

# 基于Carmel ASIC的交换机(Nexus 5548/5596)中vPC对等链路上基于L2MP的转发

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## 简介

在vPC拓扑中，仅孤立端口流量或泛洪流量（未知单播、广播、组播）的对等链路上会看到用户流量。对于此泛洪流量，交换机要求确保在vPC的一条支路上接收的泛洪流量不会发回另一个vPC支路上，以便数据包不会发回源或复制到其他vPC。

在基于Carmel的交换机(Nexus 55xx)中，vPC环路避免实施与基于Gatos(Nexus 5010/5020)的实施不同，后者使用单独的MCT VLAN在对等链路上泛洪流量。

由于基于Carmel的交换机支持L2MP或fabricpath，工程部门决定在对等链路上使用基于L2MP的转发。使用此型号时，vPC主交换机的交换机ID为2748(0xabc)，而vPC辅助交换机的交换机ID为2749(0xabd)。模拟交换机ID 2750(0xabe)将用作传入vPC但通过对等链路发送的帧的源交换机ID。vPC主交换机上的所有端口将是FTAG 256的成员，而vPC辅助交换机上的所有端口将是FTAG 257的成员。在vPC主交换机中，只有孤立端口将是FTAG 257的成员，而在vPC辅助交换机中，孤立端口将是FTAG 256的成员。

## 先决条件

### 要求

本文档没有任何特定的要求。

### 使用的组件

本文档不限于特定的软件和硬件版本。

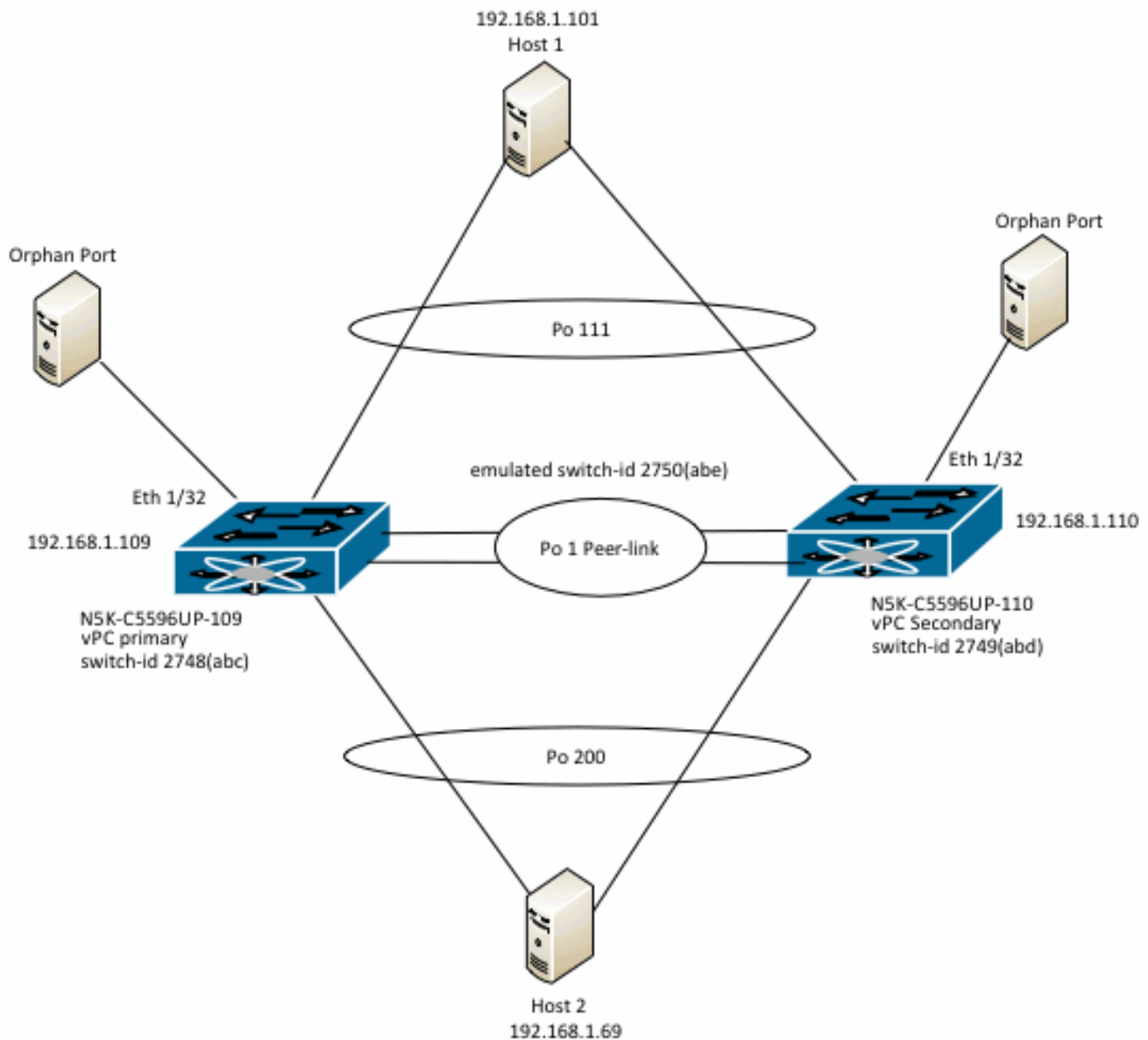
### 规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

