配置在2900XL/3500XL/2950运行Cisco IOS软件的系列交换机和Catalyst交换机之间的第二层以太网信道和中继

Contents

Introduction

本文档提供 Cisco Catalyst 2900 XL/3500 XL 或 Catalyst 2950 系列交换机和运行 Cisco IOS® 软件的 Catalyst 6500/6000 交换机之间的 IEEE 802.1Q/交换机间链路 (ISL) 中继和第 2 层 (L2) EtherChannel 的示例配置。您也可以使用运行 Cisco IOS 软件的 4500/4000 交换机来取代本示例中的 Catalyst 6500/6000。本文讨论了在交换机之间配置中继和信道时应考虑的最重要的要素。本文还提供了一些配置示例。

在本文中，从其中每一的四个快速以太网端口交换机建立中继并且被捆绑到快速的EtherChannel (FEC)。中继协议使用了3500 XL ISL，并且802.1Q使用了2950示例。

Note: Catalyst 2950不支持ISL中继。请使用802.1q中继。

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

为了创建在本文的示例，这些交换机用于实验室环境，清除配置：

- 运行Cisco IOS Software Release 12.0(5)WC2的Catalyst 3548 XL交换机
- 运行Cisco IOS软件版本12.1(6) EA2c的Catalyst 2950-24交换机
- Catalyst 6509 switch用运行Cisco IOS Software Release 12.1(11b)E的Supervisor引擎II

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.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

DTP

在设备之间的Trunk可能配置有静态或使用动态中继协议(DTP)。DTP允许被连接的两个设备在实际形成中继线连接前协商中继线设置。可配置Cisco IOS软件交换机端口(Trunking)模式包括：动态(端口协商访问或中继模式)， Trunk (绝对地设置端口对建立中继)和访问(非Trunk接入端口)。在一个静态(协商的非DTP) Trunk的双方的最常用的模式组合设置trunk-trunk。对于动态(DTP协商的) Trunk，通常的设置是动态动态。在本文的范围之外，其他组合可能导致有效结果，但是。端口聚合协议(PAgP)之间的一个中继线连接-能够交换机和一个非PAgP设备要求中继模式打开。

Note: 多数Cisco路由器和一些Catalyst交换机不支持DTP并且要求静态中继配置。例如， Catalyst XL系列， Catalyst 2948G-L3， Catalyst 4908G-L3， Catalyst 8500 series， 2/3/4/7xxx系列Cisco路由器，等不支持DTP并且要求静态中继配置。

802.1Q本地VLAN考虑

802.1q中继插入4字节802.1Q标记字段到在Trunk被发送的帧，包含VLAN信息。802.1Q标记插入到每个帧调用过渡Trunk除了在本地VLAN传输的帧，发送无示踪。在许多情况下，本地VLAN必须配比在Trunk的两边，除非有一个特定异常的配置需求，在本文的范围之外，是。如果本地VLAN不配比，陈述交换日志思科设备发现协议(CDP)的消息不匹配。当不灾难，此设置有效导致两个不同的本地VLAN被合并到一更大的L2广播域(VLAN)。这两VLAN尝试计算这样的一普通的生成树协议(STP)拓扑桥接了本地VLAN，冒着最后超出最大数量支持的STP直径的危险。

Note: 当相邻或第三方设备要求所有VLAN被标记时，有一种特殊情形。如果这发生，您可以实现解决方法创建假的VLAN和设置它作为本地VLAN。这将标记其他必要的VLAN，并且他们在Trunk将通过数据流到相邻或第三方设备。在运行Cisco IOS软件支持802.1q中继选项将标记所有VLAN数据流包括本地VLAN的Cisco IOS Software Release 12.1.11bEX， 12 .1.13E，和以后， Catalyst 6500。发出**vlan dot1q tag native命令**下面全局配置模式。在4500/4000上那运行Cisco IOS软件的Catalyst， **vlan dot1q tag native命令**首先介绍在Cisco IOS Software Release 12.2(18)EW。

