在 CatOS 交换机与外部路由器之间配置 FEC 与 ISL/802.1q 聚合

目录

简介

运行CatalystOS的本文为快速以太通道(FEC)、交换机间链路(ISL)和802.1q中继提供配置示例在Catalyst 6500交换机之间(CatOS)和Cisco 7500路由器。执行命令时，每个命令的结果都将显示出来。虽然Catalyst 6000交换机用于此配置，运行CatOS的您可能替代Catalyst 4000或Catalyst 5000系列交换机。

先决条件

要求

尝试进行此配置之前，请确保满足以下要求：

- Catalyst 6000 系列交换机CatOS版本5.1(1) CSX或以后要求支持EtherChannel
- Cisco 7000或7500系列路由器有7000系列路由交换机处理器(RSP7000)或机箱接口的(RSP7000CI)思科7000系列路由器，或者思科7500系列路由器用高速以太网接口处理器(FEIP)或通用接口处理器(VIP2)端口适配器如果使用PA-2FEISL端口适配器，您必须有硬件修订版1.2或以上。有关此问题的示例，请参阅 Field Notice：*Expired* FN - 8791_11301999 - PA-2FEISL 2端口快速以太网ISL替换建议欲知更多信息。**encapsulation dot1Q native命令**在

Cisco IOS软件版本12.1(3) T.介绍。此命令更改配置。早于12.1(3)T本文的部分请参阅Cisco 7500 802.1Q配置关于Cisco IOS软件版本欲知更多信息。默认情况下Cisco快速转发在思科7500系列路由器启用。然而， IP路由的Cisco快速转发支持在IEEE 802.1Q VLAN之间不是可用的直到Cisco IOS软件版本12.2和12.2T。配置在上一个版本的802.1Q封装是可能的，但是您必须首先发出global no ip cef命令禁用Cisco快速转发。当7500系列路由器为多协议标签交换(MPLS)和FEC时配置，支持对路由(MPLS “IP)从MPLS接口流到FEC接口的数据包是目前不可用的。所以，没有推荐MPLS和FEC配置在单个路由器共存。Cisco IOS软件版本11.1(14)CA或以后要求支持EtherChannel。Cisco IOS软件版本11.3(1)T (其中任一加上特性组)或以后要求支持ISL中继。Cisco IOS软件版本12.0(1)T (其中任一加上特性组)或以后要求支持IEEE 802.1Q建立中继。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- 运行CatOS版本5.5.14的Catalyst 6500
- 运行Cisco IOS软件版本12.2.7b的Cisco 7500

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。

重要说明

- 记住Catalyst 4000系列交换机不支持ISL中继。另外，在Catalyst 5000系列交换机的一些交换模块不是有能力的EtherChannel。发出*show port capabilities module命令*确定特定模块是否是有能力的EtherChannel，并且什么中继封装支持。
- 有EtherChannel和中继的配置的某些指南。总是参考您的交换机软件文档。例如，如果运行在Catalyst 5000的软件版本5.5.x，您会参考软件配置指南(5.5)和认真地检查所有配置指南和限制在配置的快速以太信道和千兆EtherChannel部分。

EtherChannel

FEC或千兆以太网通道(GEC)功能允许将被捆绑的多条点对点链路到一个逻辑链接。Catalyst 6000支持最多全双工模式的八个端口，提供1600 Mbps或1.6 Gbps吞吐量FEC的和16 Gbps GEC的。Cisco 7500系列支持最多每个FEC四个端口， 800 Mbps的。EtherChannel功能和性能根据交换机或路由器是不同的。参考的系统要求实现在Catalyst交换机的EtherChannel欲知更多信息。

如果一个或更多链路发生故障， EtherChannel分发在所有的流量链路间并且提供冗余。参考了解在Catalyst交换机的EtherChannel负载平衡和冗余 欲知更多信息和配置示例与EtherChannel涉及。

参考思科技术支持&文档EtherChannel页欲知更多信息。

建立中继

中继是方式运载从多个VLAN的流量在一条点对点链路或一个EtherChannel套件在两个设备之间。这些是以太网中继可以实现的两种方式：

- ISL (思科所有权中继线封装)
- 802.1Q (IEEE标准中继线封装)

