

在Dot1Q/L2P通道的包丢失

目录

[简介](#)

[先决条件](#)

[要求](#)

[使用的组件](#)

[规则](#)

[网络图](#)

[配置](#)

[观察](#)

[排除故障](#)

[解决方案](#)

[相关信息](#)

简介

本文讨论关于排除故障在Dot1Q/L2P通道的包丢失由于恶劣的网络设计在Cisco IOS与案例研究。

先决条件

要求

Cisco 建议您了解以下主题：

- 在Dot1q建立隧道的基础知识
- OSPF基础知识

使用的组件

本文档不限于特定的软件或硬件版本。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

网络图

在此网络设置，路由器7600核心的接口Gi1/44和美国兵1/43有单臂路由器设置路由器各自3400-Metro-1的Fa0/13和Fa0/12。在7600-Dot1Q交换机中接口Gi9/44和美国兵9/45启用与Dot1q隧道模式。SVI VLAN接口在3400城域边缘创建，并且Fa0/13和Fa0/12配置作为中继端口。路由器使用OSPF彼此连通。

配置

- [7609核心](#)
- [7609-Dot1Q](#)
- [3400-Metro-1](#)
- [3400城域边缘](#)

7609核心

```
!  
version 15.0  
hostname 7609-CORE  
interface GigabitEthernet1/43  
  mtu 9216  
  no ip address  
  no ip redirects  
  no ip proxy-arp  
  load-interval 60  
  carrier-delay 2  
  flowcontrol send off  
  storm-control broadcast level 1.00  
!  
interface GigabitEthernet1/43.3503  
  encapsulation dot1Q 3503  
  ip address 172.16.41.17 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip mtu 1500  
  ip ospf authentication-key 7 072C0E6B6B272D  
  ip ospf network point-to-point  
  ip ospf hello-interval 3  
  ip ospf dead-interval 10  
!  
!  
interface GigabitEthernet1/44  
  mtu 9216  
  no ip address  
  no ip redirects  
  no ip proxy-arp  
  load-interval 60  
  carrier-delay 2  
  flowcontrol send off  
  storm-control broadcast level 1.00  
!  
interface GigabitEthernet1/44.3803  
  encapsulation dot1Q 3803  
  ip address 172.16.73.137 255.255.255.248 secondary  
  ip address 172.16.41.21 255.255.255.252  
  no ip redirects  
  no ip proxy-arp  
  ip mtu 1500  
  ip ospf authentication-key 7 072C0E6B6B272D  
  ip ospf network point-to-point  
  ip ospf cost 5
```

```
ip ospf hello-interval 3
ip ospf dead-interval 10
!--- Output omitted. ! end
```

7609 DOT1Q

```
!
version 12.2
!
interface GigabitEthernet9/44
  switchport
  switchport access vlan 24
  switchport mode dot1q-tunnel
  mtu 9216
  load-interval 60
  carrier-delay 2
  flowcontrol send off
  storm-control broadcast level 1.00
  l2protocol-tunnel cdp
  l2protocol-tunnel stp
  l2protocol-tunnel vtp
  no cdp enable
  spanning-tree portfast disable
  spanning-tree bpdufilter enable
!
!
interface GigabitEthernet9/45
  switchport
  switchport access vlan 24
  switchport mode dot1q-tunnel
  mtu 9216
  load-interval 60
  carrier-delay 2
  flowcontrol send off
  storm-control broadcast level 1.00
  l2protocol-tunnel cdp
  l2protocol-tunnel stp
  l2protocol-tunnel vtp
  no cdp enable
  spanning-tree portfast disable
  spanning-tree bpdufilter enable
!
!--- Output omitted. ! end
```

3400-Metro-1

```
!
version 12.2
!
interface FastEthernet0/3
  port-type nni
  switchport trunk allowed vlan 1052,3503
  switchport mode trunk
  load-interval 60
!
interface FastEthernet0/4
  port-type nni
  switchport trunk allowed vlan 1052,3803
  switchport mode trunk
  load-interval 60
!
!
interface FastEthernet0/12
  port-type nni
```

```
switchport trunk allowed vlan 2-4094
switchport mode trunk

!
interface FastEthernet0/13
port-type nni
switchport trunk allowed vlan 2-4094
switchport mode trunk
!
end
```

3400城域边缘

```
!
version 12.2
!
interface FastEthernet0/12
port-type nni
switchport mode trunk
load-interval 60
storm-control broadcast level 1.00
spanning-tree portfast disable
spanning-tree bpdufilter disable
!
interface FastEthernet0/13
port-type nni
switchport mode trunk
load-interval 60
storm-control broadcast level 1.00
spanning-tree portfast disable
spanning-tree bpdufilter disable
!
!
interface Vlan3503
ip address 172.16.41.18 255.255.255.252
no ip redirects
no ip proxy-arp
ip ospf authentication-key 7 072C0E6B6B272D
ip ospf network point-to-point
ip ospf hello-interval 3
ip ospf dead-interval 10
!
interface Vlan3803
ip address 172.16.73.139 255.255.255.248 secondary
ip address 172.16.41.22 255.255.255.252
no ip redirects
no ip proxy-arp
ip ospf authentication-key 7 072C0E6B6B272D
ip ospf network point-to-point
ip ospf cost 5
ip ospf hello-interval 3
ip ospf dead-interval 10
!
!--- Output omitted. ! end
```

观察

当数据包通过Dot1q通道，横越随机的Ping丢包发生。但是，没有在接口的输入/输出丢包并且没有物理层问题症状。发出[show interface <interface>命令](#)为了检查在接口的输入/输出丢包：

```
7609-Dot1Q#show interface gi9/44 !--- Output omitted. Input queue: 0/75/0/0
```

(size/max/drops/flushes); Total output drops: 0 0 input errors, 0 CRC, 1 frame, 0 overrun, 0 ignored 0 output errors, 0 collisions, 1 interface resets 0 lost carrier, 0 no carrier, 0 PAUSE output !--- Output omitted.

