

在CatOS交換機和外部路由器之間配置FEC和ISL/802.1q中繼

目錄

[簡介](#)

[必要條件](#)

[需求](#)

[採用元件](#)

[重要附註](#)

[以太通道](#)

[中繼](#)

[慣例](#)

[設定](#)

[網路圖表](#)

[組態](#)

[驗證](#)

[Catalyst 6500 show命令](#)

[Cisco 7500路由器show命令](#)

[疑難排解](#)

[相關資訊](#)

簡介

本檔案將提供執行CatalystOS(CatOS)的Catalyst 6500交換器和Cisco 7500路由器之間的快速EtherChannel(FEC)、交換器間連結(ISL)和802.1Q主幹設定的範例。每個命令的結果在執行時顯示。雖然此組態中使用的是Catalyst 6000交換器，但您可以取代執行CatOS的Catalyst 4000或Catalyst 5000系列交換器。

必要條件

需求

嘗試此組態之前，請確保符合以下要求：

- Catalyst 6000 系列交換器需要CatOS 5.1(1)CSX或更高版本才能支援EtherChannel
- Cisco 7000或7500系列路由器採用7000系列路由交換處理器(RSP7000)或機箱介面(RSP7000CI)的Cisco 7000系列路由器，或採用快速以太網路介面處理器(FEIP)或多功能介面處理器(VIP2)連線埠配接器的思科7500系列路由器如果您使用的是PA-2FEISL埠介面卡，則必須具有硬體版本1.2或更高版本。請參閱[現場通知：*已過期* FN - 8791 11301999 - PA-2FEISL 2埠快速以太網ISL更換建議](#)以瞭解詳細資訊。`encapsulation dot1Q native`命令是在

Cisco IOS®軟體版本12.1(3)T中匯入。此命令會變更組態。如需詳細資訊，請參閱本檔案的[Cisco 7500 802.1Q組態Cisco IOS軟體版本12.1\(3\)T](#)之前的版本。思科7500系列路由器上預設啟用思科快速轉發。但是，在Cisco IOS軟體版本12.2和12.2T之前，對IEEE 802.1Q VLAN之間IP路由的Cisco快速轉發支援不可用。在以前的版本中仍可以配置802.1Q封裝，但您必須首先發出global `no ip cef`命令以禁用Cisco Express Forwarding。當7500系列路由器配置為多協定標籤交換(MPLS)和FEC時，對於從MPLS介面流到FEC介面的路由(MPLS " IP)資料包目前不支援此功能。因此，不建議在單個路由器上同時存在MPLS和FEC配置。支援EtherChannel需要Cisco IOS軟體版本11.1(14)CA或更高版本。支援ISL中繼需要Cisco IOS軟體版本11.3(1)T (任何加功能集) 或更高版本。支援IEEE 802.1Q中繼需要Cisco IOS軟體版本12.0(1)T (任何加功能集) 或更高版本。

採用元件

本文中的資訊係根據以下軟體和硬體版本：

- 執行CatOS版本5.5.14的Catalyst 6500
- 執行Cisco IOS軟體版本12.2.7b的Cisco 7500

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。

重要附註

- 請記住，Catalyst 4000系列交換機不支援ISL中繼。此外，Catalyst 5000系列交換器上的某些交換模組不支援EtherChannel。發出[show port capabilities](#) 模組命令，以確定特定模組是否支援EtherChannel及其支援的中繼封裝。
- EtherChannel和中繼的配置遵循特定准則。請一律參閱交換器的軟體檔案。例如，如果您在Catalyst 5000上執行軟體版本5.5.x，請參閱[軟體組態設定指南\(5.5\)](#)，並仔細檢查[設定Fast EtherChannel和Gigabit EtherChannel](#)一節中的任何組態原則及限制。

乙太通道

FEC或Gigabit EtherChannel(GEC)功能允許將多個點對點連結捆綁到單一邏輯連結中。Catalyst 6000最多支援八個全雙工模式埠，為FEC提供1600 Mbps或1.6 Gbps的吞吐量，為GEC提供16 Gbps的吞吐量。Cisco 7500系列支援每個FEC最多四個埠，速度為800 Mbps。EtherChannel的功能和效能不同，具體取決於交換機或路由器。如需詳細資訊，請參閱[在Catalyst交換器上實作EtherChannel的系統要求](#)。

EtherChannel在所有鏈路上分配流量，並在一個或多個鏈路發生故障時提供冗餘。如需與EtherChannel相關的詳細資訊和組態範例，請參閱[瞭解Catalyst交換器上的EtherChannel負載平衡和備援](#)。

如需詳細資訊，請參閱Cisco技術支援與檔案的[EtherChannel](#)頁面。

中繼

中繼是一種通過點對點鏈路或兩個裝置之間的EtherChannel捆綁來傳輸來自多個VLAN的流量的方式。以下是兩種實現乙太網中繼的方法：

- ISL (思科專有中繼封裝)

- 802.1Q (IEEE標準中繼封裝)