参考思科技术支持&文档VLAN中继协议页欲知更多信息。

规则

有关文档规则的详细信息，请参阅 Cisco 技术提示规则。

配置

本部分提供有关如何配置本文档所述功能的信息。

注意： 有关本文档所用命令的详细信息，请使用命令查找工具（仅限注册用户）。

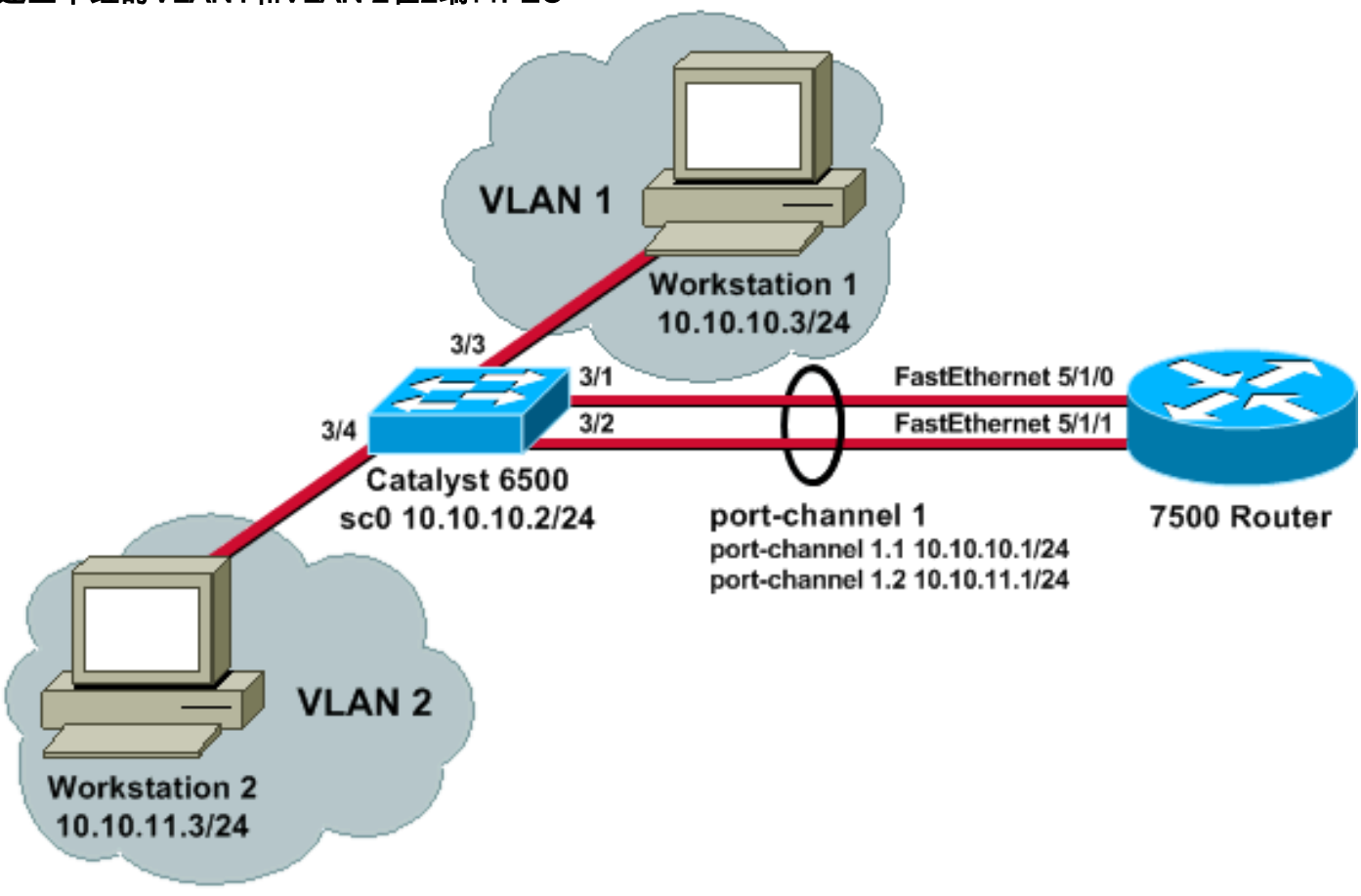
这些配置示例显示您如何做这些事：

- 配置两个接入端口在VLAN1的Workstation1的和在VLAN 2的Workstation2的在Catalyst 6500。
- 配置默认网关Workstation1的能是10.10.10.1 /24和是的Workstation2的能10.10.11.1/24在Cisco 7500。
- 配置ISL和802.1q中继在两端口的FEC在Catalyst 6500交换机和Cisco 7500路由器之间。
- 配置两个端口信道子接口用InterVLAN路由的IP地址。

网络图

本文档使用以下网络设置：

建立中继的VLAN1和VLAN 2在2端口FEC



配置

本文档使用以下配置：

- Catalyst 6500 交换机
- Cisco 7500 路由器
- Cisco 7500 Cisco IOS软件版本的802.1Q配置早于12.1(3)T

