配置示例：运行 CatOS 和 Cisco IOS 软件的 Catalyst 交换机之间的 EtherChannel

目录

简介

本文档讨论运行 Catalyst OS (CatOS) 的 Catalyst 5500/5000 交换机和运行 Cisco IOS® 软件的 Catalyst 6500/6000 或 Catalyst 4500/4000 的交换机之间的 EtherChannel 设置。EtherChannel 将单个链路绑定到在交换机或其他设备之间提供更高带宽和冗余的单个逻辑链路中。您可将 EtherChannel 作为 Fast EtherChannel (FEC) 或 Gigabit EtherChannel (GEC)；它取决于用来形成 EtherChannel 的接口或端口的速度。此配置也适用于运行 CatOS 的 Catalyst 4500/4000 或 6500/6000 系列交换机（连接到运行 Cisco IOS 软件的 Catalyst 4500/4000 或 6500/6000 系列交换机）。

本文档中的配置将每台交换机的两个快速以太网 (FE) 端口绑定到 FEC。本文档使用术语“EtherChannel”讨论 GEC、FEC、端口信道、信道和端口组。

本文档仅显示交换机的配置文件，以及相关 show 命令示例的输出。有关如何配置 EtherChannel 的详细信息，请参阅以下文档：

- 配置 EtherChannel（运行 Cisco IOS 软件的 Catalyst 6500/6000 交换机）
- 配置 EtherChannel（运行 Cisco IOS 软件的 Catalyst 4500/4000 交换机）
- 配置示例：运行 CatOS 的 Catalyst 交换机之间的 EtherChannel

先决条件

要求

在您尝试此配置前，请确保您已基本了解以下内容：

- EtherChannel 配置
- 具有命令行界面 (CLI) 的 Catalyst 6500/6000 和 Catalyst 5500/5000 系列交换机的配置

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 6.4(8) 软件的 Cisco Catalyst 5505 交换机
- 运行 Cisco IOS 软件版本 12.1(20)E 的 Cisco Catalyst 6509 交换机

注意：有关Catalyst交换机上的EtherChannel系统要求，请参阅在Catalyst交换机上实施EtherChannel的系统要求。

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。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

您可无条件（**信道模式为 on**）或通过自动协商配置 EtherChannel。当您通过自动协商配置时，交换机与远端协商信道。为此，它使用 Cisco 专用端口聚合协议 (PAgP)（使用 **channel mode desirable 命令）或 IEEE 802.3ad 链路聚合控制协议 (LACP)（使用 channel mode active 或 channel mode passive 命令）。** 在本文档中，EtherChannel 配置使用 PAgP 进行自动协商。

所有运行 CatOS 系统软件的 Catalyst 交换机均支持 PAgP。运行 Cisco IOS 系统软件的 Catalyst 6500/6000 或 4500/4000 系列交换机也支持 PAgP。在支持 PAgP 的设备之间建立 EtherChannel 的推荐模式是 desirable 模式。PAgP 可防止在两个设备之间出现任何不正确的配置。当连接设备不支持 PAgP 并且您需要无条件设置信道时，可使用**信道模式 on。**您可在 auto 和 desirable 信道模式下使用静默或非静默关键字。在默认情况下，Catalyst 6500/6000 或 4500/4000 交换机在所有端口上启用静默关键字。默认情况下，Catalyst 5500/5000 系列交换机在铜线端口上启用静默关键字。对于所有光纤端口（FE 和千兆以太网 [GE]），5500/5000 交换机默认启用非静默关键字。当您连接 Cisco 交换机时，请使用默认的静默或非静默关键字。