## 环路避免

对于进入vPC主交换机的广播/未知单播/组播帧，它们将通过对等链路以FTAG 256发送出去。当vPC辅助交换机通过vPC对等链路获取此帧时，它会检查FTAG，自其256以来，vPC辅助交换机只会将其发送到仅是孤立端口的FTAG 256成员。对于来自vPC辅助的泛洪流量，它将以FTAG 257发送，当vPC主交换机收到此帧时，它仅将收到的泛洪帧发送给仅作为孤立端口的FTAG 257的成员。这是基于Carmel的交换机如何实现vPC环路避免的方法。

为了深入探讨基于L2MP/FTAG的泛洪帧在对等链路间的转发，请使用此拓扑：



N5K-C5596UP-109和N5K-C5596UP-100是运行NX-OS 5.2(1)N1(2a)的Nexus 5596交换机的vPC对。N5K-C5596UP-109是vPC主交换机，N5K-C5596UP-110是vPC辅助交换机。Port-channel 1是vPC对等链路。显示的IP地址属于交换机的接口VLAN 1。主机1和主机2是通过VLAN 1中的vPC连接的思科交换机。本文档中称为主机1和主机2。VLAN 1中有孤立端口连接到两台交换机上的Eth1/32。

## 以下是交换机的一些命令输出：

```
N5K-C5596UP-109# show vpc
```

```
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
Peer gateway excluded VLANs : -
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status     : Disabled
```

```
vPC Peer-link status
```

```
-----
id   Port   Status  Active vlans
-----
1    Po1    up      1
```

```
vPC status
```

```
-----
id     Port      Status Consistency Reason           Active vlans
-----
111    Po111      up     success    success                    1
200    Po200      up     success    success                    1
```

```
N5K-C5596UP-109# show platform fwm info l2mp myswid
```

```
switch id
```

```
switch id manager
```

```
-----
vpc role: 0
my primary switch id: 2748 (0xabc)
emu switch id: 2750 (0xabe)
peer switch id: 2749 (0xabd)
```

```
N5K-C5596UP-109# show vpc orphan-ports
```

```
Note:
```

```
-----::Going through port database. Please be patient.::-----
```

```
VLAN           Orphan Ports
-----
1              Eth1/32
```

```
N5K-C5596UP-110# show vpc
```

```
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
Peer gateway excluded VLANs : -
Dual-active excluded VLANs : -
Graceful Consistency Check : Enabled
Auto-recovery status   : Disabled
vPC Peer-link status

```

```

-----
id   Port   Status Active vlans
--  -
1    Po1    up      1

```

vPC status

```

-----
id     Port      Status Consistency Reason           Active vlans
-----
111    Po111        up     success    success                    1
200    Po200        up     success    success                    1

```

N5K-C5596UP-110# show platform fwm info l2mp myswid

switch id

```

-----
switch id manager
-----

```

```

vpc role: 1
my primary switch id: 2749 (0xabd)
emu switch id: 2750 (0xabe)
peer switch id: 2748 (0xabc)

```

N5K-C5596UP-110# show vpc orphan-ports

Note:

```

-----::Going through port database. Please be patient.::-----

```

```

VLAN          Orphan Ports
-----

```

```

1             Eth1/32

```

Now lets check on default FTAGs used and its members.