Catalyst 6500 交换机

```
!--- Set the IP address and default gateway for VLAN 1
for management purposes. Catalyst6500> (enable) set
interface sc0 10.10.10.2 255.255.255.0 Interface sc0 IP
address and netmask set. Catalyst6500> (enable) set ip
route default 10.10.10.1 Route added. !--- Set the VTP
mode. In this example, the mode is set to be
transparent. Depending on your !--- network, set the VTP
mode accordingly. !--- For details on VTP, refer to
Understanding and Configuring VLAN Trunk Protocol (VTP).
Catalyst6500> (enable) set vtp mode transparent VTP
domain modified !--- Add VLAN 2. VLAN 1 already exists
by default. Catalyst6500> (enable) set vlan 2 VLAN 2
configuration successful !--- Add port 3/4 to VLAN 2.
Port 3/3 is already in VLAN 1 by default. Catalyst6500>
(enable) set vlan 2 3/4 VLAN 2 modified. VLAN 1
modified. VLAN Mod/Ports ---- ---------------------- 2
3/4 !--- Set the port speed to 100 and duplex to full.
One of the requirements for EtherChannel !--- to work is
for speed and duplex to be the same on both sides. To
guarantee this, hard !--- code both speed and duplex on
ports 3/1 and 3/2. Catalyst6500> (enable) set port speed
3/1-2 100 Ports 3/1-2 transmission speed set to 100Mbps.
Catalyst6500> (enable) set port duplex 3/1-2 full Ports
3/1-2 set to full-duplex. !--- Enable FEC on ports 3/1
and 3/2. Because routers do not understand Port
Aggregation !--- Protocol (PAgP), set the channel mode
to one which causes ports to channel but which !--- does
not generate PAgP frames. Catalyst6500> (enable) set
port channel 3/1-2 on Port(s) 3/1-2 are assigned to
admin group 105. Port(s) 3/1-2 channel mode set to on.
!--- Enable trunking on ports 3/1 and 3/2. Because
routers do not understand Dynamic !--- Trunking Protocol
(DTP), set the trunking mode to nonegotiate, which
causes ports to !--- trunk but which does not generate
DTP frames. !--- Note: Because EtherChannel is
configured first, any trunk settings that are applied !-
-- now to one port automatically apply to all other
ports in the channel. !--- Enter the trunking
encapsulation as either ISL… Catalyst6500> (enable) set
trunk 3/1 nonegotiate isl Port(s) 3/1-2 trunk mode set
to nonegotiate. Port(s) 3/1-2 trunk type set to isl. !--
- …or as dot1q. !--- Ensure that the native VLAN
(default is VLAN 1) matches across the link. For more !-
-- information about the native VLAN and 802.1Q
trunking, refer to Trunking Between !--- Catalyst
4500/4000, 5500/5000, and 6500/6000 Series Switches
Using 802.1Q !--- Encapsulation with Cisco CatOS System
Software. Catalyst6500> (enable) set trunk 3/1
nonegotiate dot1q Port(s) 3/1-2 trunk mode set to
nonegotiate. Port(s) 3/1-2 trunk type set to dot1q.
Catalyst6500> (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 May 2 2002, 01:26:26 ! #version 5.5(14) ! ! #system set system name Catalyst6500 ! #! #vtp **set vtp mode transparent** set vlan 1 name default type ethernet mtu 1500 said 100001 state active **set vlan 2** name VLAN0002 type ethernet mtu 1500 said 100002 state active set vlan 1002 name fddi-default type fddi mtu 1500 said 101002 state active set vlan 1004 name fddinet-default type fddinet mtu 1500 said 101004 state active stp ieee set vlan 1005 name trnet-default type trbrf mtu 1500 said 101005 state active stp ibm set vlan 1003 name token-ring-default type trcrf mtu 1500 said 101003 state active mode srb aremaxhop 7 stemaxhop 7 backupcrf off ! #ip **set interface sc0 1 10.10.10.2/255.255.255.0 10.10.10.255 set ip route 0.0.0.0/0.0.0.0 10.10.10.1** ! #set boot command set boot config-register 0x2102 set boot system flash bootflash:cat6000-sup.5-5-14.bin ! #port channel **set port channel 3/1-2 105** ! # default port status is enable ! ! #module 1 empty ! #module 2 : 2-port 1000BaseX Supervisor ! #module 3 : 48-port 10/100BaseTX Ethernet **set vlan 2 3/4** set port disable 3/5 **set port speed 3/1-2 100 set port duplex 3/1-2 full set trunk 3/1 nonegotiate isl 1-1005 set trunk 3/2 nonegotiate isl 1-1005** *!--- If IEEE 802.1Q is configured, you will see this output instead:* ***set trunk 3/1 nonegotiate dot1q 1-1005 set trunk 3/2 nonegotiate dot1q 1-1005*** set port channel 3/1-2 mode on ! #module 4 : 24-port 100BaseFX MM Ethernet ! #module 5 empty ! #module 6 empty ! #module 15 empty ! #module 16 empty end

Cisco 7500 路由器

!--- Configure a port-channel interface to enable FEC. 7500# **configure terminal** Enter configuration commands, one per line. End with CNTL/Z. 7500(config)# **interface port-channel 1** 01:34:10: %LINEPROTO-5-UPDOWN: Line protocol on Interface Port-channel1, changed state to down *!--- Configure full-duplex to match the duplex setting on the Catalyst switch side.* 7500(config-if)# **full-duplex** 7500(config-if)# **exit** *!--- If you are using ISL trunking, configure two port-channel sub-interfaces and issue the !---* ***encapsulation isl <VLAN>*** *command to enable ISL trunking. !--- Configure IP addresses for InterVLAN routing.* 7500(config)# **interface port-channel 1.1** 7500(config-subif)# **encapsulation isl 1** 7500(config-subif)# **ip address 10.10.10.1 255.255.255.0** 7500(config-subif)# **exit** 7500(config)# **interface port-channel 1.2** 7500(config-subif)# **encapsulation isl 2** 7500(config-subif)# **ip address 10.10.11.1 255.255.255.0** 7500(config-subif)# **exit** *!--- If you are using 802.1Q trunking, issue the* ***encapsulation dot1Q <vlan> native*** *!--- command to configure two port-channel sub-interfaces and enable 802.1Q trunking. !--- Configure the IP addresses for InterVLAN routing. !---* ***Note:*** *The* ***encapsulation dot1Q 1 native*** *command was added in Cisco IOS Software !--- Release 12.1(3)T. If you are using an earlier version of Cisco IOS, see the !--- Cisco 7500 802.1Q Configuration for Cisco IOS Software Releases Earlier than 12.1(3)T !-- section of this document, to configure 802.1Q trunking on the router. !--- Ensure that the native VLAN (default is VLAN 1) matches across the link. For more !-*