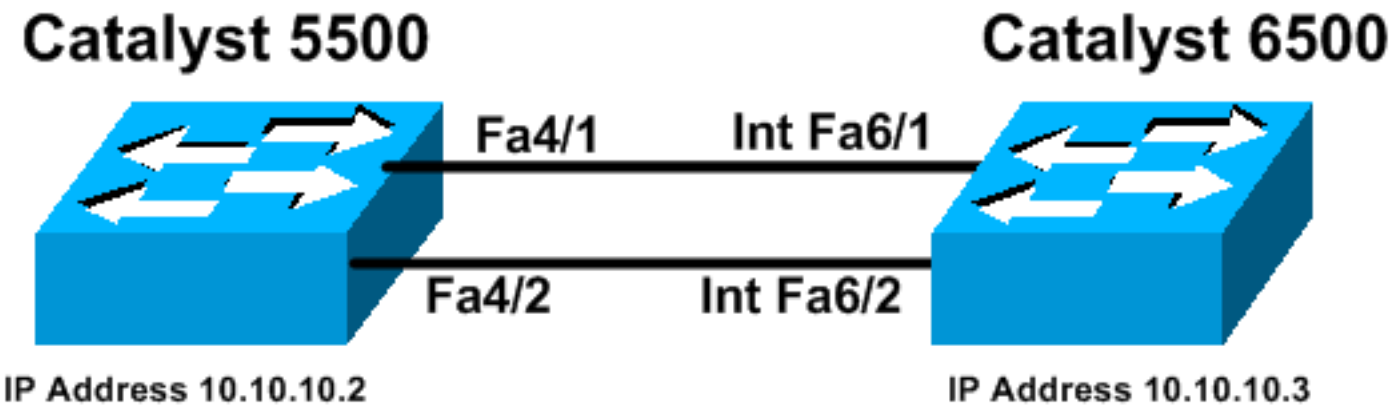
注意：有关PAgP信道模式和静默/非静默模式的其他信息，请参阅文档*在Catalyst 4500/4之间配置EtherChannel（建议）*和*静默/非静默模*式部分的“使用PAgP”配置EtherChannel运行CatOS系统软件的000、5500/5000和6500/6000交换机。

配置

此部分存在信息配置在本文描述的功能中。

网络图

本文档使用以下网络设置：



准则

当活动链路聚合到 EtherChannel 时，端口会暂时离开生成树并作为单个逻辑端口回到生成树。在生成树重新收敛之前，网络流量将中断。

如果您出于其他考虑不使用 PAgP 或 LACP 等协议对 EtherChannel 进行配置，请确保两端所需的参数相同。如果这些参数不同，则信道的一端将进入 err-disable 模式。要从 err-disable 模式恢复端口，请参阅以下内容：

- Cisco IOS平台的ErrDisable端口状态恢复
- 在 CatOS 平台上恢复处于 errDisable 状态的端口
- 了解EtherChannel不一致检测

配置

本文档使用以下配置：

- Catalyst 5500
- Catalyst 6500

注意：要验证您配置的模块或交换机端口的功能，请对运行CatOS的**交换机使用**show port capabilities module命令。对于运行 Cisco IOS 软件的交换机，请使用 show interfaces capabilities 命令。

注意：在配置中，输出之间的注释以蓝色斜体显示。

Catalyst 5500

```
cat5500 (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: Wed Jan 28 2004, 09:39:55
!

# version 6.4(2)
!
# errordetection
set errordetection portcounter enable
!
# frame distribution method
set port channel all distribution mac both
!
# vtp
set vtp domain cisco
set vlan 1 name default type ethernet mtu 1500 said
100001 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
!--- This is the IP address for management. set
interface sc0 1 10.10.10.2/255.255.255.0 10.10.10.255 !
# set boot command
set boot config-register 0x2102
set boot system flash bootflash:cat5000-supg.6-4-8.bin
!
# mls
set mls nde disable
!
# port channel

!--- Ports are assigned to admin-group 200.
Administrative groups !--- specify which ports can form
an EtherChannel together. An administrative group !---
can contain a maximum of eight ports. This admin-group
assignment happens !--- automatically with the
configuration of the port channel. You can also !---
assign it manually, as done in this example. However,
you do not need to assign !--- the admin-group manually.
Let the switch create !--- the admin-group
automatically. !--- Note: This configuration sets ports
4/1 through 4/4 !--- for port channel, but only
configures ports 4/1-2. This is !--- normal behavior.
You can use ports 4/3 and 4/4 for any other purpose.

set port channel 4/1-4 200
!
# default port status is enable
!
!
#module 1 : 0-port Supervisor III
```

```
!
#module 2 : 2-port MM MIC FDDI
!
#module 3 : 24-port 10/100BaseTX Ethernet
!
#module 4 : 12-port 10/100BaseTX Ethernet
!--- This enables port channeling with PAgP and
configures desirable silent mode. set port channel 4/1-2
mode desirable silent
!
#module 5 : 2-port MM OC-3 Dual-Phy ATM
!--- Output suppressed. end
```