PAgP

千兆位在交换机之间的EtherChannel (GECs)和FEC可能静态或动态地也配置有使用PAgP。PAgP允许被连接的两个设备在实际形成信道前协商设置。PAgP信道模式包括：(端口积极地起动信道谈判)，(默认值，端口不起动协商，但是回应另一边开始的协商尝试)，和(绝对地设置端口开辟信道和不交换PAgP帧)。一台支持PAGP的交换机和一个非PAgP设备之间的连接要求`on`形成信道。

在一条静态(协商的Non-PAgP)信道的双方的最常用的模式组合是`On-on`。对于动态(PAgP协商的)信道，通常的设置是`desirable-desirable`或。为期望的模式配置的连接的端口在开始开辟信道前进行信道谈判和验证并且继续验证信道，当运转中时。如果两台连接的交换机支持PAgP，由于PAgP提供的被添加的保护，这通常是推荐的设置。

Note: PAgP有一些故意配置限制。协商信道的端口必须有设置的同样速度、双工、中继封装和VLAN。并且，在链路间的信道负荷平衡的算法可能是可配置的在某一平台。

Note: 当是UP， EtherChannel认为一个唯一STP端口。所以，避免STP不一致，当设置一条非协商的信道时，请如下进行：

1. 关闭信道的所有端口配置在两边。
2. 执行在两端的配置。
3. 重新激活所有端口。

尝试配置这样信道，当端口是UP时可能导致临时STP不一致和循环。如果没有使用，步骤只适用PAgP。

Catalyst 2900XL/3500XL

Catalyst 2900XL/3500XL系列交换机不支持DTP和PAgP，并且要求静态Trunk并且开辟设置。欲知更多信息，请参见上面附注。Catalyst 2900XL/3500XL系列交换机当前支持ISL和802.1q中继封装。欲知更多信息，请参见本文：

- 在 Catalyst 2900XL/3500XL/2950 交换机上使用外部路由器配置 VLAN 间路由和 ISL/802.1Q 中继

Cisco IOS软件release 11.2(8)sa4及以上版本支持ISL，并且Cisco IOS Software Release 11.2(8)SA5支持802.1Q和以后。

使用Catalyst 2900 XL运行的Cisco IOS Software Release 11.2(8)SA1或11.2(8)SA2，您提供四EtherChannel (端口组)每台有无限数目的端口的交换机每个组。在链路间的负载均衡在信道总是基于地址的目的地。不支持交换端口分析器(SPAN)和端口安全功能。

在运行Cisco IOS Software Release 11.2(8)SA3或以上的Catalyst 2900 XL，运行Cisco IOS Software Release 11.2(8)SA6或以上的Catalyst 3500 XL和Catalyst 2950，在链路间的负载均衡在信道是可配置的根据源或目的地MAC地址。来源是默认值。基于来源的转发允许在FEC (端口组)的八个端口。基于目的地转发允许无限端口每个端口组。您配置每台交换机12个端口组，并且能有基于源/目的组的混合。不支持SPAN和端口安全。

Catalyst 2950

Catalyst 2950 switches仅支持802.1q中继，并且不支持ISL中继。Catalyst 2950 switches支持DTP和PAgP动态中继和信道谈判与Cisco IOS Software Release 12.1版本和静态仅模式与Cisco IOS Software Release 12.0版本。EtherChannel 负载均衡可以使用源 MAC 或目标 MAC 地址转发。您能通过发出port-channel load-balance global configuration命令配置负载均衡方法。这些交换机支持每条信道八个交换端口。

运行Cisco IOS软件的Catalyst 6500

Catalyst 6500 switches (连接孔)和第3层(运行Cisco IOS软件支持L2的L3) (路由端口) EtherChannel配置。Catalyst 6500/6000系列交换机支持最多64 EtherChannel (256与Cisco IOS Software Release 12.1(2)E和及早)。您能形成与八个兼容被配置的局域网端口的一EtherChannel在Catalyst 6000 series switch的所有模块，除Digital Feature Card (DFC)外-使用在同一个DFC模块的端口当前仅允许L2信道的被配备的模块(例如WS-X6816等等)。然而， L3信道可以在不同的配备DFC的模块间被配置。此限制在Catalyst 6500/6000 Cisco IOS Software Release 12.1(11b)EX被取消了和以后。本文配置一L2 EtherChannel。