```
-- information about the native VLAN and 802.1Q
trunking, refer to Trunking Between !--- Catalyst
4500/4000, 5500/5000, and 6500/6000 Series Switches
Using 802.1Q !--- Encapsulation with Cisco CatOS System
Software. 7500(config)# interface port-channel 1.1
7500(config-subif)# encapsulation dot1Q 1 native
7500(config-subif)# ip address 10.10.10.1 255.255.255.0
7500(config-subif)# exit 7500(config)# interface port-
channel 1.2 7500(config-subif)# encapsulation dot1Q 2
7500(config-subif)# ip address 10.10.11.1 255.255.255.0
7500(config-subif)# exit !--- Configure the FastEthernet
interfaces for speed 100, depending on the port adapter.
!--- Some FastEthernet port adapters can autonegotiate
speed (10 or 100) and duplex (half !--- or full). Others
are only capable of 100 (half or full). 7500(config)#
interface fastethernet 5/1/0 7500(config-if)# speed 100
!--- Issue the channel-group command, to configure the
FastEthernet interfaces to be !--- members of port-
channel 1. 7500(config-if)# channel-group 1 %Interface
MTU set to channel-group MTU 1500. 7500(config-if)# no
shut 7500(config-if)# %Interface MTU set to channel-
group MTU 1500. FastEthernet5/1/0 added as member-1 to
port-channel1 01:46:09: %LINK-3-UPDOWN: Interface
FastEthernet5/1/0, changed state to up 01:46:10:
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet5/1/0, changed state to up 01:46:12:
%LINEPROTO-5-UPDOWN: Line protocol on Interface Port-
channel1, changed state to up Router(config-if)# exit
Router(config)# interface fastethernet 5/1/1
Router(config-if)# speed 100 Router(config-if)# channel-
group 1 %Interface MTU set to channel-group MTU 1500.
Router(config-if)# no shut Router(config-if)# %Interface
MTU set to channel-group MTU 1500. FastEthernet5/1/1
added as member-2 to port-channel1 01:54:52: %LINK-3-
UPDOWN: Interface FastEthernet5/1/1, changed state to up
01:54:53: %LINEPROTO-5-UPDOWN: Line protocol on
Interface FastEthernet5/1/1, changed state to up
Router(config-if)# exit !--- Remember to save the
configuration. 7500# write memory Building
configuration... [OK] 7500# !--- Note: To make this
setup work and to successfully ping between Workstation
1 and !--- Workstation 2, you must ensure that the
default gateways on the workstations are setup !---
properly. For Workstation 1, the default gateway should
be 10.10.10.1; and for !--- Workstation 2, the default
gateway should be 10.10.11.1. 7500# show running-config
Building configuration... Current configuration : 1593
bytes ! version 12.2 no service pad service timestamps
debug uptime service timestamps log uptime no service
password-encryption no service single-slot-reload-enable
! hostname 7500 ! boot system disk1:rsp-jsv-mz.122-
7b.bin ! ip subnet-zero ! ip cef call rsvp-sync ! ! !
interface Port-channel1 no ip address full-duplex hold-
queue 300 in ! interface Port-channel1.1 encapsulation
isl 1 ip address 10.10.10.1 255.255.255.0 ! interface
Port-channel1.2 encapsulation isl 2 ip address
10.10.11.1 255.255.255.0 !--- If 802.1Q trunking is
configured, you will see this output instead: interface
Port-channel1.1 encapsulation dot1Q 1 native ip address
10.10.10.1 255.255.255.0 ! interface Port-channel1.2
encapsulation dot1Q 2 ip address 10.10.11.1
255.255.255.0 ! interface FastEthernet5/1/0 no ip
address no ip mroute-cache speed 100 full-duplex
channel-group 1 ! interface FastEthernet5/1/1 no ip
```