有关配置中命令的详细信息，请参阅 Catalyst 5000 系列命令参考（6.3 和 6.4）。

Catalyst 6500

```
Cat6509# show running-config
Building configuration...

Current configuration : 3852 bytes
!
version 12.1
no service single-slot-reload-enable
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Cat6509
!
!
redundancy
 main-cpu
  auto-sync standard
ip subnet-zero
!
!
interface port-channel1
 no ip address

!--- This example has configured a Layer 2 (L2)
EtherChannel. !--- You can configure a Layer 3 (L3)
EtherChannel on the Catalyst !--- 6500/6000 switches
running Cisco IOS Software; however, this is not !---
the focus of this document. For details on the Layer 3
EtherChannel configuration, !--- refer to the document
Configuring EtherChannels.  switchport

!--- This command puts the interface in VLAN1, by
default. switchport mode access
!
interface FastEthernet6/1
no ip address
!--- On the Catalyst 6500/6000, you must issue the
switchport command once, !--- without any keywords, to
configure the interface as an L2 port. !--- By default,
all the ports are router ports (L3 ports). !--- On a
Catalyst 4500/4000 switch, all ports are L2 ports by
default. !--- You do not need an additional command.

switchport
```

```
!--- This command puts the interface in VLAN1, by
default.  switchport mode access

!--- The port is a member of channel group 1 with
autonegotiation !--- that uses PAgP and silent mode.
channel-group 1 mode desirable
!
interface FastEthernet6/2
 no ip address

!--- On the Catalyst 6500/6000, you must issue the
switchport command once, !--- without any keywords, to
configure the interface as a L2 port. !--- By default,
all the ports are router ports (L3 ports). !--- On a
Catalyst 4500/4000 switch, all ports are L2 ports by
default. !--- You do not need an additional command.

 switchport

!--- This command puts the interface in VLAN1, by
default. switchport mode access

!--- The port is a member of channel group 1 with
autonegotiation !--- that uses PAgP and silent mode.
channel-group 1 mode desirable
!
interface FastEthernet6/3
 no ip address
!
interface FastEthernet6/4
 no ip address
!
!--- Output suppressed. interface FastEthernet6/45 no ip
address shutdown ! interface FastEthernet6/46 no ip
address shutdown ! interface FastEthernet6/47 no ip
address shutdown ! interface FastEthernet6/48 no ip
address shutdown ! !--- This is the IP address for
management. ip address 10.10.10.3 255.255.255.0



!
ip classless
no ip http server
!
!
!
line con 0
line vty 0 4
!
end
Cat6509#
```

有关配置中命令的详细信息，请参阅 Catalyst 5000 系列命令参考（6.3 和 6.4）。

注意：如果将接口分配给不存在的VLAN，则接口将关闭，直到您在VLAN数据库中创建VLAN。有关详细信息，请参阅配置 VLAN 的创建或修改以太网 VLAN 部分。

验证

本部分提供可用于确认您的配置是否正常运行的信息。

命令输出解释程序工具（仅限注册用户）支持某些 **show 命令，使用此工具可以查看对 show 命令输出的分析。**

要检查 CatOS 交换机的端口信道，请发出以下命令：

- show port capabilities *module*
- show port channel
- show port module/port
- show port channel info