N5K-C5596UP-109# show platform fwm info l2mp ftag all

L2MP FTAG

```

-----
ftag[0x9565b1c] id: 256 (0x100)
Topology ID: 0x111
Ftag flags: 0 (invalid ftag-flags)
Is stale: FALSE
ftag_mask[0x973eca4]
ifindex array:
0x160000c7 0x1600006e 0x1a01f000
0x15010000 0x15020000 0x1600007e
0x16000000

```

```
ifmap[0x88400fc]
ifmap idx 6: ref 1, lu_mcq_allocated 0, lu_mcq 15 (orig 15) 'not pruned'
ifmap idx 6: prune_ifmap 0, prune ref count 0, prune_unvisited 0
ifmap_idx 6: oifls_macg_ref_cnt 0, num_oifls 0
ifmap idx 6: ifs - sup-eth1 sup-eth2 Po200 Po1 Po111 Eth1/32 Po127
rpf: (0x0)
alternate: 0
intf:
Po1 (0x16000000)
ftag_ucast_index: 1
ftag_flood_index: 1
ftag_mcast_index: 32
ftag_alt_mcast_index: 48
-----
ftag[0x9565e3c] id: 257 (0x101)
Topology ID: 0x111
Ftag flags: 0 (invalid ftag-flags)
Is stale: FALSE
ftag_mask[0x95612b4]
ifindex array:
0x1a01f000 0x15010000 0x15020000
0x16000000
ifmap[0x883b81c]
ifmap idx 11: ref 1, lu_mcq_allocated 0, lu_mcq 14 (orig 14) 'not pruned'
ifmap idx 11: prune_ifmap 0, prune ref count 0, prune_unvisited 0
ifmap_idx 11: oifls_macg_ref_cnt 0, num_oifls 0
ifmap idx 11: ifs - sup-eth1 sup-eth2 Po1 Eth1/32
rpf: (0x0)
alternate: 1
intf:
Po1 (0x16000000)
ftag_ucast_index: 0
ftag_flood_index: -1
ftag_mcast_index: 0
ftag_alt_mcast_index: 0
-----
N5K-C5596UP-109#

N5K-C5596UP-110# show platform fwm info l2mp ftag all
L2MP FTAG
-----
ftag[0x956a99c] id: 256 (0x100)
Topology ID: 0x111
Ftag flags: 0 (invalid ftag-flags)
Is stale: FALSE
ftag_mask[0x98b4764]
ifindex array:
0x16000066 0x1a01f000 0x15010000
0x15020000 0x16000000
ifmap[0x9635adc]
ifmap idx 4: ref 1, lu_mcq_allocated 0, lu_mcq 15 (orig 15) 'not pruned'
ifmap idx 4: prune_ifmap 0, prune ref count 0, prune_unvisited 0
ifmap_idx 4: oifls_macg_ref_cnt 0, num_oifls 0
ifmap idx 4: ifs - sup-eth1 sup-eth2 Po103 Po1 Eth1/32
rpf: (0x0)
alternate: 1
intf:
Po1 (0x16000000)
ftag_ucast_index: 1
ftag_flood_index: -1
ftag_mcast_index: 32
ftag_alt_mcast_index: 48
-----
ftag[0x956acbc] id: 257 (0x101)
```

```

Topology ID: 0x111
Ftag flags: 0 (invalid ftag-flags)
Is stale: FALSE
ftag_mask[0x97359bc]
ifindex array:
0x160000c7 0x16000066 0x1600006e
0x1a01f000 0x15010000 0x15020000
0x1600007e 0x16000000
ifmap[0x95c624c]
ifmap idx 7: ref 1, lu_mcq_allocated 0, lu_mcq 16 (orig 16) 'not pruned'
ifmap idx 7: prune_ifmap 0, prune_ref_count 0, prune_unvisited 0
ifmap_idx 7: oifls_macg_ref_cnt 0, num_oifls 0
ifmap idx 7: ifs - sup-eth1 sup-eth2 Po200 Po103 Po1 Po111 Eth1/32 Po127
rpf: (0x0)
alternate: 0
intf:
Po1 (0x16000000)
ftag_ucast_index: 0
ftag_flood_index: 1
ftag_mcast_index: 32
ftag_alt_mcast_index: 48
-----

```

## 测试 1：广播ARP流量进入vPC辅助

从主机1(192.168.1.101)对不存在的IP 192.168.1.199执行ping操作。因此，主机1不断发出广播ARP请求，询问“谁是192.168.1.199”。主机1会将此广播流量散列到vPC辅助交换机N5K-C5596UP-110，然后vPC辅助交换机N5K-C5596UP-110，从而将其泛洪到VLAN 1中的所有端口，包括vPC对等链路Po1。