```
address no ip mroute-cache speed 100 full-duplex
channel-group 1 ! ! ip classless no ip http server ip
pim bidir-enable ! ! ! ! line con 0 line aux 0 line vty
0 4 login ! end
```

Cisco 7500 Cisco IOS软件版本的802.1Q配置早于12.1(3)T

在Cisco IOS版本中早于12.1(3)T， **encapsulation dot1Q 1 native命令**在子接口下不是可用的。然而，匹配在链路间的本地VLAN如以前描述是仍然必要的。要配置在软件版本的802.1q中继早于12.1(3)T，请配置VLAN1的IP地址在主要端口信道1接口，不是端口信道子接口。

```
!--- Configure a port-channel interface to enable FEC.
7500# configure terminal Enter configuration commands,
one per line. End with CNTL/Z. 7500(config)# interface
port-channel 1 01:34:10: %LINEPROTO-5-UPDOWN: Line
protocol on Interface Port-channel1, changed state to
down !--- Configure full-duplex to match the duplex
setting on the Catalyst switch side. 7500(config-if)#
full-duplex 7500(config-if)# exit !--- Do not configure
an interface port-channel 1.1 !--- Instead, create a
port-channel 1 main interface and configure the IP
address !--- for VLAN 1 here. 7500(config)# interface
port-channel 1 7500(config-if)# full-duplex 7500(config-
if)# ip address 10.10.10.1 255.255.255.0 7500(config-
if)# exit 7500(config)# !--- It is still necessary to
create a subinterface for VLAN 2. 7500(config)#
interface port-channel 1.2 7500(config-subif)#
encapsulation dot1Q 2 7500(config-subif)# ip address
10.10.11.1 255.255.255.0 7500(config-subif)# exit !---
Configure the FastEthernet interfaces for speed 100,
depending on the port adapter. !--- Some FastEthernet
port adapters can autonegotiate speed (10 or 100) and
duplex (half !--- or full). Others are only capable of
100 (half or full). 7500(config)# interface fastethernet
5/1/0 7500(config-if)# speed 100 !--- Issue the channel-
group command to configure the FastEthernet interfaces
to be !--- members of port-channel 1. 7500(config-if)#
channel-group 1 %Interface MTU set to channel-group MTU
1500. 7500(config-if)# no shut 7500(config-if)#
%Interface MTU set to channel-group MTU 1500.
FastEthernet5/1/0 added as member-1 to port-channel1
01:46:09: %LINK-3-UPDOWN: Interface FastEthernet5/1/0,
changed state to up 01:46:10: %LINEPROTO-5-UPDOWN: Line
protocol on Interface FastEthernet5/1/0, changed state
to up 01:46:12: %LINEPROTO-5-UPDOWN: Line protocol on
Interface Port-channel1, changed state to up
Router(config-if)# exit Router(config)# interface
fastethernet 5/1/1 Router(config-if)# speed 100
Router(config-if)# channel-group 1 %Interface MTU set to
channel-group MTU 1500. Router(config-if)# no shut
Router(config-if)# %Interface MTU set to channel-group
MTU 1500. FastEthernet5/1/1 added as member-2 to port-
channel1 01:54:52: %LINK-3-UPDOWN: Interface
FastEthernet5/1/1, changed state to up 01:54:53:
%LINEPROTO-5-UPDOWN: Line protocol on Interface
FastEthernet5/1/1, changed state to up Router(config-
if)# exit !--- Remember to save the configuration. 7500#
write memory Building configuration... [OK] 7500# !---
Note: Remember also that—in any version of software
previous to 12.2 or 12.2T for the !--- 7000/7500
series—you will have to issue the no ip cef command
```