Catalyst 6500/6000在任意来源，目的地和来源-目的地组合允许您配置EtherChannel负载均衡使用MAC地址、IP地址或者Layer4 (运行Cisco IOS软件的L4)端口信息通过发出**port-channel load-balance global configuration命令**。默认值是使用在来源和目的地IP地址之间的一个散列函数。

Catalyst 6500/6000交换机支持ISL和802.1q中继封装和DTP。关于端口功能的详细信息通过发出**show interface interface_id capabilities命令**是可用的。

运行Cisco IOS软件的Catalyst 4000

运行Cisco IOS软件的Catalyst 4000 switches (与Supervisor引擎III和IV)支持L2 (连接孔)和L3 (路由端口) EtherChannel配置。Catalyst 4000 series switch支持最多64 EtherChannel。您能形成与八个兼容配置的以太网接口的一EtherChannel在所有模块和在Catalyst 4000 series switch的模块间。在每EtherChannel的所有接口必须是同一速度，并且必须所有配置作为L2或L3接口。

Catalyst 4000运行的Cisco IOS软件在任意来源，目的地和来源-目的地组合允许您配置EtherChannel负载均衡使用MAC地址、IP地址或者L4端口信息通过发出**port-channel load-balance global configuration命令**。默认值是使用在来源和目的地IP地址之间的一个散列函数。

运行Cisco IOS软件支持ISL和802.1q中继封装和DTP的Catalyst 4000。ISL不是可用的在某些模块。关于一张完全列表的这样模块，请参见*了解配置第2层以太网接口的VLAN中继*部分。在将来软件版本中，关于端口功能的详细信息通过发出**show interface capabilities命令将**是可用的。目前此命令不是可用的。

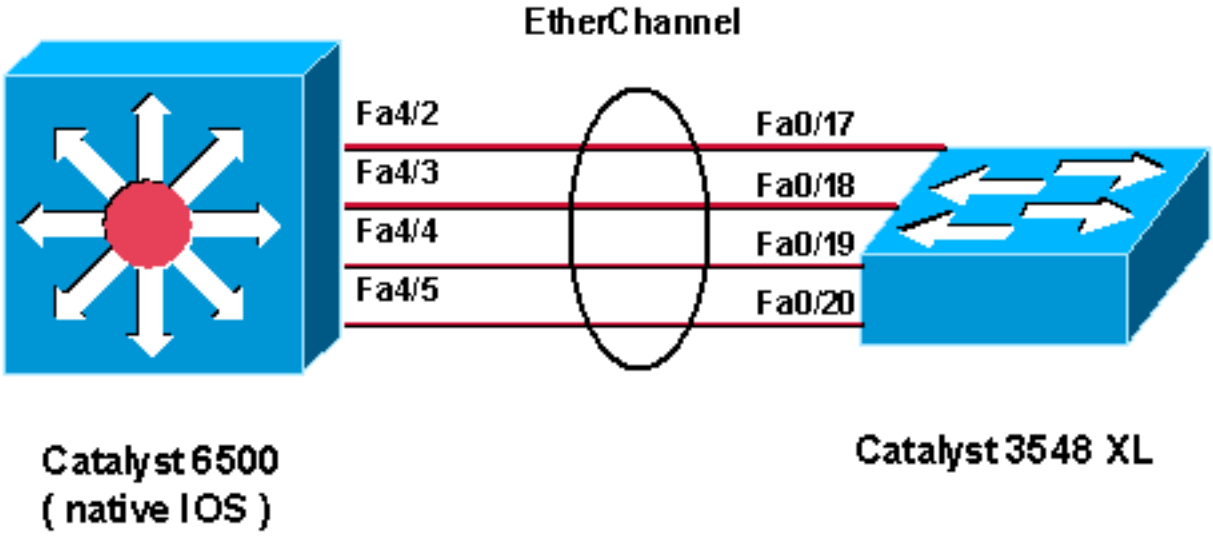
配置1 ：运行Cisco IOS软件的ISL中继和以太网信道在Catalyst 3500 XL和Catalyst 6500之间