当大约100 Ping ICMP流量从城域边缘被派出，只有95响应在核心接收，建议ICMP数据包在路径被撤销。

```
Metro-Edge#ping 172.16.41.21 re 100 Type escape sequence to abort. Sending 100, 100-byte ICMP Echos to 172.16.41.21, timeout is 2 seconds:
.....!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!! Success rate is 95 percent (95/100), round-trip min/avg/max = 1/2/9 ms
```

注意：[show ip traffic命令](#)在7609显示仅95响应接收，而在城域边缘和它显示100响应被派出。

```
show ip traffic
在城域边缘ICMP statistics:
  Rcvd: 0 format errors, 0 checksum errors, 0 redirects,
  0 unreachable
    0 echo, 95 echo reply, 0 mask requests, 0 mask
  replies, 0 quench 0 parameter, 0 timestamp, 0 info
  request, 0 other 0 irdp solicitations, 0 irdp
  advertisements Sent: 0 redirects, 0 unreachable, 100
  echo, 0 echo reply 0 mask requests, 0 mask replies, 0
  quench, 0 timestamp 0 info reply, 0 time exceeded, 0
  parameter problem 0 irdp solicitations, 0 irdp
  advertisements !--- The above output shows that 100
  echos are sent !--- but received 95 replies from 7609-
  Core. 在7609核心ICMP statistics:
  Rcvd: 0 format errors, 0 checksum errors, 0 redirects,
  0 unreachable
    95 echo, 0 echo reply, 0 mask requests, 0 mask
  replies, 0 quench 0 parameter, 0 timestamp, 0 info
  request, 0 other 0 irdp solicitations, 0 irdp
  advertisements Sent: 0 redirects, 0 unreachable, 0 echo,
  95 echo reply 0 mask requests, 0 mask replies, 0 quench,
  0 timestamp 0 info reply, 0 time exceeded, 0 parameter
  problem 0 irdp solicitations, 0 irdp advertisements
```

排除故障

验证MAC地址是否适当地了解为了排除故障在数据包的丢弃。

使用显示MAC地址表命令为了验证MAC地址项。

Ping成功

```
7609-DOT1q#sh mac-address-table address E05F.B972.1F00 all Legend: * - primary entry age -
seconds since last seen n/a - not available vlan mac address type learn age ports -----+-----
-----+-----+-----+-----+-----+----- Active Supervisor: * 24
e05f.b972.1f00 dynamic Yes 0 Gi9/44 !--- This output displays the MAC address learnt !--- and
its associated port, in this case the associated !--- port for successful ping is Gi9/44.
```

失败Ping

```
7609-DOT1q#sh mac-address-table address E05F.B972.1F00 all Legend: * - primary entry age -
seconds since last seen n/a - not available vlan mac address type learn age ports -----+-----
-----+-----+-----+-----+-----+----- Active Supervisor: * 24
e05f.b972.1f00 dynamic Yes 5 Gi9/45 !--- This output displays the MAC address learnt !--- and
its associated port, in this case, !--- the port number is Gi9/45.
```

为了看到详细的MAC索引编程，请使用show mac-address-table命令。

```
7609-DOT1q#sh mac-address-table address E05F.B972.1F00 det
```

MAC Table shown in details

```
=====
```

PI_E XTag	RM	RMA	Type	Alw-Lrn	Trap	Modified	Notify	Capture	Flood	Mac Address	Age	Pvlan	SWbits	Index
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----														
+-----														

Active Supervisor:

```
Yes No No DY No No Yes No No No e05f.b972.1f00 0xE0 24 0 0x22C 0
```

发出远程登录交换机和测验mcast LTL INFO索引<Index number>命令为了知道上一个十六进制值表示的哪端口号。

```
7609-DOT1q-sp#test mcast ltl-info index 22B index 0x22B contain ports 9/44 7609-DOT1q-sp#test  
mcast ltl-info index 22C index 0x22C contain ports 9/45 !--- The output shows that hex number  
22B !--- points to 9/44 port and hex 22C points to 9/45.
```

对于失败的Ping源和目的索引是相同端口并且丢弃。当与mac-address-table通知MAC移动on命令的已启用MAC移动7600它显示两个区别端口之间的MAC飘荡，并且时这是错误消息：

注意：因为6500/7600使用一普通的MAC地址交换机。，同一MAC地址分配区别端口之间。[show catalystr6000机箱MAC地址](#)命令显示保留交换机MAC地址。

```
* Jul 2 10:29:44.011: %MAC_MOVE-SP-4-NOTIF: Host e05f.b972.1f00 in vlan 24 is flapping between  
port Gi9/45 and port Gi9/44 !--- The previous error message indicates !--- that the same MAC  
address is assigned between !--- two different ports: Gi9/45 and port Gi9/44.
```

解决方案

上一个网络是有同一交换机的DOT1Q隧道终点的全网状网络设置。在这种网络设置MAC飘荡预计。为了避免MAC飘荡，这些解决方案之一可以实现。

- 移动隧道终点向一不同的交换机，例如，封装和解封装在另外交换机应该发生。
- VLAN修剪可以完成以便调控在的VLAN任何中继端口。

相关信息

- [配置IEEE 802.1Q建立隧道](#)
- [技术支持和文档 - Cisco Systems](#)