```
globally before you !--- configure 802.1Q trunking on a
subinterface. Otherwise, you will see this error !---
message: 802.1q encapsulation not supported with CEF
configured on the interface. !--- See the Components
Used section of this document for more information.
7500# show running-config Building configuration...
Current configuration : 1593 bytes ! version 12.1 no
service pad service timestamps debug uptime service
timestamps log uptime no service password-encryption !
hostname 7500 ! ! ip subnet-zero ! no ip cef ! ! !
interface Port-channel1 ip address 10.10.10.1
255.255.255.0 full-duplex hold-queue 300 in ! interface
Port-channel1.2 encapsulation dot1Q 2 ip address
10.10.11.1 255.255.255.0 ! interface FastEthernet5/1/0
no ip address no ip mroute-cache speed 100 full-duplex
channel-group 1 ! interface FastEthernet5/1/1 no ip
address no ip mroute-cache speed 100 full-duplex
channel-group 1 ! ! ip classless no ip http server ! ! !
line con 0 line aux 0 line vty 0 4 login ! end 7500#
```

验证

使用本部分可确认配置能否正常运行。

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 6500 show 命令

- **show interface** —显示sc0管理接口IP地址和VLAN。在本例中，使用默认VLAN (VLAN 1)。
  ```
  Catalyst6500> (enable) show interface sl0: flags=51<UP,POINTOPOINT,RUNNING> slip 0.0.0.0
  dest 0.0.0.0 sc0: flags=63<UP,BROADCAST,RUNNING> VLAN 1 inet 10.10.10.2 netmask
  255.255.255.0 broadcast 10.10.10.255 Catalyst6500> (enable)
  ```
- **show ip route** —显示默认网关。在本例中， 10.10.10.1是port-channel1的IP地址(802.1q中继)或的Port-Channel 1.1 (ISL中继)。
  ```
  Catalyst6500> (enable) show ip route Fragmentation
  Redirect Unreachable ------------ -------- ----------- enabled enabled enabled The primary
  gateway: 10.10.10.1 Destination Gateway RouteMask Flags Use Interface --------------- ------
  --------- ---------- ----- -------- --------- default 10.10.10.1 0x0 UG 0 sc0 10.10.10.0
  10.10.10.2 0xffffff00 U 8 sc0 default default 0xff000000 UH 0 sl0 Catalyst6500> (enable)
  ```
- **show port capabilities mod/port** —给在交换模块硬件功能的快速查找。在本例中，您能看到端口3/1 (和3/2)是有能力的EtherChannel，中继封装它支持和其他信息。
  ```
  Catalyst6500> (enable) show port capabilities 3/1 Model WS-X6248-RJ-45 Port 3/1 Type 10/100BaseTX Speed auto,10,100
  Duplex half,full Trunk encap type 802.1q,ISL Trunk mode on,off,desirable,auto,nonegotiate
  Channel yes Broadcast suppression percentage(0-100) Flow control receive-(off,on),send-(off)
  Security yes Membership static,dynamic Fast start yes QOS scheduling rx-(1q4t),tx-(2q2t) CoS
  rewrite yes ToS rewrite DSCP UDLD yes Inline power no AuxiliaryVlan
  1..1000,untagged,dot1p,none SPAN source,destination COPS port group not supported
  Catalyst6500> (enable)
  ```
- **show port counters** *mod*/**端口**—给在可能的端口错误的快速查找。在本例中，此端口免于所有错误。如果经历在端口的错误，参考故障排除交换机端口和接口问题欲知更多信息。
  ```
  Catalyst6500> (enable) show port counters 3/1 Port Align-Err FCS-Err Xmit-Err Rcv-Err
  UnderSize ----- ---------- ---------- ---------- ---------- --------- 3/1 0 0 0 0 0 Port
  Single-Col Multi-Coll Late-Coll Excess-Col Carri-Sen Runs Giants ----- ---------- ---------
  - ---------- ---------- --------- --------- --------- 3/1 0 0 0 0 0 0 - Last-Time-Cleared --
  ------------------------ Thu May 2 2002, 02:11:55 Catalyst6500> (enable)
  ```
- **show port** *mod* —显示端口状态、VLAN、中继和速度和双工信息。在本例中， Workstation1的接入端口是3/3，在VLAN1。Workstation2的接入端口是3/4，是VLAN 2.端口3/1和3/2是中继和

FEC端口。Catalyst6500> (enable) **show port 3** Port Name Status VLAN Duplex Speed Type ----- -------------------- ---------- ---------- ------ ----- ------------ 3/1 connected trunk full 100 10/100BaseTX 3/2 connected trunk full 100 10/100BaseTX 3/3 connected 1 a-half a-10 10/100BaseTX 3/4 connected 2 a-full a-100 10/100BaseTX *!--- Output suppressed.*