如需詳細資訊，請參閱思科技術支援與檔案的[VLAN中繼通訊協定](#)頁面。

慣例

如需文件慣例的詳細資訊，請參閱[思科技術提示慣例](#)。

設定

本節提供用於設定本文件中所述功能的資訊。

註：使用[Command Lookup Tool](#)(僅限註冊客戶)查詢有關本文檔中使用的命令的更多資訊。

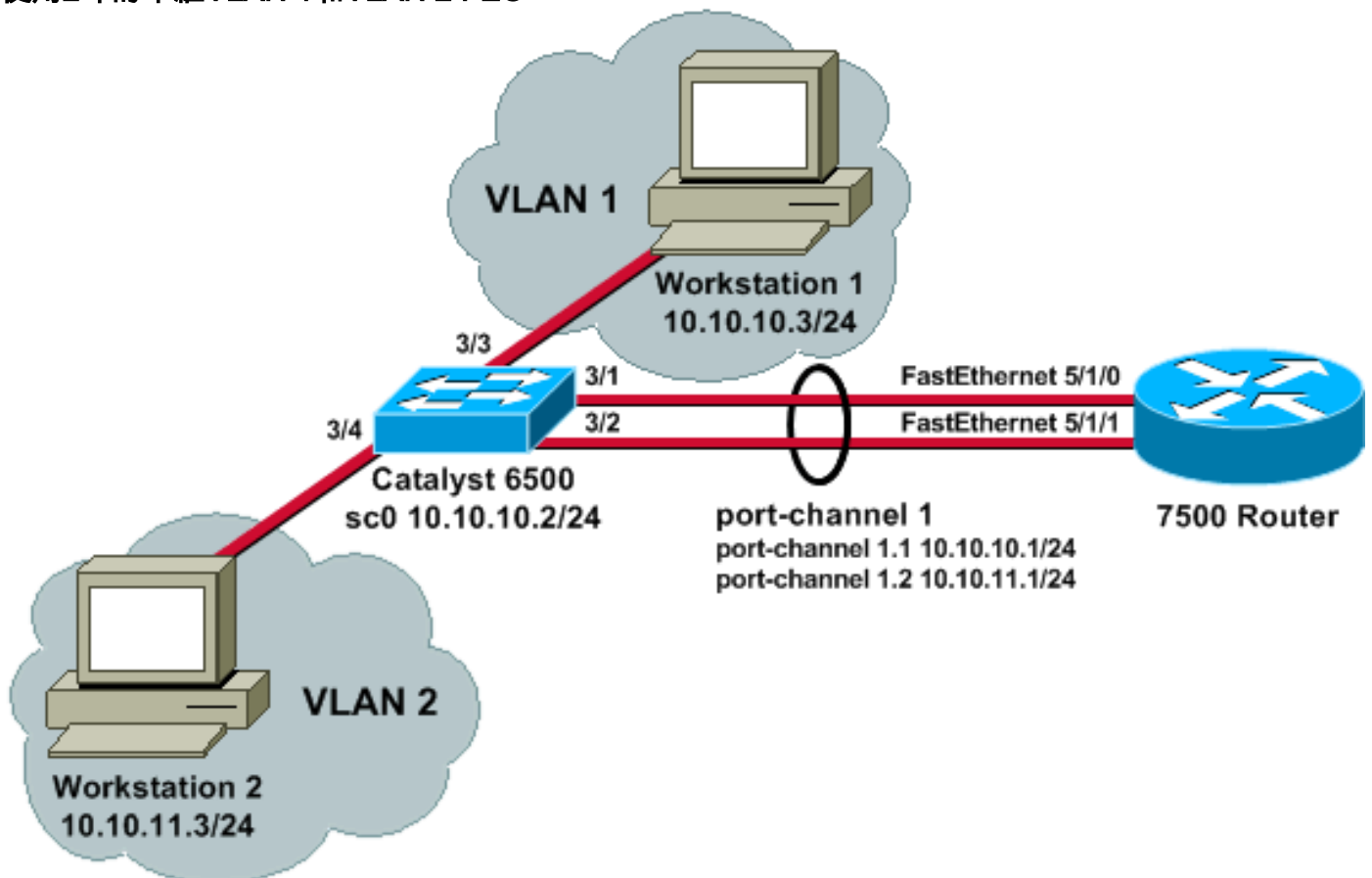
這些示例配置向您展示如何執行以下任務：

- 在Catalyst 6500上，為VLAN 1中的工作站1和VLAN 2中的工作站2配置兩個接入埠。
- 在Cisco 7500上，將工作站1的預設網關配置為10.10.10.1/24，將工作站2的預設網關配置為10.10.11.1/24。
- 在Catalyst 6500交換機和Cisco 7500路由器之間的雙埠FEC上配置ISL和802.1Q中繼。
- 為InterVLAN路由配置兩個使用IP地址的埠通道子介面。

網路圖表

本檔案會使用以下網路設定：

使用2埠的中繼VLAN 1和VLAN 2 FEC



組態

本檔案會使用以下設定：

- [Catalyst 6500交換器](#)
- [思科7500路由器](#)
- [Cisco 7500 802.1Q配置，適用於低於12.1\(3\)T的Cisco IOS軟體版本](#)