本部分提供有关如何配置本文档所述功能的信息。

Note: 要查找本文档所用命令的其他信息，请使用命令查找工具（仅限注册用户）。

Network Diagram

此配置使用此网络建立：



Catalyst 3524XL

```
!--- Catalyst 3500 XL does not support DTP/PAgP. !---
First, shut down the secondary ports involved in the
channel !--- and then enable them back when the
configuration is complete on both switches.
Cat3500XL#show run
Building configuration...
Current configuration:
!

version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat3500XL
ip subnet-zero
!
interface FastEthernet0/1
!
!--- Output suppressed. ! interface FastEthernet0/17
port group 1 !--- Assigned port to port channel 1.
switchport trunk encapsulation isl !--- Configured the
port to use the trunking encapsulation ISL. switchport
mode trunk !--- Configured the port to be in trunking
mode. ! interface FastEthernet0/18 !--- Repeated the
trunk and channel configuration. port group 1 switchport
trunk encapsulation isl switchport mode trunk !
interface FastEthernet0/19 !--- Repeated the trunk and
channel configuration. Port group 1 switchport trunk
encapsulation isl switchport mode trunk ! interface
FastEthernet0/20 !--- Repeated the trunk and channel
configuration. Port group 1 switchport trunk
encapsulation isl switchport mode trunk ! interface
FastEthernet0/21 ! !--- Output suppressed. ! interface
```

```
FastEthernet0/48 ! interface GigabitEthernet0/1 !
interface GigabitEthernet0/2 ! interface VLAN1 ip
address 10.10.10.1 255.255.255.0 no ip directed-
broadcast no ip route-cache ! line con 0 transport input
none stopbits 1 line vty 0 4 login
```

Catalyst 6500 (Cisco IOS软件)

```
!--- Catalyst 3500 XL does not support DTP/PAgP. !---
First, shut down the secondary ports involved in the
channel, !--- and then enable them back when the
configuration is complete on both switches. Cat6500#show
run
Building configuration...
Current configuration : 3999 bytes
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat6500
!
boot bootldr bootflash:c6msfc2-boot-mz.121-8b.E9
!
redundancy
main-cpu
auto-sync standard
ip subnet-zero
!
!
no mls ip multicast aggregate
no mls ip multicast non-rpf cef
mls qos statistics-export interval 300
mls qos statistics-export delimiter |
!
interface Port-channel1

!--- This interface will be created and configured
automatically. !--- You do not need to input this part
of the configuration. switchport switchport trunk
encapsulation isl switchport mode trunk no ip address !
interface GigabitEthernet1/1 no ip address shutdown ! !-
-- Output suppressed. ! interface FastEthernet4/2
switchport !--- Setting the interface as an L2 port, as
by default the port is a routed port. !--- Note:
Catalyst 4500/4000 that runs Cisco IOS Software defaults
to the L2 port.


switchport trunk encapsulation dot1q
!--- Setting the trunk encapsulation to dot1q.
switchport mode trunk !--- Configured port to be in
trunking mode. no ip address channel-group 1 mode on !--
- Configured the port to participate in port channel 1
with channel mode on. ! Interface FastEthernet4/3 !---
Repeated the trunk and channel configuration. switchport
switchport trunk encapsulation isl switchport mode trunk
no ip address channel-group 1 mode on ! interface
FastEthernet4/4 !--- Repeated the trunk and channel
configuration. switchport switchport trunk encapsulation
isl switchport mode trunk no ip address channel-group 1
```

```
mode on ! interface FastEthernet4/5 !--- Repeated the
trunk and channel configuration. switchport switchport
trunk encapsulation isl switchport mode trunk no ip
address channel-group 1 mode on ! interface
FastEthernet4/6 no ip address shutdown ! ! interface
VLAN 1 ip address 10.10.10.2 255.255.255.0 ! ip
classless no ip http server ! line con 0 line vty 0 4 !
end Cat6500#
```