- **show VLAN** —显示哪些端口分配到特定VLAN。注意在本例中的中继端口(3/1和3/2)在此输出中没出现，是正常。Catalyst6500> (enable) **show vlan** VLAN Name Status IfIndex Mod/Ports, Vlans ---- -------------------------------- --------- ------- ------------------------ 1 default active 119 2/1-2 3/3,3/5-48 4/1-24 2 VLAN0002 active 124 3/4 *!--- Output suppressed.*
- **show trunk** —显示中继模式、封装类型、允许VLAN和激活VLAN。在本例中，VLAN1 (默认情况下总是允许和激活)和VLAN 2是中继的当前活跃的VLAN。注意两个中继端口在VLAN1。Catalyst6500> (enable) **show trunk** * - indicates vtp domain mismatch Port Mode Encapsulation Status Native vlan -------- ----------- ------------- ------------ ----------- 3/1 **nonegotiate isl** trunking 1 3/2 nonegotiate isl trunking 1 Port VLANs allowed on trunk -------- --- 3/1 1-1005 3/2 1-1005 Port VLANs **allowed and active** in management domain -------- --- **3/1 1-2** 3/2 1-2 Port VLANs in spanning tree forwarding state and not pruned -------- --- 3/1 1-2 3/2 1-2 对于802.1q中继，前面的命令的输出更改对此：Catalyst6500> (enable) **show trunk** * - indicates vtp domain mismatch Port Mode Encapsulation Status Native VLAN -------- ----------- ------------- ------------ ----------- 3/1 **nonegotiate dot1q** trunking 1 3/2 **nonegotiate dot1q** trunking 1 Port VLANs allowed on trunk -------- --- 3/1 1-1005 3/2 1-1005 Port VLANs **allowed and active** in management domain -------- --- 3/1 1-2 3/2 1-2 Port VLANs in spanning tree forwarding state and not pruned -------- --- 3/1 1-2 3/2 1-2 Catalyst6500> (enable)
- **show port channel** —显示EtherChannel状态。在本例中，有，防止PAgP帧的2端口FEC (端口3/1和3/2)传送。您能也看到7500路由器的远程端口信道接口。Catalyst6500> (enable) **show port channel** Port Status Channel Admin Ch Mode Group Id ----- ---------- ------------------- ----- ----- **3/1 connected on** 105 833 3/2 connected on 105 833 ----- ---------- -------------------- ----- ----- Port Device-ID Port-ID Platform ----- ------------------------------- ------------------------- ---------------- **3/1 7500 Port-channel1.1** cisco RSP4 **3/2** ----- ------------------------------- ------------------------- ---------------- Catalyst6500> (enable) 对于与802.1q中继的FEC，前面的命令的输出更改对此：Catalyst6500> (enable) **show port channel** Port Status Channel Admin Ch Mode Group Id ----- ---------- ------------------- ----- ----- **3/1** connected on 257 769 **3/2** connected on 257 769 ----- ---------- -------------------- ----- ----- Port Device-ID Port-ID Platform ----- ------------------------------- ------------------------- ---------------- **3/1** 7500 FastEthernet5/1/0 cisco RSP4 **3/2** 7500 FastEthernet5/1/1 cisco RSP4 ----- ------------------------------- ------------------------- ---------------- Catalyst6500> (enable)

如果有输出一**show-tech support命令**从您的Cisco设备，您能使用[Output Interpreter Tool](#) ([仅限注册用户](#))显示潜在问题和修正。

[Cisco 7500 路由器 show 命令](#)

- **show interface port-channel** *信道数*—给予成员物理接口的状态。在本例中，2端口FEC配置在Catalyst 6000的端口3/1和3/2之间和在7500的interface fastethernet 5/1/0和5/1/1之间。Port-channel1显示如up/up。它安排一个IP地址配置，在这种情况下意味着它是802.1q中继的本地VLAN IP地址。[早于12.1(3)T](#)本文的部分请参阅[Cisco 7500 802.1Q配置关于Cisco IOS软件版本](#)欲知更多信息。输出为VLAN 2 802.1Q子接口也显示，从**show interface port channel 1.2命令**。7500# **show interface port-channel 1 Port-channel1 is up, line protocol is up** Hardware is FEChannel, address is 0001.6490.f8a8 (bia 0000.0000.0000) **Internet address is 10.10.10.1/24** MTU 1500 bytes, BW 200000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive set (10 sec) Full-duplex, Unknown Speed ARP type: ARPA, ARP Timeout 04:00:00 No. of active members in this channel: 2 **Member 0 : FastEthernet5/1/0 Member 1 : FastEthernet5/1/1** Last input 00:00:14, output never, output hang never Last clearing of "show interface" counters never Input queue: 0/300/0/0

