Configuração de FEC e Truncamento ISL/802.1q Entre Um Switch CatOS e Um Roteador Externo

Contents

Introduction

Este documento fornece configurações de exemplo para Fast EtherChannel (FEC), Inter-Switch Link (ISL) e entroncamento 802.1Q entre um switch Catalyst 6500 que executa o CatalystOS (CatOS) e um roteador Cisco 7500. Os resultados de cada comando são exibidos à medida que são executados. Embora um switch Catalyst 6000 seja usado nessa configuração, você pode substituir um switch da família Catalyst 4000 ou Catalyst 5000 que executa CatOS.

Prerequisites

Requirements

Certifique-se de atender a estes requisitos antes de tentar esta configuração:

- Catalyst 6000 Series SwitchesCatOS Versão 5.1(1) CSX ou posterior é necessário para oferecer suporte ao EtherChannel
- Cisco 7000 ou 7500 Series RoutersRoteadores da série Cisco 7000 com roteadores da série 7000 Route Switch Processor (RSP7000) ou Chassis Interface (RSP7000CI), ou roteadores da série Cisco 7500 com adaptadores de porta Fast Ethernet Interface Processors (FEIP) ou

Versatile Interface Processor (VIP2)Se estiver usando o adaptador de porta PA-2FEISL, você deve ter a revisão de hardware 1.2 ou posterior.Consulte Field Notice: *Expired* FN - 8791_11301999 - PA-2FEISL - Recomendação de substituição para ISL Fast Ethernet de 2 portas para mais informações.O comando **encapsulation dot1Q native** foi introduzido no Cisco IOS® Software Release 12.1(3) T. Esse comando altera a configuração.Consulte a seção Configuração do Cisco 7500 802.1Q para Cisco IOS Software Releases Anteriores à 12.1(3)T deste documento para obter mais informações.O Cisco Express Forwarding está habilitado por padrão nos Cisco 7500 Series Routers. No entanto, o suporte ao Cisco Express Forwarding para roteamento IP entre VLANs IEEE 802.1Q não estava disponível até que o Cisco IOS Software Release 12.2 e 12.2T. Ainda é possível configurar o encapsulamento 802.1Q em versões anteriores, mas você deve primeiro emitir o comando **no ip cef** global para desativar o Cisco Express Forwarding.Quando um roteador da série 7500 é configurado para Multiprotocol Label Switching (MPLS) e FEC, o suporte não está disponível no momento para pacotes de roteamento (MPLS" IP) que fluem da interface MPLS para a interface FEC. Portanto, não é recomendável que uma configuração MPLS e FEC coexistam em um único roteador.O Cisco IOS Software Release 11.1(14)CA ou posterior é necessário para suportar EtherChannel.O Cisco IOS Software Release 11.3(1)T (qualquer conjunto de recursos plus) ou posterior é necessário para suportar entroncamento ISL.O Cisco IOS Software Release 12.0(1)T (qualquer conjunto de recursos plus) ou posterior é necessário para suportar entroncamento IEEE 802.1Q.

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software e hardware:

- Catalyst 6500 executando CatOS versão 5.5.14
- Cisco 7500 executando o Cisco IOS Software Release 12.2.7b

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.

Notas importantes

- Lembre-se de que os switches da série Catalyst 4000 não suportam entroncamento ISL. Além disso, alguns módulos de switching em Switches da série Catalyst 5000 não são compatíveis com EtherChannel. Emita o comando **show port capabilities *module*** para determinar se um determinado módulo é compatível com EtherChannel e que encapsulamento de entroncamento ele suporta.
- Há algumas diretrizes para a configuração do EtherChannel e do entroncamento. Consulte sempre a documentação do software do seu switch.Por exemplo, caso esteja executando a versão 5.5.x do software em um Catalyst 5000, consulte o Manual de configuração do software (5.5) e examine cuidadosamente qualquer tipo de orientação e restrição na seção Configurando Fast EtherChannel e o Gigabit EtherChannel.