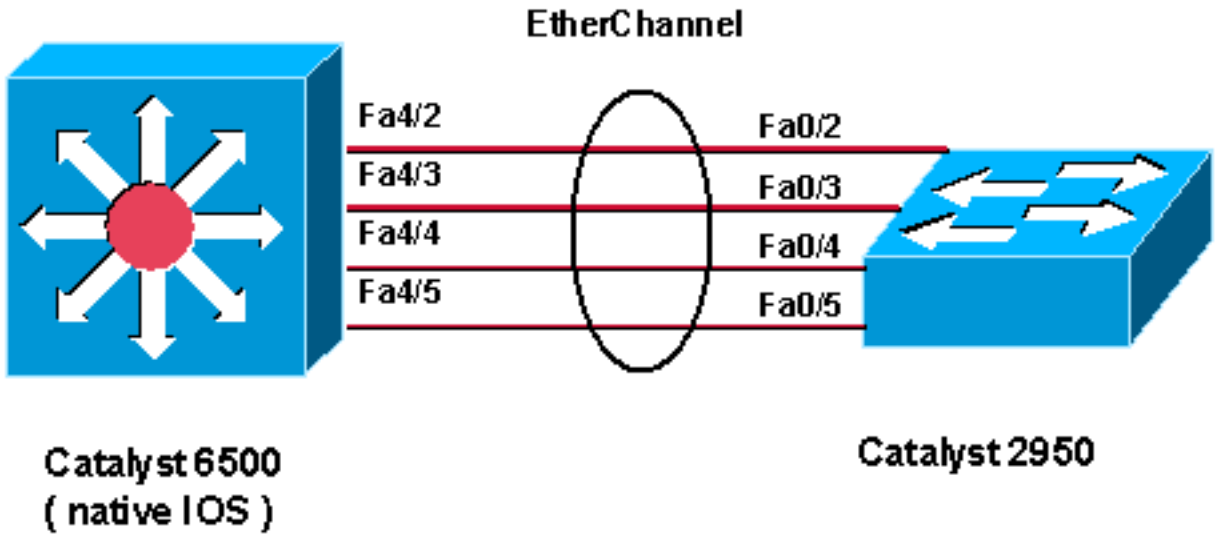
配置2 ：802.1q中继和EtherChannel与运行Cisco IOS软件的使用DTP和PAgP在Catalyst 2950和Catalyst 6500之间

本部分提供有关如何配置本文档所述功能的信息。

Note: 要查找本文档所用命令的其他信息，请使用命令查找工具（仅限注册用户）。

Network Diagram

此配置使用此网络建立：



Catalyst 2950

```
!--- Catalyst 2950 with Cisco IOS Software Release 12.1
supports PAgP. !--- There is no need to shut down the
ports as both Catalyst 2950 and 6500 can negotiate !---
channeling in desirable mode. Cat2950#show run
Building configuration...
Current configuration : 1380 bytes
!
version 12.1
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat2950
!
```

```
ip subnet-zero
no ip finger
!
interface Port-channel1
switchport mode trunk
!
interface FastEthernet0/1
!
interface FastEthernet0/2
switchport mode trunk
!--- Configured port to be in trunking mode. channel-
group 1 mode desirable !--- Configured port to
participate in PAgP-negotiated port channel 1. !
interface FastEthernet0/3 !--- Repeated trunk and
channel configuration. switchport mode trunk channel-
group 1 mode desirable ! interface FastEthernet0/4 !---
Repeated trunk and channel configuration. switchport
mode trunk channel-group 1 mode desirable ! interface
FastEthernet0/5 !--- Repeated trunk and channel
configuration. switchport mode trunk channel-group 1
mode desirable ! interface FastEthernet0/6 ! !--- Output
suppressed. ! interface FastEthernet0/25 ! interface
FastEthernet0/26 ! interface VLAN1 ip address 10.10.10.1
255.255.255.0 no ip route-cache ! ip http server ! line
con 0 transport input none line vty 5 15 ! end Cat2950#
```

