

使用基於Catalyst 2948G-L3s和CatOS的交換機配置EtherChannel和802.1Q中繼

目錄

[簡介](#)

[必要條件](#)

[需求](#)

[採用元件](#)

[慣例](#)

[背景理論](#)

[設定](#)

[網路圖表](#)

[組態](#)

[驗證](#)

[Catalyst 2948G show命令](#)

[Catalyst 2948G-L3 show命令](#)

[疑難排解](#)

[相關資訊](#)

簡介

本文討論並提供執行Cisco IOS®軟體的Catalyst 2948G-L3交換器與執行CatalystOS的交換器（所有型號，包括Catalyst 4000、5000和6000系列交換器）之間快速EtherChannel(FEC)和802.1Q主幹組態範例。

必要條件

需求

有關支援802.1Q和ISL中繼封裝的Catalyst交換機的清單，請參閱[實施中繼的系統要求](#)。

EtherChannel和中繼的配置遵循特定准則。請參閱您的交換器軟體的檔案。例如，如果您在Catalyst 6500/6000上執行Catalyst OS(CatOS)軟體版本8.2.x，請參閱[Catalyst 6500系列軟體組態設定指南8.2](#)，並仔細檢查[設定乙太網路VLAN主幹](#)和[設定EtherChannel](#)一節中的任何組態原則及限制。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- 已安裝CatOS 7.1.2的Catalyst 2948G（僅限802.1Q）

- 已安裝Cisco IOS軟體版本12.0(14)W5(20)的Catalyst 2948G-L3

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除 (預設) 的組態來啟動。如果您的網路正在作用，請確保您已瞭解任何指令可能造成的影響。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

背景理論

使用EtherChannel可提供更高的頻寬和備援。EtherChannel非常方便，因為它可以擴展頻寬，而不會增加設計的複雜性。跨距樹狀目錄將EtherChannel套件視為單一連結，因此不會匯入回圈。路由協定還將EtherChannel視為具有公用IP地址的單個路由介面。EtherChannel捆綁提供高達1600 Mbps FEC (快速EtherChannel)、全雙工或16 Gbps Gigabit EtherChannel(GEC)。中繼通過兩台裝置之間的點對點鏈路傳輸來自多個VLAN的流量。中繼的兩種方法是交換機間鏈路協定 (ISL , 思科專有協定) 或802.1Q (IEEE標準)。本文檔專門介紹802.1Q中繼。

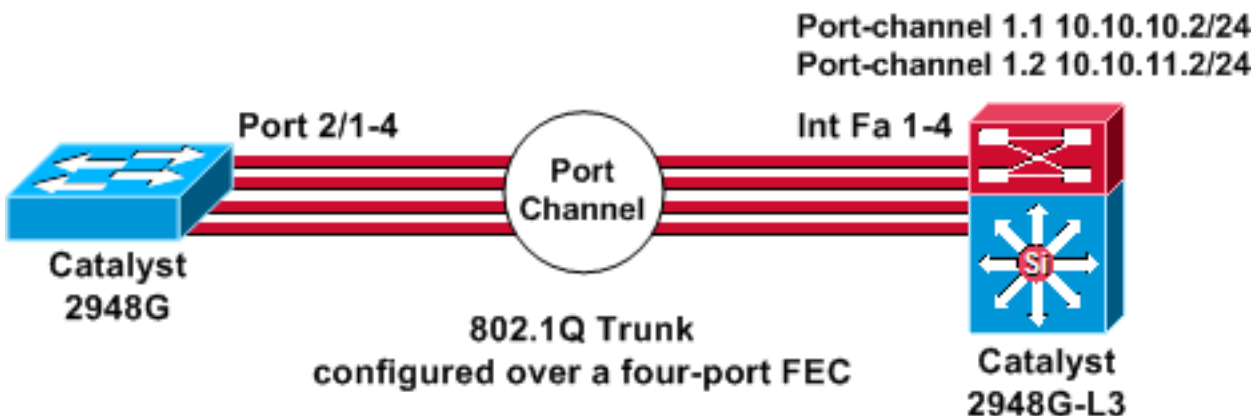
設定

在本節中，顯示的配置將包括2948G-L3和CatOS交換機之間的四埠FEC和802.1Q中繼。

注意：要查詢有關本文檔中命令的其他資訊，請使用[命令查詢工具](#)(僅限註冊客戶)。

網路圖表

本檔案會使用以下網路設定：



組態

本檔案會使用以下設定：

- [Catalyst 2948G](#)
- [Catalyst 2948G-L3](#)