捕获端口通道1的TX SPAN，以查看此ARP广播的交换矩阵路径报头，该ARP广播是FP术语中的多目标帧。查看此多目标帧的交换矩阵路径报头。

No.	Time	Source	Destination	Protocol	Length	Identification	Info
1	2012-10-31 15:26:29.574683360	Cisco_0f:b3:01	Broadcast	ARP	84		Who has 192.168.1.199? Tell 192.168.1.101
2	2012-10-31 15:26:46.578376630	Cisco_0f:b3:01	Broadcast	ARP	84		Who has 192.168.1.199? Tell 192.168.1.101
3	2012-10-31 15:26:48.577569140	Cisco_0f:b3:01	Broadcast	ARP	84		Who has 192.168.1.199? Tell 192.168.1.101
4	2012-10-31 15:26:52.577605320	Cisco_0f:b3:01	Broadcast	ARP	84		Who has 192.168.1.199? Tell 192.168.1.101
5	2012-10-31 15:27:00.577678840	Cisco_0f:b3:01	Broadcast	ARP	84		Who has 192.168.1.199? Tell 192.168.1.101

```

Frame 1: 84 bytes on wire (672 bits), 84 bytes captured (672 bits) on 0
Ethernet II, Src: Cisco_0f:b3:01 (54:7f:ee:0f:b3:01), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  Source: abe.00.0000
  FTAG: 257
  ... .. 10 0000 = TTL: 32
  Ethernet II, Src: Cisco_0f:b3:01 (54:7f:ee:0f:b3:01), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  002.1Q Virtual LAN, PRI: 0, CFI: 0, ID: 1
  Address Resolution Protocol (request)
    Hardware type: Ethernet (1)
    Protocol type: IP (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: request (1)
    Sender MAC address: Cisco_0f:b3:01 (54:7f:ee:0f:b3:01)
    Sender IP address: 192.168.1.101 (192.168.1.101)
    Target MAC address: Broadcast (ff:ff:ff:ff:ff:ff)
    Target IP address: 192.168.1.199 (192.168.1.199)

```

- 由于帧通过vPC(vPC 111)进入，因此源交换机ID为abe.00.0000。
- 目的地是广播MAC FF:FF:FF:FF:FF:FF
- FTAG是257。

当此帧进入vPC主交换机时，它将检查FTAG 257。由于只有孤立端口是FTAG 257的成员，因此此广播ARP帧将仅发送到Eth 1/32。

### 测试 2：进入vPC辅助的未知单播帧

为了引入未知单播流量，在主机1上，我为192.168.1.99设置了静态ARP，静态MAC为0001.0002.0003，并对192.168.1.99执行ping操作。ICMP回应请求到达N5K-C5596UP-110，由于不知道MAC 0001.0002.0003在何处，因此它将该帧泛洪到VLAN中，包括对等链路。

捕获端口通道1的TX SPAN，以查看此未知单播泛洪帧的交换矩阵路径报头，该帧是FP术语中的多目标帧。查看此多目标帧的交换矩阵路径报头。

The image shows a Wireshark capture of four ICMP frames. The details pane for the first frame (Frame 1) is expanded to show the Cisco FabricPath header, which includes the source MAC (abe.00.0000) and destination MAC (01:bb:cc:dd:01:01). The source MAC is circled in red. Below the FabricPath header, the Ethernet II header is shown with source and destination MAC addresses. The source MAC is also circled in red. The details pane is further expanded to show the 802.1Q Virtual LAN header and the Internet Protocol Version 4 header. The source IP is 192.168.1.101 and the destination IP is 192.168.1.99. The packet bytes are displayed at the bottom of the details pane.