Catalyst 6500 (Cisco IOS软件)

```
!--- Catalyst 2950 with Cisco IOS Software Release 12.1
supports PAgP. !--- There is no need to shut down the
ports as both Catalyst 2950 and 6500 can negotiate !---
channeling in desirable mode. Cat6500#show run
Building configuration...
Current configuration : 3999 bytes
!
version 12.1
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat6500
!
boot bootldr bootflash:c6msfc2-boot-mz.121-8b.E9
!
redundancy
main-CPU
auto-sync standard
ip subnet-zero
!
!
no mls ip multicast aggregate
no mls ip multicast non-rpf cef
mls qos statistics-export interval 300
mls qos statistics-export delimiter |
!
interface Port-channel1

!--- This interface will be created and configured
automatically. !--- You do not need to input this part
of the configuration. switchport switchport trunk
encapsulation dot1q switchport mode trunk no ip address
! interface GigabitEthernet1/1 no ip address shutdown !
```

```
!--- Output suppressed. ! interface FastEthernet4/2
switchport !--- Setting the interface as an L2 port, as
by default the port is a routed port. !--- Note:
Catalyst 4500/4000 that runs Cisco IOS Software defaults
to the L2 port.


switchport trunk encapsulation dot1q

!--- Setting the trunk encapsulation to dot1q.
switchport mode trunk !--- Configured port to be in
trunking mode. No ip address channel-group 1 mode
desirable !--- Configured port to participate in port
channel 1 with channel mode desirable. ! Interface
FastEthernet4/3 !--- Repeated trunk and channel
configuration. switchport switchport trunk encapsulation
dot1q switchport mode trunk no ip address channel-group
1 mode desirable ! interface FastEthernet4/4 !---
Repeated trunk and channel configuration. switchport
switchport trunk encapsulation dot1q switchport mode
trunk no ip address channel-group 1 mode desirable !
interface FastEthernet4/5 !--- Repeated trunk and
channel configuration. switchport switchport trunk
encapsulation dot1q switchport mode trunk no ip address
channel-group 1 mode desirable ! interface
FastEthernet4/6 no ip address shutdown ! ! interface
VLAN 1 ip address 10.10.10.2 255.255.255.0 ! ip
classless no ip http server ! ! line con 0 line vty 0 4
! end Cat6500#
```

验证：ISL中继

Use this section to confirm that your configuration works properly.

命令输出解释程序（仅限注册用户）(OIT) 支持某些 **show** 命令。 使用 OIT 可查看对 show 命令输出的分析。

Catalyst 3500 XL

```
Cat3500XL#show cdp neighbor
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
Cat3500XL        Fas 0/20           136         R S I      Catalyst 6Fas 4/5
Cat3500XL        Fas 0/19           136         R S I      Catalyst 6Fas 4/4
Cat3500XL        Fas 0/18           136         R S I      Catalyst 6Fas 4/3
Cat3500XL        Fas 0/17           136         R S I      Catalyst 6Fas 4/2
Cat3500XL#



Cat3500XL#show port group
Group  Interface              Transmit Distribution
-----  ---------------------  ---------------------
1  FastEthernet0/18       source address
1  FastEthernet0/17       source address
1  FastEthernet0/20       source address
1  FastEthernet0/19       source address
```

```
Cat3500XL#


Cat3500XL#show etherchannel summary
Flags:  d - default     D - down
I - in use

Group Ports
----- -----
1     Fa0/18(I) Fa0/17(Id) Fa0/20(I) Fa0/19(I)
Cat3500XL#
```

Note: 如果有八端口EtherChannel，发出**show etherchannel summary命令**能失败交换机，如果运行早于Cisco IOS Software Release 12.0(5)WC5的Cisco IOS软件版本。

```
Cat3500XL#show interfaces fastethernet0/17 switchport
Name: Fa0/17
Switchport: Enabled
Administrative mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: isl
Operational Trunking Encapsulation: isl
Negotiation of Trunking: Disabled
Access Mode VLAN: 0 ((Inactive))
Trunking Native Mode VLAN: 1 (default)
Trunking VLANs Enabled: ALL
Trunking VLANs Active: 1,2
Pruning VLANs Enabled: 2-1001

Priority for untagged frames: 0
Override vlan tag priority: FALSE
Voice VLAN: none
Appliance trust: none
Cat3500XL#
```

