync'd对主要的

2. 当xconnect在VLAN时被配置，从一个站点的数据流到另一个用外面目的地address=multicast地址封装被定义在该特定vn分段的NVE接口下。推荐使用唯一组播组xconnect VLAN。在核心/脊椎的组播应该是工作。

3. 组播数据流也许击中在xconnect远端的两个vPC机箱;然而，能解封装二赖子)的Decap赢利地区(机箱只将是在一个vPC对的一台交换机。使用show命令转发组播路由组<组地址的>来源<SRC IP>，这可以被验证。如果显示的标志位这里是小写v，意味着机箱是decap输家，并且，如果其大写V，机箱是decap赢利地区，并且，因此能解封装组播数据流，并且向前进一步向下。

4. 在根据9k1的平台，当主机是孤立行被联络到9k1时，并且，如果没有S的油，G 93180YC，组播信息包的复制被发送到vPC对等体使用来源IP-> 127.0.0.1和目的地IP->共有的NVE IP的特殊封装，并且，如果9k2有S，G条目，然后数据流转发的油是已处理将由9k2到远程站点。

信息包获取

下面被采取在脊椎交换机信息包获取的屏幕画面；

```
Frame 1: 152 bytes on wire (1216 bits), 152 bytes captured (1216 bits)
Ethernet II, Src: Cisco_2a:89:a7 (70:79:b3:2a:89:a7), Dst: IPv4mcast_1e:1e:1e (01:00:5e:1e:1e:1e)
Internet Protocol Version 4, Src: 172.17.1.100, Dst: 239.30.30.30
User Datagram Protocol, Src Port: 12860, Dst Port: 4789
Virtual eXtensible Local Area Network
  > Flags: 0x0800, VXLAN Network ID (VNI)
    Group Policy ID: 0
    VXLAN Network Identifier (VNI): 1003000
    Reserved: 0
Ethernet II, Src: Cisco_64:94:41 (70:7d:b9:64:94:41), Dst: Cisco_48:6c:b7 (70:79:b3:48:6c:b7)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 10
  000. .... .... = Priority: Best Effort (default) (0)
  ...0 .... .... = DEI: Ineligible
  .... 0000 0000 1010 = ID: 10
  Type: IPv4 (0x0800)
Internet Protocol Version 4, Src: 192.168.10.200, Dst: 192.168.10.100
```

- 内在dot1q header=10保留
- 使用的VNI是1003000(which是外面VLAN的VNID)
- 目的地IP地址是被定义在nve接口下的组播组