要检查 CatOS 交换机的生成树协议 (STP) 状态，请发出以下命令：

- show spantree
- show spantree *vlan*
- show spantree *module/port*

要检查运行 Cisco IOS 软件的 Catalyst 6500/6000 或 Catalyst 4500/4000 系列交换机的端口信道，请发出以下命令：

- show interfaces capabilities
- show interfaces port-channel *port-channel interface number*
- show etherchannel summary
- show etherchannel port-channel

要检查运行 Cisco IOS 软件的 Catalyst 6500/6000 或 Catalyst 4500/4000 系列交换机的 STP 状态，请发出以下命令：

- show spanning-tree detail
- show spanning-tree vlan *vlan number*

show 命令输出示例

Catalyst 5500 交换机

- show port capabilities *module*

此命令可验证模块是否可以建立信道。还可告知您可以绑定哪组端口以形成 EtherChannel。在本示例中，您可以组合两个端口 4/1-2 或四个端口 4/1-4 以形成信道：

```
cat5500 (enable) show port capabilities 4
Model                    WS-X5203
Port                     4/1
Type                     10/100BaseTX
Speed                    auto,10,100
Duplex                   half,full
Trunk encap type         ISL
Trunk mode               on,off,desirable,auto,nonegotiate
Channel                  4/1-2,4/1-4
Broadcast suppression    pps(0-150000),percentage(0-100)
Flow control             no
Security                 yes
Membership               static,dynamic
Fast start               yes
QOS scheduling           rx-(none),tx-(none)
CoS rewrite              no
```

```
ToS rewrite              no
Rewrite                  no
UDLD                     yes
AuxiliaryVlan            no
SPAN                     source,destination
!--- Output suppressed.
```

- show port channel

此命令与 show port 命令一起验证端口信道的状态。

```
cat5500 (enable) show port channel
Port  Status     Channel              Admin Ch
                 Mode                 Group Id
----- ---------- -------------------- ----- -----
4/1   connected  desirable silent       200   865
4/2   connected  desirable silent       200   865
----- ---------- -------------------- ----- -----

Port  Device-ID                        Port-ID                   Platform
----- ------------------------------- ------------------------- ----------------
4/1   Switch                          Fa6/1                     cisco Catalyst 6000
4/2   Switch                          Fa6/2                     cisco Catalyst 6000
----- ------------------------------- ------------------------- ----------------
cat5500 (enable)
```

- show port module/port

```
cat5500 (enable) show port 4/1
Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
4/1                      connected  1          normal a-full a-100 10/100BaseTX
!--- Output suppressed. Port Status Channel Admin Ch Mode Group Id ----- ---------- ------------
-------- ----- ----- 4/1   connected  desirable silent       200   865
4/2   connected  desirable silent       200   865
----- ---------- -------------------- ----- -----

!--- Output suppressed. cat5500 (enable) show port 4/2
Port  Name               Status     Vlan       Level  Duplex Speed Type
----- ------------------ ---------- ---------- ------ ------ ----- ------------
4/2                      connected  1          normal a-full a-100 10/100BaseTX

!--- Output suppressed. Port Status Channel Admin Ch Mode Group Id ----- ---------- ------------
-------- ----- ----- 4/1   connected  desirable silent       200   865
4/2   connected  desirable silent       200   865
----- ---------- -------------------- ----- -----

!--- Output suppressed.
```