Catalyst 6500 (Cisco IOS软件)

```
Cat6500#show interfaces fastethernet 4/2 capabilities
FastEthernet4/2
Model:                 WS-X6248-RJ-45
Type:                  10/100BaseTX
Speed:                 10,100,auto
Duplex:                half,full
Trunk encap. type:     802.1Q,ISL
Trunk mode:            on,off,desirable,nonegotiate
Channel:               yes
Broadcast suppression: percentage(0-100)
Flowcontrol:           rx-(off,on),tx-(none)
Fast Start:            yes
QOS scheduling:        rx-(1q4t), TX(2q2t)
CoS rewrite:           yes
ToS rewrite:           yes
Inline power:          no
SPAN:                  source/destination

Cat6500#

Cat6500#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater
```

```
Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
Cat6500          Fas 4/5            135         T S       WS-C3548-XFas 0/20
Cat6500          Fas 4/4            135         T S       WS-C3548-XFas 0/19
Cat6500          Fas 4/3            134         T S       WS-C3548-XFas 0/18
Cat6500          Fas 4/2            134         T S       WS-C3548-XFas 0/17
Cat6500#
```

```
Cat6500#show interfaces port-channel 1 etherchannel
Age of the Port-channel   = 01d:07h:30m:43s
Logical slot/port   = 14/1           Number of ports = 4
GC                  = 0x00010001      HotStandBy port = null
Port state          = Port-channel Ag-Inuse

Ports in the Port-channel:

Index   Load   Port    EC state
------+------+------+------------
0     11     Fa4/2    on
1     22     Fa4/3    on
2     44     Fa4/4    on
3     88     Fa4/5    on

Time since last port bundled:    01d:06h:51m:22s    Fa4/5
Time since last port Un-bundled: 01d:06h:52m:30s    Fa4/5

Cat6500#
```

```
Cat6500#show etherchannel ?
<1-269>       Channel group number
brief         Brief information
detail        Detail information
load-balance  Load-balance/frame-distribution scheme among ports in
port-channel
port          Port information
port-channel  Port-channel information
summary       One-line summary per channel-group
```

```
Cat6500#show etherchannel summary
Flags:  D - down        P - in port-channel
I - stand-alone s - suspended
R - Layer3      S - Layer2
U - port-channel in use
Group Port-channel  Ports
-----+------------+-----------------------------------------------------------
1     Po1(SU)     Fa4/2(P)   Fa4/3(P)   Fa4/4(P)   Fa4/5(P)

Cat6500#
```

```
Cat6500#show etherchannel port-channel
Channel-group listing:
-----------------------

Group: 1
----------
Port-channels in the group:
----------------------

Port-channel: Po1
------------
```

```
Age of the Port-channel   = 01d:07h:35m:28s
Logical slot/port   = 14/1           Number of ports = 4
GC                  = 0x00010001      HotStandBy port = null
Port state          = Port-channel Ag-Inuse

Ports in the Port-channel:

Index   Load   Port    EC state
------+------+------+------------
0     11     Fa4/2    on
1     22     Fa4/3    on
2     44     Fa4/4    on
3     88     Fa4/5    on

Time since last port bundled:    01d:06h:56m:08s    Fa4/5
Time since last port UN-bundled: 01d:06h:57m:15s    Fa4/5


Cat6500#show interfaces port-channel 1 switchport
Name: Po1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: isl
Operational Trunking Encapsulation: isl
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Operational private-vlan: none
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001

Cat6500#
```

验证：802.1q中继

Use this section to confirm that your configuration works properly.

