

# Dot1Q/L2P隧道上的丢包

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## 简介

本文档通过案例研究讨论了Cisco IOS®中由于网络设计不佳而导致的Dot1Q/L2P隧道丢包<sup>故障</sup>的故障排除。

## 先决条件

### 要求

Cisco 建议您了解以下主题：

- 关于Dot1Q隧道的基本知识
- OSPF的基本知识

### 使用的组件

本文档不限于特定的软件或硬件版本。

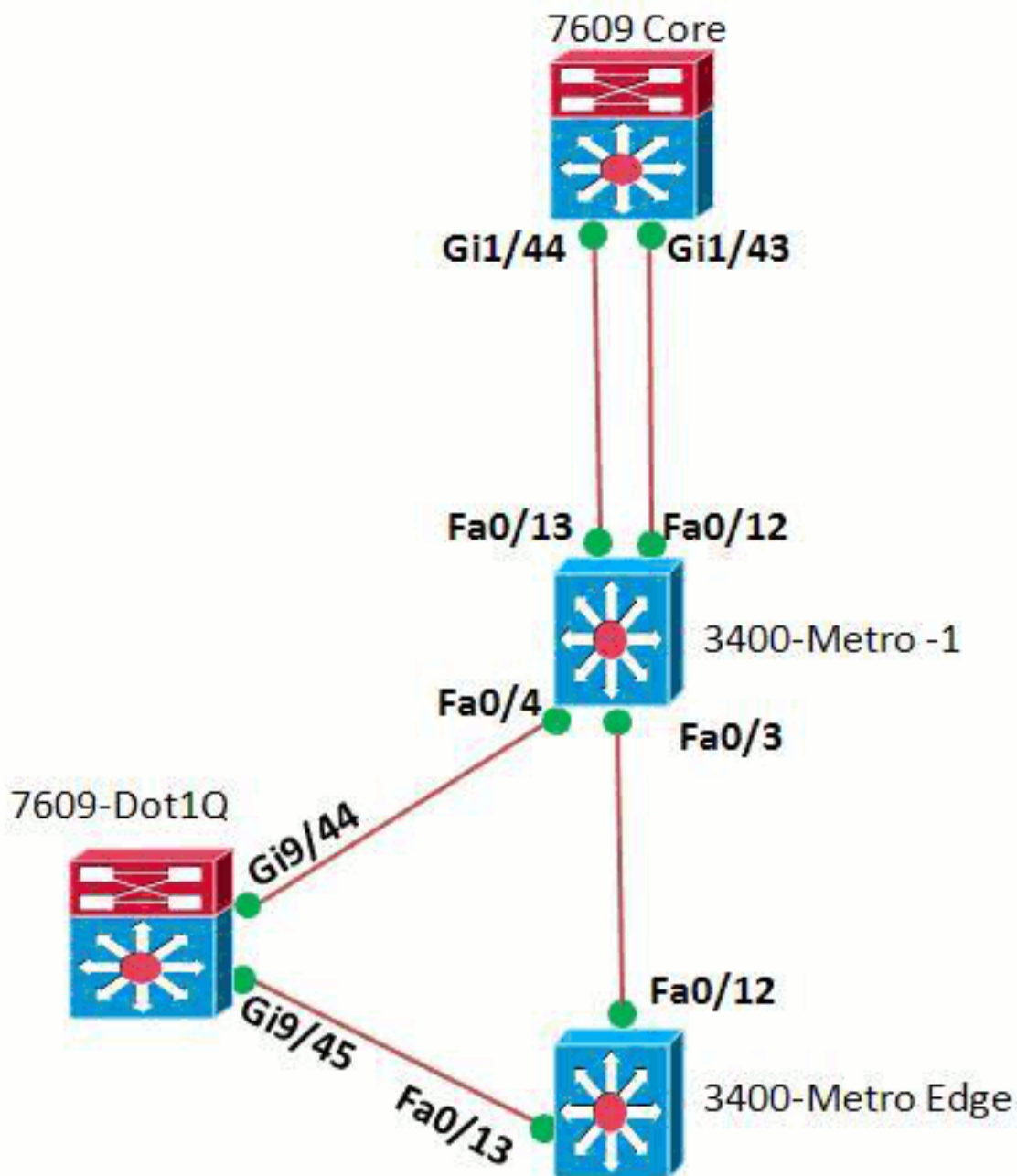
本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

### 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

在此网络设置中，路由器7600-Core的接口Gi1/44和Gi1/43将路由器分别设置为单臂路由器3400-Metro-1的Fa0/13和Fa0/12。在7600-Dot1Q交换机中，接口Gi9/44和Gi 9/45已启用Dot1q隧道模式。在3400 — 城域边缘上创建SVI vlan接口，Fa0/13和Fa0/12配置为中继端口。路由器使用OSPF相互通信。



## 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 bpdudfilter 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 bpdudfilter 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 bpdudfilter 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 bpdudfilter 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隧道时，会发生随机Ping丢弃。但是，接口上没有输入/输出丢弃，也没有物理层问题的症状。发出[show interface <interface >](#)命令以检查接口上的输入/输出丢弃：

```
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.
```

当从城域边缘发出约100个Ping的ICMP流量时，核心层仅接收95个回显，这表明ICMP数据包在路径中被丢弃。

```
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:
```





- 将隧道终端移动到其他交换机，例如，封装和解封应发生在不同的交换机。
- VLAN修剪可以用来调节任何中继端口中的VLAN。

## 相关信息

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