- show port channel info

```
cat5500 (enable) show port channel info
Switch Frame Distribution Method: Mac both

Port  Status     Channel              Admin Channel Speed Duplex Vlan
                 mode                 group id
----- ---------- -------------------- ----- ------- ----- ------ ----
4/1   connected  desirable silent       200     865 a-100 a-full    1
4/2   connected  desirable silent       200     865 a-100 a-full    1
----- ---------- -------------------- ----- ------- ----- ------ ----

Port  ifIndex Oper-group Neighbor   Oper-Distribution PortSecurity/
```

```
                        Oper-group Method            Dynamic port
----- ------- ---------- ---------- ----------------- -------------
4/1   334              1 65537      Mac both
4/2   334              1 65537      Mac both
----- ------- ---------- ---------- ----------------- -------------

Port  Device-ID                       Port-ID                   Platform
----- ------------------------------- ------------------------- ----------------
4/1   Switch                          Fa6/1                     cisco Catalyst 6000
4/2   Switch                          Fa6/2                     cisco Catalyst 6000
----- ------------------------------- ------------------------- ----------------

!--- Output suppressed.
```

- show spantree

STP 命令验证您是否组合了信道中的所有端口以及是否处于转发状态。

```
cat5500 (enable) show spantree 1
VLAN 1
Spanning tree enabled
Spanning tree type          IEEE

Designated Root             00-30-40-a7-a4-00
Designated Root Priority    32768
Designated Root Cost        0
Designated Root Port        1/0
Root Max Age   20 sec    Hello Time 2  sec   Forward Delay 15 sec

Bridge ID MAC ADDR          00-30-40-a7-a4-00
Bridge ID Priority          32768
Bridge Max Age 20 sec    Hello Time 2  sec   Forward Delay 15 sec

Port                      Vlan Port-State    Cost  Priority Portfast   Channel_id
------------------------ ---- ------------- ----- -------- ---------- ----------
2/1-2                     1    not-connected    19       32 disabled   0
3/1                       1    not-connected   100       32 disabled   0
3/2                       1    not-connected   100       32 disabled   0
3/3                       1    not-connected   100       32 disabled   0
3/4                       1    not-connected   100       32 disabled   0
3/5                       1    not-connected   100       32 disabled   0
3/6                       1    not-connected   100       32 disabled   0
3/7                       1    not-connected   100       32 disabled   0
3/8                       1    not-connected   100       32 disabled   0
3/9                       1    not-connected   100       32 disabled   0
3/10                      1    not-connected   100       32 disabled   0
3/11                      1    not-connected   100       32 disabled   0
3/12                      1    not-connected   100       32 disabled   0
3/13                      1    not-connected   100       32 disabled   0
3/14                      1    not-connected   100       32 disabled   0
3/15                      1    not-connected   100       32 disabled   0
3/16                      1    not-connected   100       32 disabled   0
3/17                      1    not-connected   100       32 disabled   0
3/18                      1    not-connected   100       32 disabled   0
3/19                      1    not-connected   100       32 disabled   0
3/20                      1    not-connected   100       32 disabled   0
3/21                      1    not-connected   100       32 disabled   0
3/22                      1    not-connected   100       32 disabled   0
3/23                      1    not-connected   100       32 disabled   0
3/24                      1    not-connected   100       32 disabled   0
4/1-2                     1    forwarding       12       32 disabled   865
4/3                       1    forwarding       19       32 disabled   0
4/4                       1    forwarding       19       32 disabled   0
```

```
4/5                     1    not-connected   100       32 disabled   0
4/6                     1    not-connected   100       32 disabled   0
4/7                     1    not-connected   100       32 disabled   0
4/8                     1    not-connected   100       32 disabled   0
4/9                     1    not-connected   100       32 disabled   0
4/10                    1    not-connected   100       32 disabled   0
4/11                    1    not-connected   100       32 disabled   0
4/12                    1    not-connected   100       32 disabled   0
cat5500 (enable)
```

- show spantree *module/port*

```
cat5500 (enable) show spantree 4/1
Port                     Vlan Port-State    Cost  Priority Portfast   Channel_id
------------------------ ---- ------------- ----- -------- ---------- ----------
4/1-2                    1    forwarding       12       32 disabled   865
cat5500 (enable) show spantree 4/2
Port                     Vlan Port-State    Cost  Priority Portfast   Channel_id
------------------------ ---- ------------- ----- -------- ---------- ----------
4/1-2                    1    forwarding       12       32 disabled   865
cat5500 (enable)
```