No.	Time	Source	Destination	Protocol	Length
1	2012-10-31 16:18:20.000000000	192.168.1.101	192.168.1.99	ICMP	60
2	2012-10-31 16:18:21.000398870	192.168.1.101	192.168.1.99	ICMP	60
3	2012-10-31 16:18:22.000788810	192.168.1.101	192.168.1.99	ICMP	60
4	2012-10-31 16:18:23.001732900	192.168.1.101	192.168.1.99	ICMP	60

```
Frame 1: 122 bytes on wire (976 bits), 122 bytes captured (976 bits) on interface 0
Cisco FabricPath, Src: abe.00.0000, Dst: 01:bb:cc:dd:01:01 (01:bb:cc:dd:01:01)
  MC Destination: 01:bb:cc:dd:01:01 (01:bb:cc:dd:01:01)
  Source: abe.00.0000
    0000 00.. 00.. .... = End Node ID: 0 (0x000000)
    .... ..1. .... = U/L bit: Locally administered address (this is NOT the factory default)
    .... ...0 .... = I/G bit: Individual address (unicast)
    .... ..00 .... = 000/DL Bit: Deliver in order (If DA) or Learn (If SA)
    .... .... 1010 1011 1110 = switch-id: 2750 (0x000abe)
    sub-switch-id: 0 (0x00)
    Source LID: 0 (0x0000)
    0100 0000 01.. .... = FTAG: 257
    .... .... 10 0000 = TTL: 32
Ethernet II, Src: Cisco_0f:b3:01 (54:7f:ee:0f:b3:01), Dst: EquipTra_02:00:03 (00:01:00:02:00:03)
  Destination: EquipTra_02:00:03 (00:01:00:02:00:03)
  Address: EquipTra_02:00:03 (00:01:00:02:00:03)
    .... ..0. .... = LG bit: Globally unique address (factory default)
    .... ...0 .... = IG bit: Individual address (unicast)
  Source: Cisco_0f:b3:01 (54:7f:ee:0f:b3:01)
  Address: Cisco_0f:b3:01 (54:7f:ee:0f:b3:01)
    .... ..0. .... = LG bit: Globally unique address (factory default)
    .... ...0 .... = IG bit: Individual address (unicast)
  Type: 802.1Q Virtual LAN (0x8100)
802.1Q Virtual LAN, PRI: 0, CFI: 0, ID: 1
  000. .... = Priority: Best Effort (default) (0)
  ...0 .... = CFI: Canonical (0)
  .... 0000 0000 0001 = ID: 1
  Type: IP (0x0800)
  Trailer: b136ee4b
Internet Protocol Version 4, Src: 192.168.1.101 (192.168.1.101), Dst: 192.168.1.99 (192.168.1.99)
  Version: 4
0000 01 bb cc dd 01 01 02 0a be 00 00 00 89 03 40 60 .....@
0010 00 01 00 02 00 03 54 7f ee 0f b3 01 81 00 00 01 .....T. ....
0020 08 00 45 00 00 54 93 71 00 00 ff 01 a4 1e c0 a8 ..E..T.q .....
0030 01 65 c0 a8 01 63 08 00 ee 5a b3 1a 71 01 6d 87 .e...c...Z..q.m.
0040 01 50 00 0a 0b 00 0d 0b 00 00 0d 0b 00 00 0d 0b ..*
Cisco FabricPath (cfp), 16 bytes | Packets: 4 Dis... | Profile: Default
```

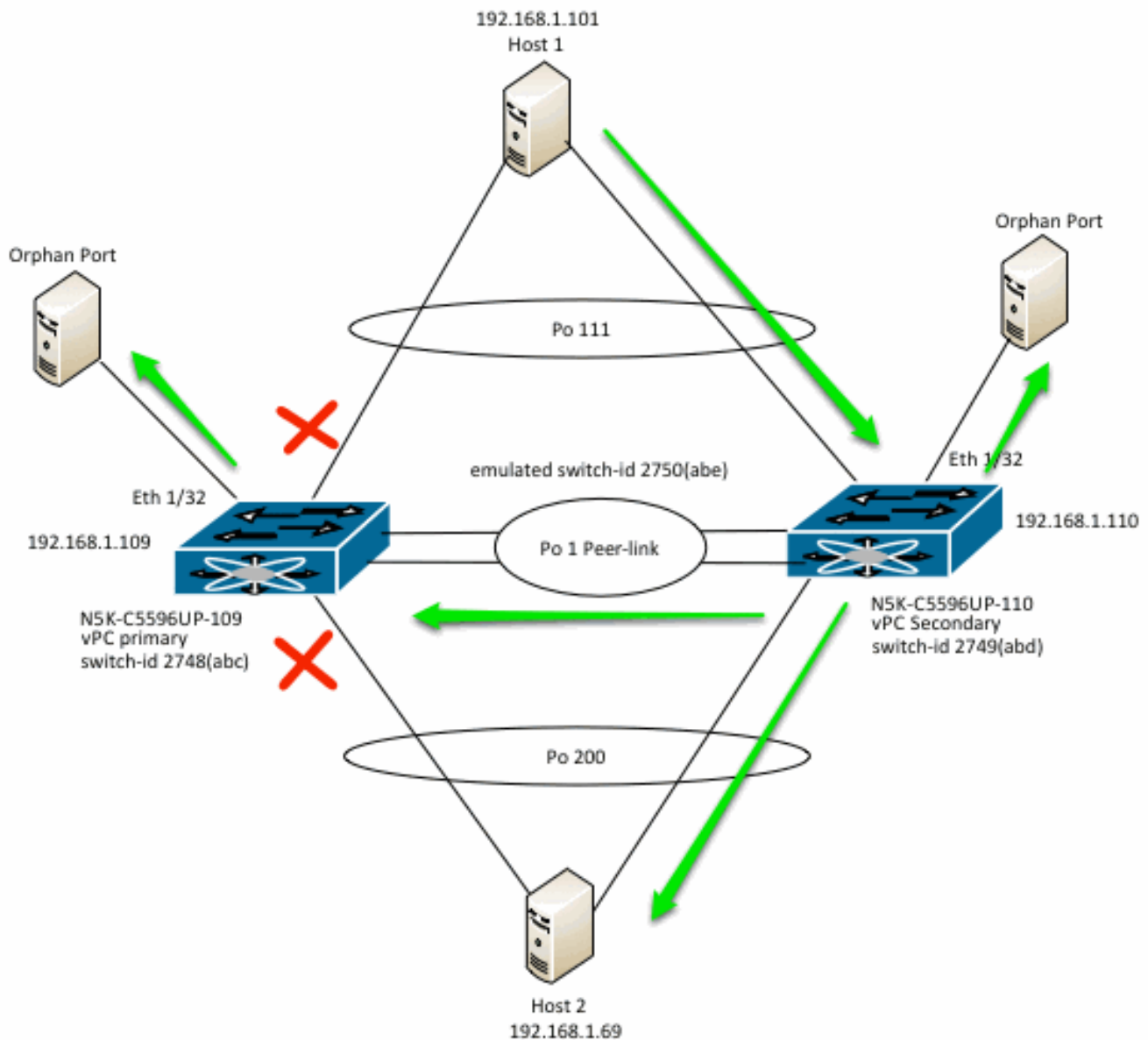
- 由于帧通过vPC(vPC 111)进入，因此源交换机ID为abe.00.0000



