

Configuring EtherChannel Between Catalyst 2900XL/3500XL Switches and CatOS Switches

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Introduction

This sample configuration sets up an EtherChannel between a Cisco Catalyst 6500 that runs Catalyst OS (CatOS) and a Catalyst 3500XL switch. EtherChannel can be called Fast EtherChannel (FEC) or Gigabit EtherChannel (GEC). The name depends on the speed of interfaces or ports that you use to form the EtherChannel. You can use any of these switches in this scenario in order to obtain the same results:

- Any Catalyst 4500/4000, 5500/5000, or 6500/6000 series switch that runs CatOS
- Any of the Catalyst Layer 2 (L2) fixed configuration 2900XL or 3500XL series switches

In this document, two Fast Ethernet ports from each of the switches are bundled into an FEC. In this document, the terms "FEC", "GEC", "port channel", "channel", and "port group" all refer to EtherChannel.

Prerequisites

Requirements

Ensure that you meet these requirements before you attempt this configuration:

- Familiarity with the commands to use in order to configure EtherChannel on a Catalyst 2900XL or 3500XL switch

For more information on the commands, refer to the *Configuring the Switch Ports* section of the document Catalyst 2900 XL and Catalyst 3500 XL Software Configuration Guide, 12.0(5)WC5, 12.0(5)WC6.

- Familiarity with the commands to use in order to configure EtherChannel on a switch that runs CatOS

For more information on the commands, refer to the *Configuring EtherChannel* section of the

Components Used

The information in this document is based on these software and hardware versions:

- Catalyst 3500XL switch (model WS-C3524-PWR-XL-EN) that runs Cisco IOS® Software Release 12.0(5)WC9
- Catalyst 6500 switch (model 6506 with Supervisor Engine II) that runs CatOS software version 8.2.1

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.

Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

Background Information

You must manually create EtherChannel because Catalyst 2900XL/3500XL switches do not support Port Aggregation Protocol (PAgP); CatOS switches support PAgP. PAgP facilitates the automatic creation of FEC and GEC. For more information on PAgP, refer to the *Configuring EtherChannel* section of the document Catalyst 6500 Series Software Configuration Guide, 8.7.

Create the port channel in the order of these steps:

Note: When you perform the steps in this order, you avoid possible problems with Spanning Tree Protocol (STP) that can occur during the configuration process. STP can shut down ports with the errdisable status on the Catalyst 6500 switch if you configure the CatOS switch as a channel before you configure the XL switch as a channel.

1. Issue the **set port disable** *module/port* command on the CatOS switch.

The command sets to disable mode the ports for use in port channeling.

2. Create the port channel (port group) on the XL switch.
3. Create the port channel on the CatOS switch.

Note: Be sure to set the channel mode to "on". This setting is necessary in order to disable PAgP on the ports and to force the ports to form a channel.

4. Issue the **set port enable** *module/port* command on the CatOS switch.

The command reenables the ports that were disabled earlier.

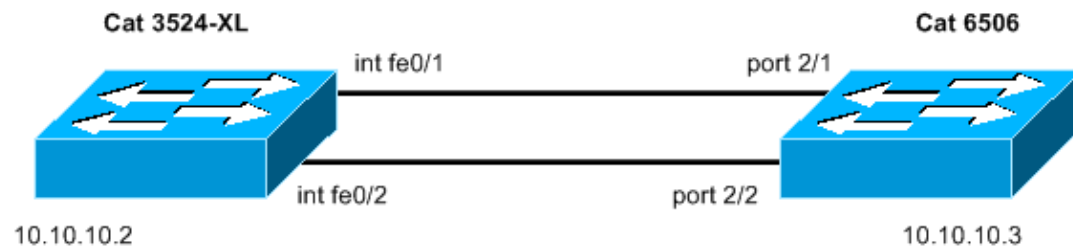
Configure

In this section, you are presented with the information to configure the features described in this document.

Note: Use the Command Lookup Tool [🔗](#) (registered customers only) to find more information on the commands used in this document.