命令输出解释程序（仅限注册用户）(OIT) 支持某些 **show** 命令。 使用 OIT 可查看对 show 命令输出的分析。

Catalyst 2950

```
Cat2950#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater

Device ID        Local Intrfce     Holdtme    Capability  Platform  Port ID
Cat2950          Fas 0/4            120        R S I      Catalyst 6Fas 4/4
Cat2950          Fas 0/5            120        R S I      Catalyst 6Fas 4/5
Cat2950          Fas 0/3            120        R S I      Catalyst 6Fas 4/3
Cat2950          Fas 0/2            120        R S I      Catalyst 6Fas 4/2
Cat2950#



Cat2950#show etherchannel port-channel
Channel-group listing:
```

```
----------------------

Group: 1
----------
Port-channels in the group:
----------------------

Port-channel: Po1
------------

Age of the Port-channel   = 01d:08h:27m:08s
Logical slot/port   = 1/0           Number of ports = 4
GC                  = 0x00010001      HotStandBy port = null
Port state          = Port-channel Ag-Inuse

Ports in the Port-channel:

Index   Load   Port    EC state
------+------+------+------------
0     00     Fa0/2    desirable-SL
0     00     Fa0/3    desirable-SL
0     00     Fa0/4    desirable-SL
0     00     Fa0/5    desirable-SL

Time since last port bundled:    00d:00h:07m:17s    Fa0/5
Time since last port UN-bundled: 01d:08h:10m:06s    Fa0/5

Cat2950#



Cat2950#show etherchannel load-balance
Source MAC address
Cat2950#


Cat2950#show interfaces port-channel 1 switchport
Name: Po1
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Trunking VLANs Enabled: ALL
Pruning VLANs Enabled: 2-1001

Protected: false

Voice VLAN: none (Inactive)
Appliance trust: none
Cat2950#
```

Catalyst 6500 Cisco IOS软件

```
Cat6500#show etherchannel port-channel
Channel-group listing:
----------------------
```

```
Group: 1
----------
Port-channels in the group:
----------------------

Port-channel: Po1
------------

Age of the Port-channel   = 01d:08h:25m:07s
Logical slot/port   = 14/1          Number of ports = 4
GC                  = 0x00010001      HotStandBy port = null
Port state          = Port-channel Ag-Inuse

Ports in the Port-channel:

Index   Load   Port    EC state
------+------+------+------------
1     11     Fa4/2    desirable-SL
3     22     Fa4/3    desirable-SL
0     44     Fa4/4    desirable-SL
2     88     Fa4/5    desirable-SL

Time since last port bundled:    00d:00h:09m:53s    Fa4/3
Time since last port UN-bundled: 00d:00h:09m:56s    Fa4/5

Cat6500#
```

Troubleshoot

使用本部分可排除配置故障。

数据流在802.1Q中继不通过

这些原因之一能导致问题：

- **有在被连接在两交换机之间的端口的本地VLAN配置不匹配。**验证在两交换机的本地VLAN配置。发出**show trunk命令**在CatOS交换机为了发现本地VLAN设置。发出*show interface interface_id switchport命令*在XL环交换机为了发现本地VLAN设置。如果有两交换机之间的本地VLAN不匹配，请用同样本地VLAN配置交换机。发出**switchport trunk native VLAN接口**配置命令为了更改在XL环交换机的本地VLAN。发出**set vlan命令**为了更改在CatOS交换机的本地VLAN。
- **XL环交换机不支持DTP帧。**CatOS交换机发送在中继链接的DTP帧，但是XL环交换机不支持DTP帧。XL环交换机不支持DTP。为了避免此问题，请设置CatOS交换机端口状态对没有协商。发出*set trunk mod/port nonegotiate dot1q命令*为了设置中继模式为dot1q中继模式的nonegotiate。
- **有在XL环交换机的封装不匹配。**在XL环交换机上，请验证中继线封装设置为dot1q。发出*show interface interface_id switchport命令*为了发现当前设置。发出interface configuration命令**交换端口Trunk的encapsulation dot1q**为了更改封装到dot1q。
- **CatOS的一个更早版本不支持dot1q Trunking。**在交换机使用CatOS的更早版本不支持dot1q Trunking。升级交换机的CatOS到支持dot1q Trunk和ISL中继线的一个最新版本。

Related Information

- *创建配置交换端口的EtherChannel端口组*
- *VLAN中继如何工作*配置VLAN
- 配置EtherChannel
- 配置EtherChannel
- 配置用于第 2 层交换的 LAN 端口
- 了解和配置 EtherChannel
- 配置第2层以太网接口
- LAN 产品支持页
- LAN 交换技术支持页
- Technical Support & Documentation - Cisco Systems