- 目标是组播MAC 01:bb:cc:dd:01:01
- FTAG是257。

当此帧进入vPC主交换机时，它将检查FTAG 257。由于只有孤立端口是FTAG 257的成员，因此此vPC主交换机将仅将此帧泛洪到孤立端口Eth 1/32。

由于上述机制，以下是流入vPC辅助交换机的泛洪流量的流。



### 测试 3 : 广播ARP流量进入vPC主要

从主机2(192.168.1.69)对不存在的IP 192.168.1.200执行ping操作。因此，主机2不断发出广播ARP请求，询问“谁是192.168.1.200”。主机2会将此广播流量散列到vPC主交换机N5K-C5596UP-109，而vPC主交换机N5K-C5596UP-109又将其泛洪到VLAN 1中的所有端口，包括vPC对等链路Po1。

捕获端口通道1的TX SPAN，以查看此ARP广播的交换矩阵路径报头，该ARP广播是FP术语中的多目标帧。查看此多目标帧的交换矩阵路径报头。

No.	Time	Source	Destination	Protocol
1	2012-10-31 13:53:20.000000000	Cisco_48:4c:00	Broadcast	ARP
2	2012-10-31 13:53:22.000140560	Cisco_48:4c:00	Broadcast	ARP
3	2012-10-31 13:53:23.999955470	Cisco_48:4c:00	Broadcast	ARP
4	2012-10-31 13:53:25.999978340	Cisco_48:4c:00	Broadcast	ARP
5	2012-10-31 13:53:28.000098460	Cisco_48:4c:00	Broadcast	ARP
6	2012-10-31 13:53:29.999967990	Cisco_48:4c:00	Broadcast	ARP
7	2012-10-31 13:53:32.000172270	Cisco_48:4c:00	Broadcast	ARP
8	2012-10-31 13:53:34.000140460	Cisco_48:4c:00	Broadcast	ARP
9	2012-10-31 13:53:36.000116550	Cisco_48:4c:00	Broadcast	ARP
10	2012-10-31 13:53:38.000081040	Cisco_48:4c:00	Broadcast	ARP
11	2012-10-31 13:53:40.000048330	Cisco_48:4c:00	Broadcast	ARP

```

Frame 1: 84 bytes on wire (672 bits), 84 bytes captured (672 bits) on interface 0
Cisco FabricPath, Src: abe.00.0000, Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  MC Destination: Broadcast (ff:ff:ff:ff:ff:ff)
  Source: abe.00.0000
    0000 00.. 00.. .... = End Node ID: 0 (0x000000)
    .... .1. .... = U/L bit: Locally administered address (this is NOT the factory default)
    .... .0. .... = I/G bit: Individual address (unicast)
    .... ..0. .... = 000/DL Bit: Deliver in order (If DA) or Learn (If SA)
