

在 Catalyst 2948G-L3 与基于 CatOS 的交换机之间配置 EtherChannel 和 802.1Q 中继

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简介

本文讨论并且提供运行Cisco IOS软件和交换机运行CatalystOS快速以太通道(FEC)和802.1q中继的配置示例，在Catalyst 2948G-L3交换机之间(所有型号，包括Catalyst 4000、5000及6000系列交换机)。

先决条件

要求

支持802.1Q和ISL中继封装Catalyst交换机的列表，参考的[系统要求实现中继](#)。

有EtherChannel和中继的配置的某些指南。参考您的交换机软件的文档。例如，如果运行在Catalyst 6500/6000的CatalystOS (CatOS)软件版本8.2.x，参考[Catalyst 6500系列软件配置指南](#)，[8.2](#)和认真地检查所有配置指南和限制在[配置的以太网VLAN中继](#)和[配置EtherChannel](#)部分。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Catalyst 2948G用已安装的CatOS 7.1.2 (仅802.1Q)
- Catalyst 2948G-L3用12.0(14)W5(20)安装的Cisco IOS软件版本

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](#)。

背景理论

使用EtherChannel能提供增加的带宽和冗余。因为扩展带宽，不用在设计的复杂性的，任何增加EtherChannel是方便的。生成树对待EtherChannel套件作为单条链路，因此环路没有介绍。路由协议也对待EtherChannel作为与一个普通的IP地址的单个路由接口。以太网信道包提供至1600 Mbps FEC (快速以太信道)，全双工或者16 Gbps千兆以太网通道(GEC)。中继是指在二个设备之间的点到点链路上传输来自多个 VLAN 的数据流。中继两个方法是Inter-Switch Link (ISL)协议(ISL，Cisco专有协议)或802.1Q (IEEE标准)。本文档专门讨论 802.1q 中继。

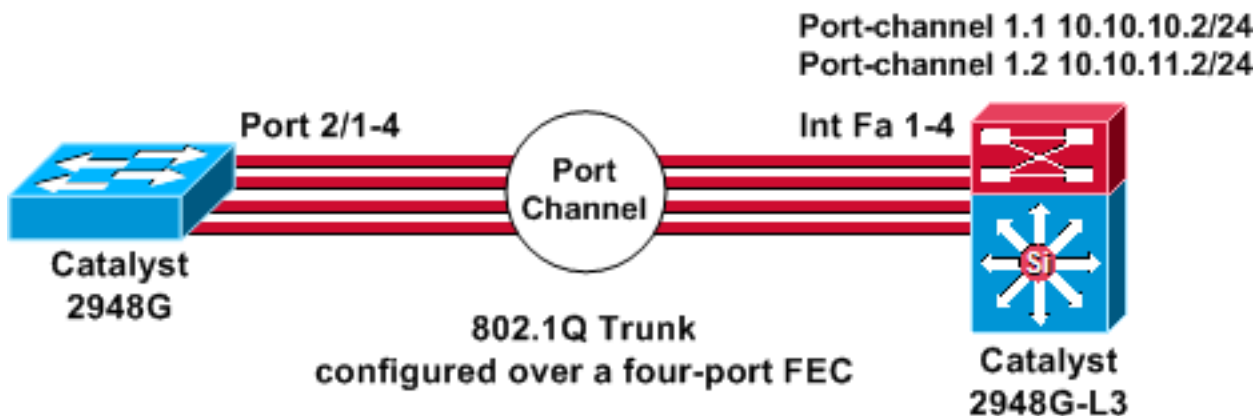
配置

在此部分，被提交的配置将包括四端口FEC和802.1Q中继在2948G-L3和CatOS交换机之间。

注意： 要寻找关于本文中指令的其他信息，请使用[命令查找工具\(注册用户\)](#)。

网络图

本文档使用以下网络设置：



配置

本文档使用以下配置：

- [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

```

Catalyst 2948G-L3

```
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$33puy1WCyrdKMvlnj61Js.
!
ip subnet-zero
!
!
!--- The logical port-channel interface must be created
!--- before you put the physical interfaces into the !--
- channel group.interface port-channell1. 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-channell1 encapsulation 802.1Q 1 native ip address
10.10.10.2 255.255.255.0 no ip redirects no ip directed-
broadcast ! interface Port-channell2 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

```

验证

此部分提供信息确认您的配置适当地工作。

Catalyst 2948G显示命令

- **show port channel** —显示EtherChannel信息。它也显示负载均衡或帧分配方案、端口和Port-Channel信息。

!--- 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	Ch Id	Platform
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

```

注意：不直接地连接对交换机端口2/2是相当正常的。输出**show port channel**命令在连接到路由器的交换机通常看似类似此示例。由于路由器不参与Pagp (用于协商信道), 并且开辟, 使用思科设备发现协议 (CDP)数据, 端口显示FEC邻居信息。Cisco IOS软件派出在信道接口和物理接口的CDP数据包。其中一Catalyst端口看到广泛CDP邻居并且报告不。这是表面问题, 并且更多信息是可用的在[Cisco Bug ID CSCdp04017 \(仅限注册用户\)](#)。

- **show port channel**统计显示端口通道和显示的Admin group Pagp是否是在使用中的在端口通道。验证Pagp不是在使用中的在链路。CatOS (enable) **show port channel status**

```

Port Admin   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** —显示中继模式、封装和本地VLAN。验证建立中继启用在物理接口和在端口通道接口。并且, 请验证中继模式正确地设置为nonegotiate。**注意：**在802.1Q中继, 本地VLAN在两边必须配比。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

```

[Catalyst 2948G-L3 show 命令](#)

- **show interfaces port-channel 1** —提供是端口通道组的成员端口通道和端口的状态。验证是EtherChannel的部分的所有物理接口能被看到作为成员。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** —列出通过CDP发现的所有直接地连接的Cisco设备。验证在另一端的交换机通过所有物理端口是可视。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-channell.1	126	T S	WS-C2948	2/3
JAB032400H2	Port-channell.1	124	T S	WS-C2948	2/4
JAB032400H2	Port-channell.1	123	T S	WS-C2948	2/1
JAB032400H2	Port-channell.1	123	T S	WS-C2948	2/2

故障排除

目前没有针对此配置的故障排除信息。

相关信息

- [在 CatOS 交换机与外部路由器之间配置 ISL 与 802.1q Trunking \(VLAN 间路由 \)](#)
- [Catalyst 2948G-L3 配置示例 - 单 VLAN，多个VLAN和连接到网络核心的多个VLAN的分配层](#)
- [Catalyst 2948g-L3/4908g-L3 系列交换机硬件故障排除](#)
- [LAN 产品支持](#)
- [LAN 交换技术支持](#)
- [技术支持和文档 - Cisco Systems](#)