(size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue :0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 6720 packets input, 923310 bytes, 0 no buffer Received 5010 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 watchdog 0 input packets with dribble condition detected 1902 packets output, 573088 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 7500# 7500# **show interface port-channel 1.2** Port-channel1.2 is up, line protocol is up Hardware is FEChannel, address is 0001.6490.f8a8 (bia 0000.0000.0000) **Internet address is 10.10.11.1/24** MTU 1500 bytes, BW 200000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255 **Encapsulation 802.1q Virtual LAN, Vlan ID 2.** ARP type: ARPA, ARP Timeout 04:00:00 这是ISL中继和FEC的输出：7500# **show interface port-channel 1 Port-channel1 is up, line protocol is up** Hardware is FEChannel, address is 0001.6490.f8a8 (bia 0000.0000.0000) MTU 1500 bytes, BW 200000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive set (10 sec) Full-duplex, Unknown Speed ARP type: ARPA, ARP Timeout 04:00:00 No. of active members in this channel: 2 **Member 0 : FastEthernet5/1/0 Member 1 : FastEthernet5/1/1** Last input 00:00:01, output never, output hang never Last clearing of "show interface" counters never Input queue: 0/300/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue :0/40 (size/max) 5 minute input rate 0 bits/sec, 1 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 113 packets input, 7278 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 watchdog 0 input packets with dribble condition detected 13 packets output, 2264 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 7500# **show interface port-channel 1.1** Port-channel1.1 is up, line protocol is up Hardware is FEChannel, address is 0001.6490.f8a8 (bia 0000.0000.0000) **Internet address is 10.10.10.1/24** MTU 1500 bytes, BW 200000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255 **Encapsulation ISL Virtual LAN, Color 1.** ARP type: ARPA, ARP Timeout 04:00:00 7500# **show interface port-channel 1.2** Port-channel1.2 is up, line protocol is up Hardware is FEChannel, address is 0001.6490.f8a8 (bia 0000.0000.0000) **Internet address is 10.10.11.1/24** MTU 1500 bytes, BW 200000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255 **Encapsulation ISL Virtual LAN, Color 2.** ARP type: ARPA, ARP Timeout 04:00:00

- show interfaces fastethernet *slot/端口适配器/端口*—显示路由器的物理接口的状况，并且任何错误是否在接口存在。在本例中，它是无错的。7500# **show interface fastethernet 5/1/0** FastEthernet5/1/0 is up, line protocol is up Hardware is cyBus FastEthernet Interface, address is 0001.6490.f8a8 (bia 0001.6490.f8a8) MTU 1500 bytes, BW 100000 Kbit, DLY 100 usec, reliability 255/255, txload 1/255, rxload 1/255 Encapsulation ARPA, loopback not set Keepalive set (10 sec) Full-duplex, 100Mb/s, 100BaseTX/FX ARP type: ARPA, ARP Timeout 04:00:00 Last input 1d00h, output 00:00:07, output hang never Last clearing of "show interface" counters 1d00h Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0 Queueing strategy: fifo Output queue :0/40 (size/max) 5 minute input rate 0 bits/sec, 0 packets/sec 5 minute output rate 0 bits/sec, 0 packets/sec 2929 packets input, 425318 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored 0 watchdog 0 input packets with dribble condition detected 12006 packets output, 1539768 bytes, 0 underruns 0 output errors, 0 collisions, 6 interface resets 0 babbles, 0 late collision, 0 deferred 0 lost carrier, 0 no carrier 0 output buffer failures, 0 output buffers swapped out 7500#

故障排除

目前没有针对此配置的故障排除信息。

相关信息

- LAN 产品支持页
- EtherChannel 支持页
- LAN 交换技术支持页

- 技术支持和文档 - Cisco Systems