Catalyst 2948G

```
CatOS (enable) show config
```

This command shows non-default configurations only.
Use 'show config all' to show both default and non-
default configurations.

```
.....  
.....  
..  
  
begin  
!  
# ***** NON-DEFAULT CONFIGURATION *****  
!  
!  
#time: Thu Nov 21 2002, 15:24:27  
!  
#version 7.1(2)  
!  
!  
#system web interface version(s)  
set prompt CatOS  
!  
#test  
!  
#frame distribution method  
set port channel all distribution mac both  
!  
#ip  
set interface sc0 1 10.10.10.1/255.255.255.0  
10.10.10.255  
set interface sl0 down  
set interface me1 down  
set ip alias default          0.0.0.0  
set ip alias cat              10.10.10.2  
!  
#spantree  
#vlan                          <VlanID>  
!  
#set boot command  
set boot config-register 0x2102  
clear boot system all  
!  
!--- Ports 2/1 to 2/4 are assigned to a port channel.  
#port channel set port channel 2/1-4 29 ! #multicast  
filter set igmp filter disable ! #module 1 : 0-port  
Switching Supervisor ! !--- The trunking mode is  
specified as 802.1Q, because it !--- is the only  
encapsulation that is supported on the !--- 2948G. The  
mode is set to nonegotiate, because the !--- 2948G-L3  
does not support Dynamic Trunking Protocol (DTP).  
  
#module 2 : 50-port 10/100/1000 Ethernet  
set trunk 2/1 nonegotiate 802.1Q 1-1005  
set trunk 2/2 nonegotiate 802.1Q 1-1005  
set trunk 2/3 nonegotiate 802.1Q 1-1005  
set trunk 2/4 nonegotiate 802.1Q 1-1005  
!--- The channel mode is set to on, because 2948G-L3 !--  
- does not support Port Aggregation Protocol (PAgP).  
  
set port channel 2/1-4 mode on  
end
```

```

2948G-L3# 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 2948G-L3
!
enable secret 5 $1$bNvR$33puy1WCyrdKMvlnj6lJs.
!
ip subnet-zero
!
!
!--- The logical port-channel interface must be created
!--- before you put the physical interfaces into the !--
- channel group.interface port-channel1. no ip address
no ip directed-broadcast hold-queue 300 in ! !---
Specify the native VLAN: VLAN 1 in this example, !---
which is the default. For performance and security !---
reasons, it is recommended that you keep the user !---
traffic off of the native or management VLAN. interface
Port-channel1.1 encapsulation 802.1Q 1 native ip address
10.10.10.2 255.255.255.0 no ip redirects no ip directed-
broadcast ! interface Port-channel1.2 encapsulation
802.1Q 2 ip address 10.10.11.2 255.255.255.0 no ip
directed-broadcast ! !--- Specify all of the physical
ports that are part !--- of the logical port channel
interface. interface FastEthernet1 no ip address no ip
directed-broadcast channel-group 1 ! interface
FastEthernet2 no ip address no ip directed-broadcast
channel-group 1 ! interface FastEthernet3 no ip address
no ip directed-broadcast channel-group 1 ! interface
FastEthernet4 no ip address no ip directed-broadcast
channel-group 1 ! !--- Output suppressed. ! ip classless
! ! line con 0 transport input none line aux 0 line vty
0 4 password cisco login ! end

```

驗證

本節提供的資訊用於確認您的組態是否正常運作。

Catalyst 2948G show命令

- **show port channel** — 顯示EtherChannel資訊。它還顯示負載均衡或幀分配方案、埠和埠通道資訊。

!--- Verify that the port channel is UP (connected, on) and that !--- all the physical ports are members (channel ID). CatOS (enable) **show port channel**

Port	Status	Channel Mode	Admin Ch Group Id
-----	-----	-----	-----

```

2/1 connected on 29 801
2/2 connected on 29 801
2/3 connected on 29 801
2/4 connected on 29 801
Port Device-ID Port-ID Platform
-----
2/1 2948G-L3 FastEthernet1 cisco Cat2948G
2/2 Not directly connected to switch
2/3 2948G-L3 FastEthernet3 cisco Cat2948G
2/4 2948G-L3 FastEthernet4 cisco Cat2948G