EtherChannel

O recurso FEC ou Gigabit EtherChannel (GEC) permite que vários links ponto-a-ponto sejam agrupados em um link lógico. O Catalyst 6000 suporta um máximo de oito portas no modo full-

duplex, que oferece um rendimento de 1600 Mbps ou 1,6 Gbps para FEC e 16 Gbps para GEC. A série Cisco 7500 suporta um máximo de quatro portas por FEC, para 800 Mbps. EtherChannel capability and performance is different, depending on the Switch or router. Consulte Requisitos do Sistema para Implementação de EtherChannel em Catalyst Switches para obter informações adicionais.

O EtherChannel distribui o tráfego em todos os links e fornece redundância se um ou mais links falharem. Consulte Entendendo o balanceamento de carga e a redundância do EtherChannel em Switches Catalyst para obter mais informações e configurações de exemplo relacionadas ao EtherChannel.

Consulte a página EtherChannel do Suporte Técnico e Documentação da Cisco para obter mais informações.

Entroncamento

O entroncamento é uma maneira de transportar o tráfego de várias VLANs em um link ponto-a-ponto ou em um pacote EtherChannel entre dois dispositivos. Estas são duas maneiras pelas quais o entroncamento Ethernet pode ser implementado:

- ISL (encapsulamento de tronco proprietário da Cisco)
- 802.1q (encapsulamento de tronco com padrão de IEEE)

Consulte a página VLAN Trunking Protocols do Suporte Técnico e Documentação da Cisco para obter mais informações.

Conventions

Consulte as Convenções de Dicas Técnicas da Cisco para obter mais informações sobre convenções de documentos.

Configurar

Nesta seção, você encontrará informações para configurar os recursos descritos neste documento.

Nota:Use a Command Lookup Tool (somente clientes registrados) para obter mais informações sobre os comandos usados neste documento.

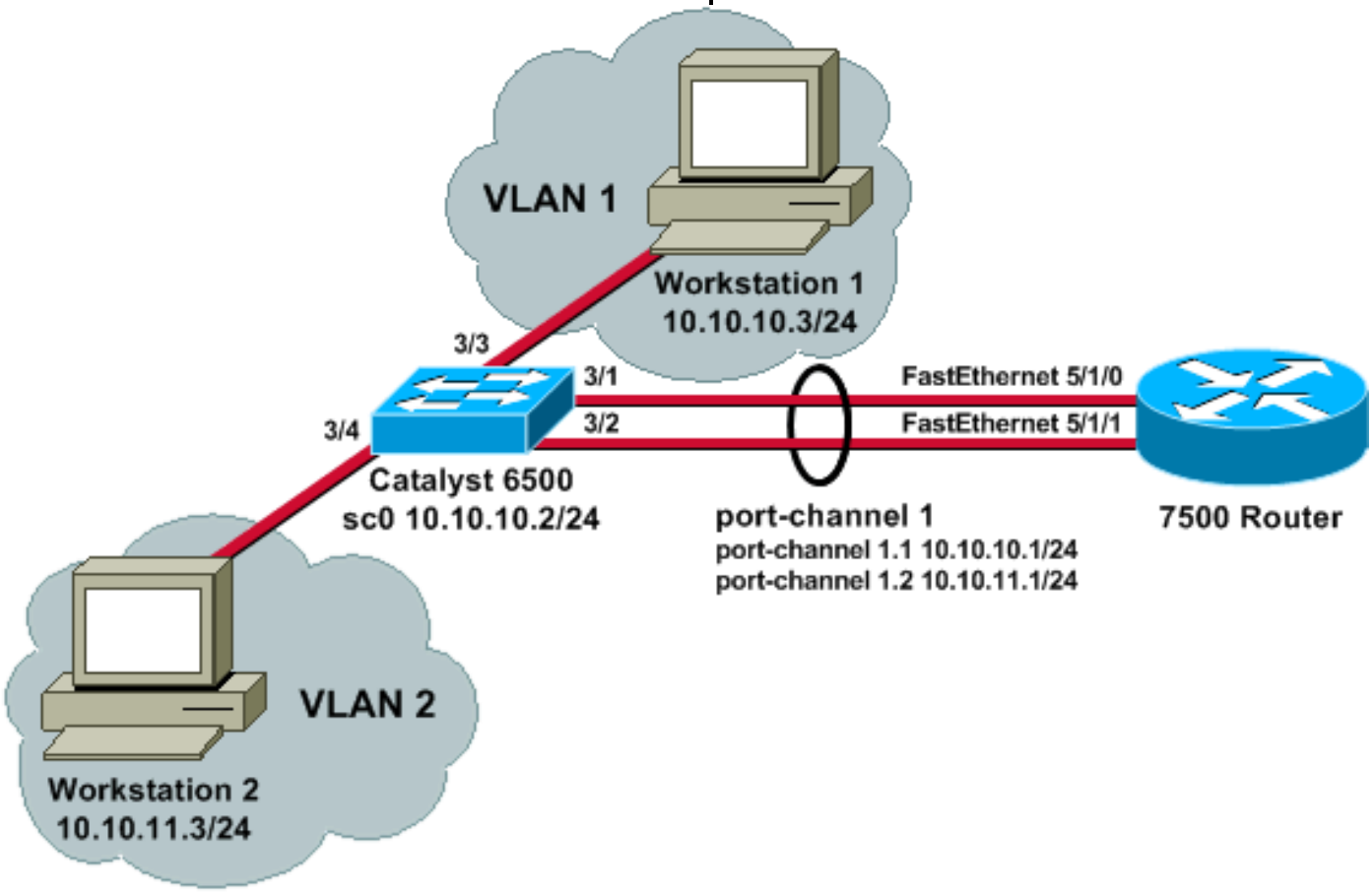
Estas configurações de exemplo mostram como fazer estas coisas:

- Configure duas portas de acesso para a Estação de Trabalho 1 na VLAN 1 e para a Estação de Trabalho 2 na VLAN 2 no Catalyst 6500.
- Configure o gateway padrão para que a Estação de trabalho 1 seja 10.10.1 /24 e para que a Estação de trabalho 2 seja 10.10.11.1/24 no Cisco 7500.
- Configure os troncos ISL e 802.1Q sobre um FEC de duas portas entre um switch Catalyst 6500 e o roteador Cisco 7500.
- Configure duas subinterfaces de canal de porta com endereços IP para roteamento entre VLANs.

Diagrama de Rede

Este documento utiliza a seguinte configuração de rede:

Entroncamento VLAN 1 e VLAN 2 sobre FEC de 2 portas



Configurações

Este documento utiliza as seguintes configurações:

- Catalyst 6500 Switch
- Cisco 7500 Router
- Configuração do Cisco 7500 802.1Q para versões do software Cisco IOS anteriores a 12.1(3)T

Catalyst 6500 Switch

```
!--- 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 Router

```
!--- 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



           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-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
```

Configuração do Cisco 7500 802.1Q para versões do software Cisco IOS anteriores a 12.1(3)T

Em versões anteriores a 12.1(3)T do IOS Cisco, o comando nativo encapsulation dot1Q 1 sob a sub-interface não estava disponível. Entretanto, ainda é necessário fazer a correspondência da VLAN nativa no link, conforme anteriormente descrito. Para configurar o entroncamento 802.1Q em versões de software anteriores à 12.1(3)T, configure o endereço IP para a VLAN 1 na interface principal do canal de porta 1, não uma subinterface de canal de porta.