注意：端口4/**1和*4/2的***show spantree module/port的输出显示相同的结果。原因是它们被分组到信道 ID 为 865 的信道中。

Catalyst 6500 交换机

- show interfaces capabilities

此命令可验证模块是否可以建立信道。

```
Cat6509# show interfaces capabilities module 6
FastEthernet6/1
  Model:                 WS-X6348-RJ-45
  Type:                  10/100BaseTX
  Speed:                 10,100,auto
  Duplex:                half,full
  Trunk encap. type:     802.1Q,ISL
  Trunk mode:            on,off,desirable,nonegotiate
  Channel:               yes
  Broadcast suppression: percentage(0-100)
  Flowcontrol:           rx-(off,on),tx-(none)
  Membership:            static
  Fast Start:            yes
  QOS scheduling:        rx-(1q4t), tx-(2q2t)
  CoS rewrite:           yes
  ToS rewrite:           yes
  Inline power:          yes
  SPAN:                  source/destination
  UDLD                   yes
  Link Debounce:         yes
  Link Debounce Time:    no
FastEthernet6/2
  Model:                 WS-X6348-RJ-45
  Type:                  10/100BaseTX
  Speed:                 10,100,auto
  Duplex:                half,full
  Trunk encap. type:     802.1Q,ISL
  Trunk mode:            on,off,desirable,nonegotiate
  Channel:               yes
  Broadcast suppression: percentage(0-100)
```

```
  Flowcontrol:            rx-(off,on),tx-(none)
  Membership:             static
  Fast Start:             yes
  QOS scheduling:         rx-(1q4t), tx-(2q2t)
  CoS rewrite:            yes
  ToS rewrite:            yes
  Inline power:           yes
  SPAN:                   source/destination
  UDLD                    yes
  Link Debounce:          yes
  Link Debounce Time:     no
```

- **show interfaces port-channel** ***port-channel interface number***

此命令检查端口信道的状态。还可告知您哪些端口可形成此信道。

```
Cat6509# show interfaces port-channel 1
Port-channel1 is up, line protocol is up
  Hardware is EtherChannel, address is 0009.1267.27d9 (bia 0009.1267.27d9)
  MTU 1500 bytes, BW 200000 Kbit, DLY 100 usec,
     reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Full-duplex, 100Mb/s
input flow-control is off, output flow-control is off
Members in this channel: Fa6/1 Fa6/2
ARP type: ARPA, ARP Timeout 04:00:00
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/2000/0/0 (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
     126880 packets input, 10173099 bytes, 0 no buffer
     Received 126758 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 input packets with dribble condition detected
     6101 packets output, 1175124 bytes, 0 underruns
     0 output errors, 0 collisions, 2 interface resets
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
Cat6509#
```

- [show etherchannel summary]

此命令为每个信道组显示一行摘要。在此输出示例中，您可以看口Fa6/1Fa6/2的P。这意味着这些端口形成了端口信道。

```
Cat6509# show etherchannel summary
Flags: D - down P - in port-channel
I - stand-alone s - suspended
H - Hot-standby (LACP only)
R - Layer3 S - Layer2
U - in use f - failed to allocate aggregator

u - unsuitable for bundling
Number of channel-groups in use: 1
Number of aggregators: 1

Group Port-channel Protocol Ports
------ +-------------------+ ----------+ ----------
1 Po1(SU) PAgP Fa6/1(P) Fa6/2(P)
```

- show etherchannel port-channel

此命令可显示端口信道信息。

```
Cat6509# show etherchannel port-channel


Channel-group listing:
----------------------

Group: 1
----------
Port-channels in the group:
----------------------

Port-channel: Po1
------------

Age of the Port-channel = 00d:00h:02m:25s
Logical slot/port = 14/1 Number of ports = 2
GC = 0x00010001 HotStandBy port = null
Port state = Port-channel Ag-Inuse
Protocol = PAgP

Ports in the Port-channel:

Index Load Port EC state No of bits
------+------+------+------------------+-----------
1 55 Fa6/1 Desirable-Sl 4
0 AA Fa6/2 Desirable-Sl 4

Time since last port bundled: 00d:00h:01m:03s Fa6/1
Time since last port Un-bundled: 00d:00h:01m:05s Fa6/1
```