    .... .... 1010 1011 1110 = switch-id: 2750 (0x000abe)
    sub-switch-id: 0 (0x00)
    Source LID: 0 (0x0000)
    0100 0000 00.. .... = FTAG: 256
    .... .... ..10 0000 = TTL: 32
Ethernet II, Src: Cisco_48:4c:00 (00:21:56:48:4c:00), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
  Destination: Broadcast (ff:ff:ff:ff:ff:ff)
    Address: Broadcast (ff:ff:ff:ff:ff:ff)
    .... .1. .... = LG bit: Locally administered address (this is NOT the factory default)
    .... .1. .... = IG bit: Group address (multicast/broadcast)
  Source: Cisco_48:4c:00 (00:21:56:48:4c:00)
    Address: Cisco_48:4c:00 (00:21:56:48:4c:00)
    .... .0. .... = LG bit: Globally unique address (factory default)
    .... .0. .... = IG bit: Individual address (unicast)
  .....
```

```

0000 ff ff ff ff ff ff 02 0a be 00 00 00 89 03 40 20 .....@
0010 ff ff ff ff ff ff 00 21 56 48 4c 00 81 00 00 01 .....!VH.....
0020 08 06 00 01 08 00 06 04 00 01 00 21 56 48 4c 00 .....!VH.
0030 c0 a8 01 45 00 00 00 00 00 00 c0 a8 01 32 00 00 ...E....2..
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

- 由于帧通过vPC(vPC 200)进入，因此源交换机ID为abe.00.0000
- 目的地是广播MAC FF:FF:FF:FF:FF:FF
- FTAG是256。

当此帧进入vPC辅助交换机时，它将检查FTAG 256。由于只有孤立端口是FTAG 256的成员，因此此广播ARP帧将仅发送到Eth 1/32。

#### 测试 4：传入vPC主要的未知单播帧

为引入未知单播流量，在主机2上，为192.168.1.200设置静态ARP，静态MAC为

0003.0004.0005,ping静态MAC为192.168.1.200。ICMP回应请求散列到vPC主N5K-C5596UP-109，由于它不知道MAC 0003.0004.0005在何处，因此它将该帧泛洪到VLAN中，包括对等链路。捕获端口通道1的TX SPAN，以查看此未知单播泛洪帧的交换矩阵路径报头，该帧是FP术语中的多目标帧。查看此多目标帧的交换矩阵路径报头。

No.	Time	Source	Destination	Protocol
1	2012-11-01 11:52:09.494715320	192.168.1.69	192.168.1.200	ICMP
2	2012-11-01 11:52:11.494739360	192.168.1.69	192.168.1.200	ICMP

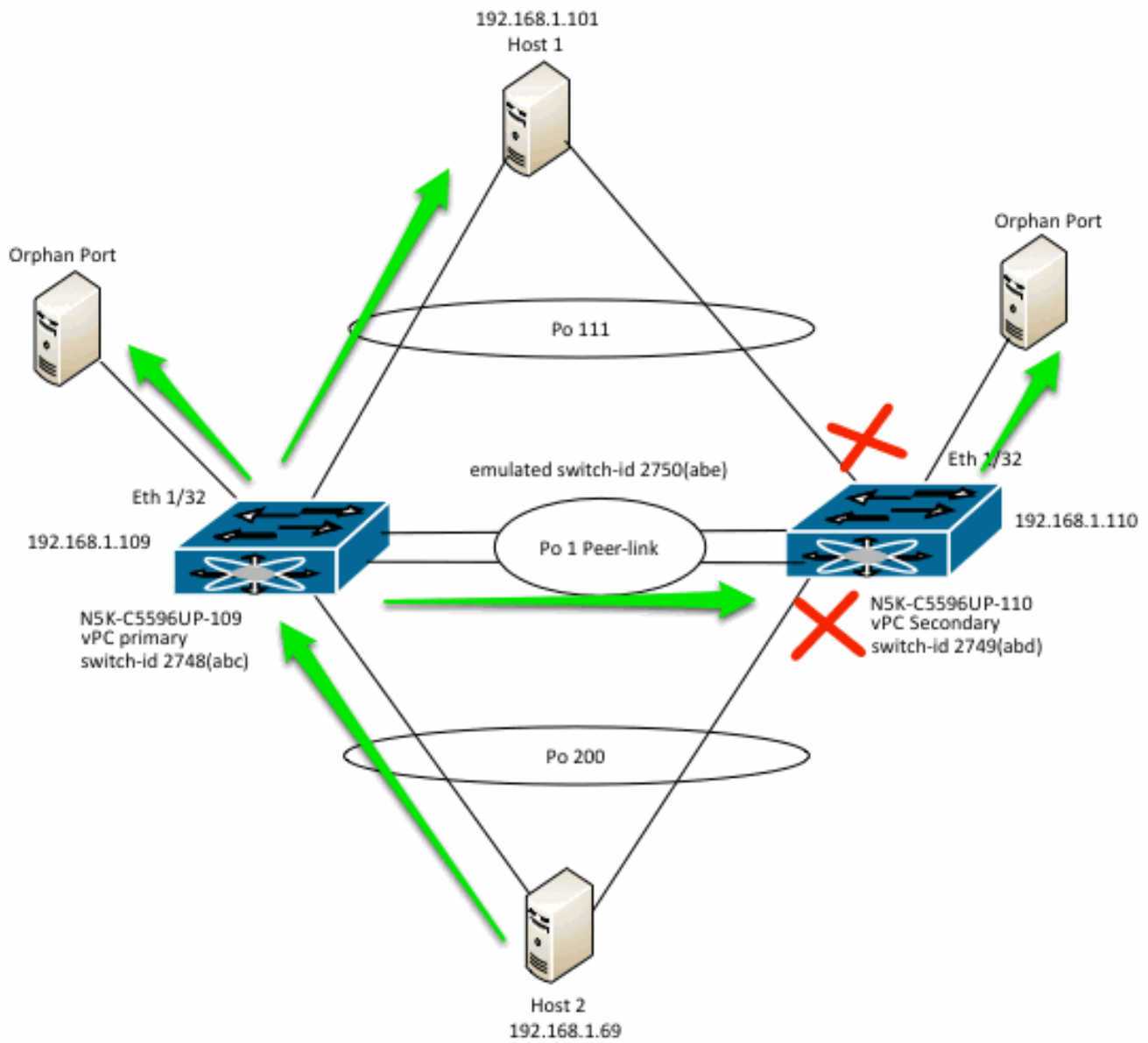
```