```
!--- 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#
```

Verificar

Use esta seção para confirmar se a sua configuração funciona corretamente.

A Output Interpreter Tool (somente clientes registrados) (OIT) oferece suporte a determinados comandos show. Use a OIT para exibir uma análise da saída do comando show.

Comandos show do Catalyst 6500

- **show interface** —Mostra o endereço IP e a VLAN da interface de gerenciamento sc0. Neste exemplo, a VLAN padrão é usada (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




Catalyst6500> (enable)
```

- **show ip route** — Mostra o gateway padrão. Neste exemplo, 10.10.10.1 é o endereço IP do canal de porta 1 (para entroncamento 802.1Q) ou do canal de porta 1.1 (para entroncamento

ISL).

```
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* —Dá uma olhada rápida nas capacidades de hardware dos módulos de comutação. Neste exemplo, você pode ver que a porta 3/1 (e 3/2) é compatível com EtherChannel, que encapsulamentos de entroncamento ela suporta e outras informações.

```
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* —Dá uma rápida olhada em possíveis erros de porta. Nesse exemplo, essa porta está livre de erros. Se houver erros na porta, consulte Troubleshooting de Problemas de Interface e Porta do Switch para obter mais informações.

```
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         -

Last-Time-Cleared
--------------------------
Thu May 2 2002, 02:11:55
Catalyst6500> (enable)
```

- **show port** *mod* —Mostra o status da porta, VLAN, tronco e informações de velocidade e

duplex. Neste exemplo, a porta de acesso para a Estação de trabalho 1 é 3/3, que está na VLAN 1. A porta de acesso para a estação de trabalho 2 é 3/4, que é a VLAN 2. As portas 3/1 e 3/2 são o entroncamento e as portas FEC.

```
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** — Mostra quais portas estão atribuídas a VLANs específicas. Observe que as portas de tronco neste exemplo (3/1 e 3/2) não aparecem nesta saída, o que é normal.

```
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** —Mostra o modo de truncamento, o tipo de encapsulamento, as VLANs permitidas e as VLANs ativas. Neste exemplo, VLAN 1 (sempre permitida e ativa por padrão) e VLAN 2 são as atualmente ativas no tronco. Observe que ambas as portas de tronco estão na VLAN 1.

```
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
```

Para entroncamento 802.1Q, a saída do comando anterior muda para este:

```
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** — Mostra o status do EtherChannel. Neste exemplo, há uma FEC de 2 portas (portas 3/1 e 3/2) `ativada`, para impedir a transmissão de quadros PAgP. Você também pode ver a interface de canal de porta remota do roteador 7500.

```
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)
```

Para um FEC com entroncamento 802.1Q, a saída do comando anterior muda para este:

```
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)
```

Se você tiver a saída de um comando **show-tech support** de seu dispositivo Cisco, poderá usar a Output Interpreter Tool (somente clientes registrados) para exibir problemas e correções potenciais.

Comandos show do Cisco 7500 Router

- **show interface port-channel** *channel number* —Fornece o status do membro para interfaces físicas. Neste exemplo, uma FEC de 2 portas é configurada entre as portas 3/1 e 3/2 no Catalyst 6000 e entre a interface FastEthernet 5/1/0 e 5/1/1 no 7500. O canal de porta 1 é mostrado como `up`/`up`.Ele tem um endereço IP configurado, o que neste caso significa que é o endereço IP da VLAN nativa para entroncamento 802.1Q. Consulte a seção Configuração do

Cisco 7500 802.1Q para Cisco IOS Software Releases Anteriores à 12.1(3)T deste documento para obter mais informações. A saída também é mostrada para a subinterface VLAN 2 802.1Q, do comando **show interface port channel 1.2**.

```
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
```

Esta é a saída para entroncamento ISL e FEC:

```
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/adaptador de porta/porta* —Mostra o status das interfaces físicas do roteador e se existem erros nas interfaces. Neste exemplo, ele está livre de erros.

```
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#
```

Troubleshoot

Atualmente, não existem informações disponíveis específicas sobre Troubleshooting para esta configuração.

Informações Relacionadas

- Páginas de Suporte de Produtos de LAN
- Página de suporte do EtherChannel
- Página de suporte da switching de LAN
- Suporte Técnico e Documentação - Cisco Systems