- show spanning-tree detail

此命令验证信道是否处于特定 VLAN 的转发状态。

```
Cat6509# show spanning-tree detail

VLAN1 is executing the IEEE compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, address 00d0.029a.8001
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 32768, address 0030.40a7.a400
  Root port is 833 (Port-channel1), cost of root path is 12
  Topology change flag not set, detected flag not set
  Number of topology changes 0 last change occurred 00:23:59 ago
  Times:  hold 1, topology change 35, notification 2
          hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0, aging 300

Port 833 (Port-channel1) of VLAN1 is forwarding
   Port path cost 12, Port priority 128, Port Identifier 131.65.
   Designated root has priority 32768, address 0030.40a7.a400
   Designated bridge has priority 32768, address 0030.40a7.a400
   Designated port id is 131.97, designated path cost 0
   Timers: message age 2, forward delay 0, hold 0
   Number of transitions to forwarding state: 1
   BPDU: sent 1, received 718
```

- show spanning-tree vlan *vlan number*

此命令显示 VLAN1 的生成树信息。

```
Cat6509# show spanning-tree vlan 1

VLAN0001
Spanning tree enabled protocol ieee
Root ID Priority 32768
Address 0030.40a7.a400
Cost 12
Port 833 (Port-channel1)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32768
Address 00d0.029a.8001
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 300

Interface Role Sts Cost Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Po1 Root FWD 12 128.833 P2p
```

在信道模式下使用无条件方式的特别注意事项

按照本文档所述，Cisco 推荐对端口信道配置使用 PAgP。如果由于任何理由无条件配置 EtherChannel（使用**信道模式 on**），您应该创建一个端口信道。本部分提供过程。如果创建了端口信道，您可在配置过程中避免可能出现的 STP 问题。如果您在另一端成为信道前配置其中一端，则 STP 环路检测可以禁用端口。

1. 要设置端口信道的端口以禁用 CatOS 交换机的模式，请发出 set port disable module/port 命令。
2. 在 Cisco IOS 交换机上创建端口信道（端口组），并将信道模式设置为 on。
3. 在 CatOS 交换机上创建端口信道，并将信道模式设置为 on。
4. 要在第一台 CatOS 交换机上重新启用您之前禁用的端口，请发出 set port enable module/port 命令。

故障排除

EtherChannels 的性能问题

EtherChannels 的性能问题由多种情况引起。常见原因包括负载平衡算法不正确和端口特定物理层问题。

要更好地了解并配置负载平衡算法，请参阅以下文档：

- Catalyst 6500 系列软件配置指南 8.6 的了解 EtherChannel 帧分配如何工作部分。
- Catalyst 6500 系列 Cisco IOS 软件配置指南 12.2SX 的了解负载平衡部分。

有关如何对物理层问题进行故障排除的信息，请参阅对交换机端口和接口问题进行故障排除。

相关信息

- 在运行 CatOS 系统软件的 Catalyst 4500/4000、5500/5000 和 6500/6000 交换机之间配置 EtherChannel
- 在 Catalyst 6500/6000 和 Catalyst 4500/4000 之间配置 LACP (802.3ad)
- 在 Catalyst 交换机上实施 EtherChannel 的系统要求
- Catalyst 6500 系列交换机配置指南
- Catalyst 5000 系列软件配置指南（6.3 和 6.4）
- Catalyst 4000 系列交换机配置指南
- Catalyst 5500 系列交换机技术支持
- Catalyst 6500 系列交换机技术支持
- EtherChannel 技术支持页
- LAN 产品支持
- LAN 交换技术支持
- 技术支持 - Cisco Systems