



Fast EtherChannel

The Fast EtherChannel feature allows multiple Fast Ethernet point-to-point links to be bundled into one logical link to provide bidirectional bandwidth of up to 800 Mbps. Fast EtherChannel builds on standards based on 802.3 full-duplex Fast Ethernet to provide fault-tolerant, high-speed links between devices and servers.

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Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Information About Fast EtherChannel

Overview of Fast EtherChannel

The Fast EtherChannel feature can be configured between:

- Cisco 7200 series routers, Cisco 7500 series routers, and Cisco 7000 series routers with the Cisco 7000 Series Route Switch Processor (RSP7000) and Cisco 7000 Series Chassis Interface (RSP7000CI).

- A Cisco 7500 series router or a Cisco 7000 series router with the RSP7000 and RSP7000CI and a Catalyst 5000 switch.

Fast EtherChannel provides higher bidirectional bandwidth, redundancy, and load sharing. Up to four Fast Ethernet interfaces can be bundled in a port-channel, and the device can support up to four port channels. The Fast EtherChannel feature is capable of load balancing traffic across Fast Ethernet links. Unicast, broadcast, and multicast traffic are distributed across the links providing higher performance and redundant parallel paths. In the event of a link failure, traffic is automatically redirected to other functional links within the Fast EtherChannel.

In the Fast EtherChannel feature, IP traffic is distributed over the port-channel interface, while traffic from other routing protocols is sent over a single link. Bridged traffic is distributed on the basis of the Layer 3 information in the packet. If the Layer 3 information does not exist in the packet, the traffic is sent over the first link.

Fast EtherChannel supports all features currently supported on the Fast Ethernet interface. You must configure these features on the port-channel interface rather than on the individual Fast Ethernet interfaces. Fast EtherChannel connections are fully compatible with Cisco VLAN and routing technologies. The Inter-Switch Link (ISL) VLAN trunking protocol can carry multiple VLANs across a Fast EtherChannel. Devices attached to Fast EtherChannel links can provide full multiprotocol routing with support for host standby using the Hot Standby Router Protocol (HSRP).

The port-channel (consisting of up to four Fast Ethernet interfaces) is treated as a single interface. A port-channel is used in Cisco software to maintain compatibility with existing commands on the Catalyst 5000 switch. You can create the Fast EtherChannel by using the **interface port-channel** interface configuration command. You can assign up to four Fast Ethernet interfaces to a port-channel by using the **channel-group** interface configuration command.

Additional Fast EtherChannel features include:

- Hot Standby Router Protocol (HSRP)

For more information about configuring HSRP, see the “Configuring IP Services” chapter in the *IP Application Services Configuration Guide*.

- Cisco Express Forwarding (formerly known as CEF) and distributed Cisco Express Forwarding (formerly known as dCEF)

For more information about configuring Cisco Express Forwarding, see the “Configuring Cisco Express Forwarding” module of the *IP Switching Configuration Guide*.

How to Configure Fast EtherChannel

Configuring the Port-Channel Interface

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface port-channel** *channel-number*
4. **ip address** *ip-address mask*
5. **mac-address** *ieee-address*
6. **end**
7. **show interface port-channel**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface port-channel <i>channel-number</i> Example: Device(config)# interface port-channel 3	Creates the port-channel interface and enters interface configuration mode. The channel number ranges from 1 to 4.
Step 4	ip address <i>ip-address mask</i> Example: Device(config-if)# ip address 10.108.1.27 255.0.0.0	Assigns an IP address and subnet mask to the Fast EtherChannel. • If you configure Cisco Inter-Switch Link (ISL), you must assign an IP address to the subinterface (for example, interface port-channel 1.1—an IP address per VLAN) and you must specify the encapsulation with the VLAN number under that subinterface (for example, encapsulation is 100).
Step 5	mac-address <i>ieee-address</i>	(Optional) Assigns a static MAC address to the Fast EtherChannel.

	Command or Action	Purpose
	Example: <pre>Device(config-if)# mac-address 1111.2222.3333</pre>	If you do not assign a static MAC address on the port-channel interface, the Cisco software automatically assigns a MAC address. If you assign a static MAC address and later remove it, the Cisco software automatically assigns a MAC address.
Step 6	end Example: <pre>Device(config-if)# end</pre>	Exits interface configuration mode and returns to privileged EXEC mode.
Step 7	show interface port-channel Example: <pre>Device# show interface port-channel</pre>	Displays information about the port-channel interface so that you can verify the configuration.