Network Diagram

This document uses this network setup:



Configurations

This document uses these configurations:

- Catalyst 3524XL
- Catalyst 6506

```
Catalyst 3524XL
Current configuration:
!
version 12.0
no service pad
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname cat3500
!
enable password mysecret

!--- This is the privileged mode password for the example.

!
!
!
!
!
ip subnet-zero
!
!
!
interface FastEthernet0/1
  port group 1

!--- The port group <group-number> command
!--- makes this interface a member of channel group 1.

!
interface FastEthernet0/2
  port group 1

!--- This interface is also a member of channel group 1.

!
interface VLAN1
  ip address 10.10.10.2 255.255.255.0
```

```

!--- This is the IP address for management.

no ip directed-broadcast
no ip route-cache
!
!
line con 0
  transport input none
  stopbits 1
line vty 0 4
  password mysecret

!--- This is the Telnet password for the example.

  login
line vty 5 15
  login
!
end

cat3500#

```

Catalyst 6506

```

begin
!
# ***** NON-DEFAULT CONFIGURATION *****
!
!
#time: Sun Feb 1 2004, 14:03:48
!
#version 8.2(1)
!

!--- Output suppressed.

!
#ip
set interface sc0 1 10.10.10.3/255.255.255.0 10.10.10.255

!--- This is the IP address for management.

!

!--- Output suppressed.

!
#port channel
set port channel 2/1-2 15

!--- The set port channel <module/port> command
!--- creates an EtherChannel on switches that run CatOS.
!--- The admin group (15, in this case) is not configured,
!--- but is a number that the system assigns randomly.

# default port status is enable
!
!
#module 1 : 2-port 1000BaseX Supervisor
!
#module 2 : 48-port 10/100BaseTX Ethernet
set port channel 2/1-2 mode on

!--- The set port channel <module/port> mode on command disables PAGP.

```

```

!--- The disablement forces the ports to form a channel with the XL switch
!--- that does not support PAgP.

!
#module 3 empty
!
#module 4 empty
!
#module 5 empty
!
#module 6 empty
!
#module 15 : 1-port Multilayer Switch Feature Card
!
#module 16 empty
end
cat6506> (enable)

```

Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool [🔗](#) (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- Check the port channel in the Catalyst 2900XL/3500XL switch:
 - ◆ **show port group**
 - ◆ **show port group *group-number***
- Check the spanning tree status in the Catalyst 2900XL/3500XL switch:
 - ◆ **show spanning-tree**
- Check the port channel in the CatOS switch:
 - ◆ **show port capabilities *module***
 - ◆ **show port channel**
 - ◆ **show port channel *module/port***
 - ◆ **show port channel info**
- Check the spanning tree status in the CatOS switch:
 - ◆ **show spantree**
 - ◆ **show spantree *vlan***
 - ◆ **show spantree *module/port***

Sample show Command Output

Catalyst 2900XL/3500XL Switch

- **show port group**

```

cat3500# show port group
Group      Interface      Transmit Distribution
-----

```

```

1      FastEthernet0/1      source address
1      FastEthernet0/2      source address
cat3500#

```

- **show spanning-tree**

```
cat3500# show spanning-tree
```

```

Spanning tree 1 is executing the IEEE compatible Spanning Tree protocol
  Bridge Identifier has priority 32768, address 00d0.5868.f180
  Configured hello time 2, max age 20, forward delay 15
  Current root has priority 32768, address 00d0.020e.2c00
  Root port is 1, cost of root path is 12
  Topology change flag not set, detected flag not set, changes 10
  Times: hold 1, topology change 35, notification 2
         hello 2, max age 20, forward delay 15
  Timers: hello 0, topology change 0, notification 0

```

Interface Fa0/1 (port 1) in Spanning tree 1 is FORWARDING

```

  Port path cost 12, Port priority 128
  Designated root has priority 32768, address 00d0.020e.2c00
  Designated bridge has priority 32768, address 00d0.020e.2c00
  Designated port is 33, path cost 0
  Timers: message age 2, forward delay 0, hold 0
  BPDU: sent 4, received 633

```

Interface Fa0/3 (port 15) in Spanning tree 1 is down

```

  Port path cost 100, Port priority 128
  Designated root has priority 32768, address 00d0.020e.2c00
  Designated bridge has priority 32768, address 00d0.5868.f180

```

!--- Output suppressed.