Catalyst 6500交換器

```
!--- 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

```

思科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-channell, 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
```

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
```

!--- 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-channell
```

```
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-channell,
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-channell
```

```
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 802.1Q配置，適用於低於12.1(3)T的Cisco IOS軟體版本

在低於12.1(3)T的Cisco IOS版本中，子介面下的 **encapsulation dot1Q 1 native** 命令不可用。但是，仍然需要匹配鏈路上的本徵VLAN (如前所述)。要在低於12.1(3)T的軟體版本中配置802.1Q中繼，請在主埠 — 通道1介面 (而不是埠通道子介面) 上配置VLAN 1的IP地址。

```
!--- 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-channell

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-channell,
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-channell

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#
```

驗證

使用本節內容，確認您的組態是否正常運作。

[輸出直譯器工具](#)(僅供已註冊客戶使用)(OIT)支援某些show命令。使用OIT檢視show命令輸出的分析

o

Catalyst 6500 show命令

- **show interface** — 顯示sc0管理介面IP地址和VLAN。在本範例中，使用預設的VLAN(VLAN 1)。

```
Catalyst6500> (enable) show interface

s10: flags=51<UP,POINTOPOINT,RUNNING>
      slip 0.0.0.0 dest 0.0.0.0
sc0: flags=63
```

```
Catalyst6500> (enable)
```

- **show ip route** — 顯示預設網關。在本示例中，10.10.10.1是埠通道1 (用於802.1Q中繼) 或埠通道1.1 (用於ISL中繼) 的IP地址。

```
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	0xffffffff00	U	8	sc0
default	default	0xff000000	UH	0	s10

```
Catalyst6500> (enable)
```

- **show port capabilities mod/port** — 快速瞭解交換模組的硬體功能。在此範例中，您可以看到連線埠3/1 (和3/2) 具備EtherChannel功能、其支援哪種中繼封裝和其他資訊。

```
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/port** — 快速檢視可能的連線埠錯誤。在本範例中，此連線埠沒有任何

錯誤。如果連線埠發生錯誤，請參閱[疑難排解交換器連線埠和介面問題](#)，瞭解詳細資訊。

```
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  Runts    Giants
-----
3/1          0          0          0          0          0        0        0

Last-Time-Cleared
-----
```

```
Thu May 2 2002, 02:11:55
```

```
Catalyst6500> (enable)
```

- **show port mod** — 顯示連線埠狀態、VLAN、主幹以及速度和雙工資訊。在本例中，工作站1的接入埠是3/3，位於VLAN 1中。工作站2的接入埠是3/4，即VLAN 2。埠3/1和3/2是中繼埠和FEC埠。

```
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** — 顯示將哪些埠分配給特定VLAN。請注意，此範例中的主干連線埠 (3/1和3/2) 沒有在此輸出中顯示，這是正常現象。

```
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** — 顯示中繼模式、封裝型別、允許的VLAN和活動VLAN。在本例中，VLAN 1 (預設情況下始終允許且活動) 和VLAN 2是中繼的當前活動VLAN。請注意，兩個主干連線埠均位於VLAN 1中。

```
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
```

對於802.1Q中繼，前面命令的輸出將更改為以下內容：

```
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** — 顯示EtherChannel狀態。在本示例中，有一個2埠FEC (埠3/1和3/2) 處於開啟狀態，以防止PAGP幀被傳輸。您還可以看到7500路由器的遠端埠通道介面。

```
Catalyst6500> (enable) show port channel
```

```
Port  Status      Channel      Admin Ch
      Mode           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)
```

對於具有802.1Q中繼的FEC，前面命令的輸出將更改為以下內容：

```
Catalyst6500> (enable) show port channel
```

```
Port  Status      Channel      Admin Ch
      Mode           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)
```

如果您的Cisco裝置具有**show-tech support**指令的輸出，可以使用[Output Interpreter Tool](#)(僅供註冊客戶使用)顯示潛在問題和修正程式。

Cisco 7500路由器show命令

- **show interface port-channel *channel number*** — 提供物理介面的成員狀態。在本範例中，在Catalyst 6000上的連線埠3/1和3/2之間以及7500上的介面FastEthernet 5/1/0和5/1/1之間設定了2埠FEC。Port-channel 1顯示為`up/up`。它配置了IP地址，在本例中表示它是802.1Q中繼的本徵VLAN IP地址。如需詳細資訊，請參閱本檔案的[Cisco 7500 802.1Q組態Cisco IOS軟體版本12.1\(3\)T](#)之前的版本。此外，還顯示VLAN 2 802.1Q子介面的輸出(來自**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
```

這是ISL中繼和FEC的輸出：

```
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-channell1.1 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-channell1.2 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/port-adapter/port** — 顯示路由器物理介面的狀態以及介面上是否存在任何錯誤。在此範例中，它沒有錯誤。

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#
```

[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](#)

- [LAN 產品支援頁面](#)
- [EtherChannel支援頁面](#)
- [LAN 交換支援頁面](#)
- [技術支援與文件 - Cisco Systems](#)