What to Do Next



Note

If you want to use the Cisco Discovery Protocol (formerly known as CDP), you must configure it on the physical Ethernet, Fast Ethernet, or Gigabit Ethernet interface and not on the port-channel interface.



Caution

Fast EtherChannel supports Cisco Express Forwarding and distributed Cisco Express Forwarding, depending on your release. We recommend that you clear all explicit **ip route-cache distributed** commands from Fast Ethernet interfaces before enabling distributed Cisco Express Forwarding on the port-channel interface to give the port-channel interface proper control of its physical Fast Ethernet links. When you enable Cisco Express Forwarding or distributed Cisco Express Forwarding globally, all interfaces that support Cisco Express Forwarding or distributed Cisco Express Forwarding are enabled. When Cisco Express Forwarding or distributed Cisco Express Forwarding is enabled on the port-channel interface, it is automatically enabled on each of the Fast Ethernet interfaces in the channel group. However, if you have previously disabled Cisco Express Forwarding or distributed Cisco Express Forwarding on the Fast Ethernet interface, Cisco Express Forwarding or distributed Cisco Express Forwarding is not automatically enabled. In this case, you must enable Cisco Express Forwarding or distributed Cisco Express Forwarding on the Fast Ethernet interface.

Configuring Fast Ethernet Interfaces

Assigning Fast Ethernet Interfaces to a Fast EtherChannel

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **interface fastethernet *slot/port***
4. **no ip address**
5. **channel-group *channel-number***
6. **exit**
7. **end**
8. **show interfaces port-channel**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface fastethernet <i>slot/port</i> Example: Device(config)# interface fastethernet 5/0	Creates or modifies an existing Fast Ethernet interface and enters interface configuration mode.
Step 4	no ip address Example: Device(config-if)# no ip address	Disables the IP address if the Fast Ethernet interface already exists and has an IP address assigned.
Step 5	channel-group <i>channel-number</i> Example: Device(config-if)# channel-group 3	Assigns Fast Ethernet interfaces to the Fast EtherChannel. The channel number is the same as the channel number that you specified when you created the port-channel interface.

	Command or Action	Purpose
Step 6	exit Example: Device(config-if)# exit	Exits interface configuration mode and returns to global configuration mode. Repeat Steps 1 through 4 to add up to four Fast Ethernet interfaces to the Fast EtherChannel.
Step 7	end Example: Device(config)# end	Exits global configuration mode and returns to privileged EXEC mode.
Step 8	show interfaces port-channel Example: Device# show interfaces port-channel	Displays information about the Fast Ethernet interface so that you can verify the configuration.

Removing Fast Ethernet Interfaces from a Fast EtherChannel



Caution

The port-channel interface is a routed interface. Do not enable Layer 3 addresses on the physical Fast Ethernet interfaces. Do not assign bridge groups on physical Fast Ethernet interfaces because bridges may create loops. Also, you must disable the spanning tree protocol.

SUMMARY STEPS

1. enable
2. configure terminal
3. interface fastethernet *slot/port*
4. no channel-group
5. end
6. show interfaces port-channel

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.
Step 3	interface fastethernet slot/port Example: Device(config)# interface fastethernet 5/0	Specifies the Fast Ethernet interface and enters interface configuration mode.
Step 4	no channel-group Example: Device(config-if)# no channel-group	Removes the Fast Ethernet interface from the channel group.
Step 5	end Example: Device(config-if)# end	Exits interface configuration mode and returns to privileged EXEC mode.
Step 6	show interfaces port-channel Example: Device# show interfaces port-channel	Displays information about the Fast Ethernet interface so that you can verify the configuration.

What to Do Next

The Cisco software automatically removes a Fast Ethernet interface from the Fast EtherChannel if the interface goes down, and the software automatically adds the Fast Ethernet interface to the Fast EtherChannel when the interface comes up.

Fast EtherChannel relies on keepalives to detect whether the line protocol is up or down. Keepalives are enabled by default on Fast Ethernet interfaces. If the line protocol on the interface goes down because of not receiving a keepalive signal, the Fast EtherChannel detects that the line protocol is down and removes the interface from the Fast EtherChannel. However, if the line protocol remains up because keepalives are disabled on the Fast Ethernet interface, the Fast EtherChannel cannot detect this link failure and does not remove the interface from the Fast EtherChannel even if the line protocol goes down. This behavior can cause unpredictable results. The implementation of the Port Aggregation Protocol in a subsequent release of this feature will remove the dependency on keepalives.

See the [Configuration Examples for Fast EtherChannel](#), on page 10 section for configuration examples.