Note: This output does not display interface Fa0/2 because the interface is bundled with Fa0/1 in the port channel. See **(port 1)** in the output.

Catalyst 6506 Switch

- **show port capabilities module** Use this command to check if the module supports EtherChannel.

```

cat6506> (enable) show port capabilities 2
Model                WS-X6348-RJ-45
Port                 2/1
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          auto,off
AuxiliaryVlan         1..1000,1025..4094,untagged,dot1p,none
SPAN                  source,destination
COPS port group       2/1-48
Link debounce timer   yes
Dot1q-all-tagged     yes

```

```

-----
Model                WS-X6348-RJ-45
Port                 2/2
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         auto,off
AuxiliaryVlan        1..1000,1025..4094,untagged,dot1p,none
SPAN                 source,destination
COPS port group      2/1-48
Link debounce timer yes
Dot1q-all-tagged    yes
-----

```

!--- Output suppressed.

• show port channel

```
cat6506> (enable) show port channel
```

Port	Status	Channel Mode	Admin Group	Ch Id
2/1	connected	on	15	1762
2/2	connected	on	15	1762

Port	Device-ID	Port-ID	Platform
2/1	cat3500	FastEthernet0/1	cisco WS-C3524-PWR-X
2/2	cat3500	FastEthernet0/2	cisco WS-C3524-PWR-X

```
cat6506> (enable)
```

• show port channel info

```
cat6506> (enable) show port channel info
```

```
Switch Frame Distribution Method: ip both
```

Port	Status	Channel mode	Admin group	Channel id	Speed	Duplex	Vlan
2/1	connected	on	15	1762	a-100	a-full	1
2/2	connected	on	15	1762	a-100	a-full	1

Port	Channel ifIndex	Oper-group	Neighbor Oper-group	Oper-Distribution Method	PortSecurity/Dynamic port
2/1	67	241		ip both	
2/2	67	241		ip both	

Port	Device-ID	Port-ID	Platform
2/1	cat3500	FastEthernet0/1	cisco WS-C3524-PWR-X
2/2	cat3500	FastEthernet0/2	cisco WS-C3524-PWR-X

!--- Output suppressed.

• **show spantree vlan**

```
cat6506> (enable) show spantree 1
VLAN 1
Spanning tree mode          RAPID-PVST+
Spanning tree type          ieee
Spanning tree enabled

Designated Root             00-04-9b-bf-04-00
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          00-04-9b-bf-04-00
Bridge ID Priority           32768
Bridge Max Age 20 sec  Hello Time 2 sec  Forward Delay 15 sec

Port                State          Role Cost      Prio Type
-----
1/1                 not-connected -           4 32
1/2                 not-connected -           4 32
2/1-2             forwarding DESG      12 32 P2P, PEER(STP)
2/3                 not-connected -          100 32
2/4                 not-connected -          100 32
2/5                 not-connected -          100 32
2/6                 not-connected -          100 32
```

!--- Output suppressed.

• **show spantree module/port**

```
cat6506> (enable) show spantree 2/1
Edge Port:                No, (Configured) Default
Link Type:                 P2P, (Configured) Auto
Port Guard:                Default
Port                Vlan State          Role Cost      Prio Type
-----
2/1-2             1 forwarding DESG      12 32 P2P, PEER(STP)
cat6506> (enable)

cat6506> (enable) show spantree 2/2
Edge Port:                No, (Configured) Default
Link Type:                 P2P, (Configured) Auto
Port Guard:                Default
Port                Vlan State          Role Cost      Prio Type
-----
2/1-2             1 forwarding DESG      12 32 P2P, PEER(STP)
cat6506> (enable)
```

Note: The output of the **show spantree module/port** command for ports 2/1 and 2/2 displays identical results because the ports are grouped together in one channel.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

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Related Information

- **Configuring EtherChannel and 802.1Q Trunking Between Catalyst 2900XL/3500XL and Catalyst 2940, 2950/2955, and 2970 Switches**
- **Configuring Layer 2 EtherChannel and Trunking Between 2900XL/3500XL/2950 Series Switches and Catalyst Switches Running Cisco IOS Software**
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