Frame 1: 138 bytes on wire (1104 bits), 138 bytes captured (1104 bits)
Cisco FabricPath, Src: abe.00.0000, Dst: 01:bb:cc:dd:01:01 (01:bb:cc:dd:01:01)
  MC Destination: 01:bb:cc:dd:01:01 (01:bb:cc:dd:01:01)
  Source: abe.00.0000
    0000 00.. 00.. .... = End Node ID: 0 (0x000000)
    .... .1. .... = U/L bit: Locally administered address (this is NOT the factory default)
    .... .0. .... = I/G bit: Individual address (unicast)
    .... ..0. .... = 000/DL Bit: Deliver in order (If DA) or Learn (If SA)
    .... .... 1010 1011 1110 = switch-id: 2750 (0x000abe)
    sub-switch-id: 0 (0x00)
    Source LID: 0 (0x0000)
    0100 0000 00.. .... = FTAG: 256
    .... .... ..10 0000 = TTL: 32
  Ethernet II, Src: Cisco_48:4c:00 (00:21:56:48:4c:00), Dst: Barracud_04:00:05 (00:03:00:04:00:05)
  Destination: Barracud_04:00:05 (00:03:00:04:00:05)
    Address: Barracud_04:00:05 (00:03:00:04:00:05)
    .... ..0. .... = LG bit: Globally unique address (factory default)
    .... ..0. .... = IG bit: Individual address (unicast)
  Source: Cisco_48:4c:00 (00:21:56:48:4c:00)
    Address: Cisco_48:4c:00 (00:21:56:48:4c:00)
    .... ..0. .... = LG bit: Globally unique address (factory default)
    .... ..0. .... = IG bit: Individual address (unicast)
    Type: 802.1Q Virtual LAN (0x8100)
  802.1Q Virtual LAN, PRI: 0, CFI: 0, ID: 1
    000. .... = Priority: Best Effort (default) (0)
    ...0. .... = CFI: Canonical (0)
    .... 0000 0000 0001 = ID: 1
    Type: IP (0x0800)
    Trailer: 42b8cb0e
  Internet Protocol Version 4, Src: 192.168.1.69 (192.168.1.69), Dst: 192.168.1.200 (192.168.1.200)
    Version: 4
0000 01 bb cc dd 01 01 02 0a be 00 00 00 89 03 40 20 .....@
0010 00 03 00 04 00 05 00 21 56 48 4c 00 81 00 00 01 .....!VHL.....
0020 08 00 45 00 00 64 52 56 00 00 ff 01 e4 e4 c0 a8 ..E..dRV .....
0030 01 45 c0 a8 01 c8 08 00 ec 58 00 1d 01 fe 00 00 .E......X.....
0040 00 00 2d 5a 00 7a ab ed ab ed ab ed ab ed ab ed ab ed .....
Cisco FabricPath (cfp), 16 bytes | Packets: ... | Profile: Default
  
```

- 由于帧通过vPC(vPC 200)进入，因此源交换机ID为abe.00.0000
- 目标是用于未知单播泛洪的组播MAC 01:bb:cc:dd:01:01
- FTAG是256。

当此帧进入vPC辅助交换机时，它将检查FTAG 257。由于只有孤立端口是FTAG 256的成员，因此此vPC主要将此帧仅泛洪到孤立端口Eth 1/32。

由于上述机制，以下是流入vPC主交换机的泛流量的流量。



## 相关信息

- [技术支持和文档 - Cisco Systems](#)