```

註：連線埠2/2不直接連線到交換器是非常正常的。在連線到路由器的交換器上，**show port channel**命令的輸出通常如下例所示。由於路由器不參與PAgP（用於協商通道）且通道已開啟，因此連線埠會使用思科探索通訊協定(CDP)資料顯示FEC鄰居資訊。Cisco IOS軟體在通道介面和物理介面上傳送CDP資料包。其中一個Catalyst埠看到多個CDP鄰居，並且報告。這是一個表面問題，更多資訊請參閱[Cisco錯誤ID CSCdp04017](#)(僅限註冊客戶)。

- **show port channel statistics** — 顯示埠通道的管理組並顯示埠通道上是否正在使用PAgP。檢驗鏈路上是否未使用PAgP。

CatOS (enable) **show port channel status**

```

Port Admin PAgP Pkts PAgP Pkts PAgP Pkts PAgP Pkts PAgP Pkts PAgP Pkts
      Group Transmitted Received InFlush RetnFlush OutFlush InError
-----
2/1 29 0 0 0 0 0 0
2/2 29 0 0 0 0 0 0
2/3 29 0 0 0 0 0 0
2/4 29 0 0 0 0 0 0

```

- **show trunk** — 顯示中繼模式、封裝和本地VLAN。檢驗物理介面和埠通道介面上是否已啟用中繼。此外，驗證是否已正確將中繼模式設定為nonegotiate。**注意：**在802.1Q中繼上，兩端的本徵VLAN必須匹配。

CatOS (enable) **show trunk**

```

* - indicates vtp domain mismatch
Port Mode Encapsulation Status Native vlan
-----
2/1 nonegotiate 802.1Q trunking 1
2/2 nonegotiate 802.1Q trunking 1
2/3 nonegotiate 802.1Q trunking 1
2/4 nonegotiate 802.1Q trunking 1
Port Vlans allowed on trunk
-----
2/1 1-1005
2/2 1-1005
2/3 1-1005
2/4 1-1005
Port Vlans allowed and active in management domain
-----
2/1 1
2/2 1
2/3 1
2/4 1
Port Vlans in spanning tree forwarding state and not pruned
-----
2/1 1
2/2 1
2/3 1
2/4 1

```

- **show interfaces port-channel 1** — 提供連線埠通道的狀態以及作為連線埠通道組成員的連線埠。驗證作為EtherChannel一部分的所有物理介面是否可以視為成員。

```
2948G-L3# show interfaces port-channel 1
```

```
Port-channel1 is up, line protocol is up
Hardware is FEChannel, address is 0008.a308.1c07 (bia 0000.0000.0000)
MTU 1500 bytes, BW 400000 Kbit, DLY 100 usec, rely 255/255, load 1/255
Encapsulation ARPA, loopback not set, keepalive set (10 sec)
Half-duplex, Unknown Speed, Media type unknown
ARP type: ARPA, ARP Timeout 04:00:00
  No. of active members in this channel: 4
    Member 0 : FastEthernet2
    Member 1 : FastEthernet1
    Member 2 : FastEthernet4
    Member 3 : FastEthernet3
Last input 00:00:00, output 00:00:55, output hang never
Last clearing of "show interface" counters never
Queueing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/300, 0 drops
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  596128 packets input, 50714549 bytes, 0 no buffer
  Received 7 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  0 watchdog, 0 multicast
  0 input packets with dribble condition detected
44294 packets output, 17498215 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 babbles, 0 late collision, 0 deferred
  0 lost carrier, 0 no carrier
  0 output buffer failures, 0 output buffers swapped out
```

- **show cdp neighbor** — 列出通過CDP發現的所有直連Cisco裝置。確認另一端上的交換機通過所有物理埠可見。

```
2948G-L3# 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
JAB032400H2      Port-channel1.1 126        T S          WS-C2948   2/3
JAB032400H2      Port-channel1.1 124        T S          WS-C2948   2/4
JAB032400H2      Port-channel1.1 123        T S          WS-C2948   2/1
JAB032400H2      Port-channel1.1 123        T S          WS-C2948   2/2
```

[疑難排解](#)

目前尚無適用於此組態的具體疑難排解資訊。

[相關資訊](#)

- [在CatOS交換機和外部路由器之間配置ISL和802.1q中繼 \(InterVLAN路由 \)](#)
- [Catalyst 2948G-L3示例配置 — 連線到網路核心的單VLAN、多VLAN和多VLAN分佈層](#)
- [Catalyst 2948G-L3/4908G-L3系列交換機的硬體故障排除](#)
- [LAN 產品支援](#)
- [LAN 交換技術支援](#)
- [技術支援與文件 - Cisco Systems](#)