Configuring Gigabit Ethernet Interfaces

Assigning Gigabit Ethernet Interfaces to the Gigabit EtherChannel

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `interface gigabitethernet slot/port`
4. `no ip address`
5. `channel-group channel-number`
6. `exit`
7. `end`
8. `show interfaces port-channel`

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> <code>enable</code>	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# <code>configure terminal</code>	Enters global configuration mode.
Step 3	interface gigabitethernet <i>slot/port</i> Example: Device(config)# <code>interface gigabitethernet 0</code>	Creates or modifies an existing Gigabit Ethernet interface and enters interface configuration mode.
Step 4	no ip address Example: Device(config-if)# <code>no ip address</code>	Disables the IP address, if the Gigabit Ethernet interface already exists and has an IP address assigned.
Step 5	channel-group <i>channel-number</i> Example: Device(config-if)# <code>channel-group 3</code>	Assigns Gigabit Ethernet interfaces to the Gigabit EtherChannel. The channel number is the same as the channel number that you specified when you created the port-channel interface.

	Command or Action	Purpose
Step 6	exit Example: Device(config-if)# exit	Exits interface configuration mode and returns to global configuration mode. Repeat Steps 1 through 4 to add up to eight Gigabit Ethernet interfaces to the Gigabit EtherChannel.
Step 7	end Example: Device(config-if)# end	Exits global configuration mode and returns to privileged EXEC mode.
Step 8	show interfaces port-channel Example: Device(config)# show interfaces port-channel	Displays information about the Gigabit Ethernet interface so that you can verify the configuration.

Removing Gigabit Ethernet Interfaces from a Gigabit EtherChannel

SUMMARY STEPS

1. enable
2. configure terminal
3. interface gigabitethernet *slot/port*
4. no channel-group
5. end
6. show interfaces port-channel

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Device> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Device# configure terminal	Enters global configuration mode.

	Command or Action	Purpose
Step 3	interface gigabitethernet <i>slot/port</i> Example: Device(config)# interface gigabitethernet 0	Specifies the Gigabit Ethernet interface and enters interface configuration mode.
Step 4	no channel-group Example: Device(config-if)# no channel-group	Removes the Gigabit Ethernet interface from the channel group.
Step 5	end Example: Device(config-if)# end	Exits global configuration mode and returns to privileged EXEC mode.
Step 6	show interfaces port-channel Example: Device# show interfaces port-channel	Displays information about the Gigabit Ethernet interface so that you can verify the configuration.

Configuration Examples for Fast EtherChannel

Example: Configuring the Port-Channel Interface

```

Device> enable
Device# configure terminal
Device(config)# interface port-channel 3
Device(config-if)# ip address 10.108.1.27 255.0.0.0
Device(config-if)# mac-address 1111.2222.3333
Device(config-if)# end
Device# show interface port-channel

```

Example: Assigning Fast Ethernet Interfaces to a Fast EtherChannel

```

Device> enable
Device# configure terminal
Device(config)# interface fastethernet 0
Device(config-if)# no ip address
Device(config-if)# channel-group 3
Device(config)# end
Device# show interfaces port-channel

```

Example: Removing Fast Ethernet Interfaces from a Fast EtherChannel

```
Device> enable
Device# configure terminal
Device(config)# interface fastethernet 0
Device(config-if)# no channel-group
Device(config-if)# end
```

Example: Assigning Gigabit Ethernet Interfaces to a Gigabit EtherChannel

```
Device> enable
Device# configure terminal
Device(config)# interface gigabitethernet 0
Device(config-if)# no ip address
Device(config-if)# channel-group 3
Device(config-if)# end
Device(config)# show interfaces port-channel
```

Example: Removing Gigabit Ethernet Interfaces from a Gigabit EtherChannel

```
Device> enable
Device# configure terminal
Device(config)# interface gigabitethernet 0
Device(config-if)# no channel-group
Device(config-if)# end
```

Additional References for Fast EtherChannel

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Command List, All Releases
Interface and Hardware Component commands	Cisco IOS Interface and Hardware Component Command Reference

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Fast EtherChannel

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for Fast EtherChannel

Feature Name	Releases	Feature Information
Fast EtherChannel	12.1(4)E 12.2(52)SG	The Fast EtherChannel feature allows multiple Fast Ethernet point-to-point links to be bundled into one logical link to provide bidirectional bandwidth of up to 800 Mbps. Fast EtherChannel builds on standards based on 802.3 full-duplex Fast Ethernet to provide fault-tolerant, high-speed links between devices and servers.