CHAPTER 10

Configuring EtherChannel

This chapter describes how to configure EtherChannel for the Catalyst 4840G SLB switch. For further information about the commands used in this chapter, refer to the command reference publications in the Cisco IOS documentation set and to Appendix A, "Command Reference."

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Note You are at Step 8 in the suggested process for configuring your Catalyst 4840G SLB switch. See the "Switch Configuration Steps" section on page 2-1.

About EtherChannel

Cisco Fast EtherChannel trunking technology builds on standards-based 802.3 full-duplex Fast Ethernet to provide a reliable high-speed solution for the campus network backbone. Fast EtherChannel provides bandwidth scalability within the campus by providing increments of 200 Mbps to 400 Mbps.

EtherChannel groups multiple full-duplex 802.3 Ethernet interfaces to provide fault-tolerant high-speed links between switches, routers, and servers. EtherChannel is a logical aggregation of multiple Ethernet interfaces. EtherChannel forms a single higher bandwidth routing or bridging endpoint. EtherChannel is designed primarily for host-to-switch connectivity or Inter-Switch Link (ISL) switch-to-switch connectivity, for example, connectivity to a Catalyst 5500 switch.

EtherChannel connections are fully compatible with Cisco IOS VLAN and routing technologies. The ISL VLAN trunking protocol can carry multiple VLANs across an EtherChannel, and routers attached to EtherChannel links can provide full multiprotocol routing with support for host standby using Hot Standby Router Protocol (HSRP).

An EtherChannel interface, which consists of up to four Fast Ethernet interfaces, is treated as a single interface called a port channel. You must configure EtherChannel on the EtherChannel interface rather than on the individual member Ethernet interfaces. You create an EtherChannel interface by entering the **interface port-channel** interface configuration command. The Catalyst 4840G SLB switch supports 10 Fast Ethernet (FEC) port channels and 1 Gigabit Ethernet (GEC) port channel.

Configuring EtherChannel

You first create an EtherChannel interface (port channel) and assign a network IP address to it. You then assign the Fast Ethernet or Gigabit Ethernet interfaces (up to four) to the port channel.

Note When you assign interfaces to a specific port channel, the interfaces must be all Fast Ethernet or all Gigabit Ethernet. You cannot mix interface types within a single port channel.

Caution The EtherChannel interface is the routed interface. Do not enable Layer 3 addresses on the physical Fast Ethernet or Gigabit Ethernet interfaces. Do not assign bridge groups on the physical Fast Ethernet or Gigabit Ethernet interfaces because doing so creates loops. Finally, you must disable the Spanning Tree Protocol.

To create an EtherChannel interface and assign its IP address and subnet mask, perform this task:

	Command	Purpose
Step 1	`SLB-Switch(config)# interface port-channel` *channel-number* `SLB-Switch(config-if)#`	Create the EtherChannel interface. The channel number can be from 1 to 64 for FEC and GEC.
Step 2	`SLB-Switch(config-if)# ip address` *ip-address subnet-mask*	Assign an IP address and subnet mask to the EtherChannel interface.
Step 3	`SLB-Switch(config-if)# exit`	Exit interface configuration mode. Optionally, you can remain in interface configuration mode and enable other supported interface commands to meet your requirements.

To assign Ethernet interfaces to the EtherChannel, perform this task:

	Command	Purpose
Step 1	`SLB-Switch(config)# interface fastethernet` *interface_number* or `SLB-Switch(config)# interface gigabitethernet` *interface_number* `SLB-Switch(config-if)#`	Enter Ethernet interface configuration mode to configure the Fast Ethernet or Gigabit Ethernet interface you want to assign to the EtherChannel. You can assign any interface on any interface module installed on the system to the EtherChannel.
Step 2	`SLB-Switch(config-if)# no ip address`	Disable the IP address. If the Fast Ethernet or Gigabit Ethernet interface already exists and has an IP address assigned, you must disable it before performing the next step. The Ethernet interface uses the IP address assigned to the EtherChannel interface.

	Command	Purpose
Step 3	`SLB-Switch(config-if)# channel-group channel-number`	Assign the Fast Ethernet or Gigabit Ethernet interfaces to the EtherChannel. The channel number must be the same channel number you assigned to the EtherChannel interface.
Step 4	`SLB-Switch(config-if)# exit` `SLB-Switch#`	Exit interface configuration mode. Repeat steps 3 through 5 to add up to 10 Fast Ethernet interfaces or a Gigabit Ethernet interface to the Fast EtherChannel.
Step 5	`SLB-Switch# copy system:running-config nvram:startup-config`	Save your configuration changes to NVRAM.

Once Fast EtherChannel or Gigabit EtherChannel is configured, you can monitor its status using the **show interfaces port-channel** command.

For an example of Gigabit EtherChannel configuration, see the "Example ISL VLAN and BVI with GEC Configuration" section on page 4-11.

Removing an EtherChannel Interface

To remove an interface from an EtherChannel, you first remove the network address from the interface, and then remove the Ethernet interfaces assigned to the EtherChannel.

To remove the network address from the EtherChannel, perform this task beginning in global configuration mode:

	Command	Purpose
Step 1	`SLB-Switch(config)# interface port-channel channel-number` `SLB-Switch(config-if)#`	Enter interface configuration mode for the port channel.
Step 2	`SLB-Switch(config-if)# no ip address ip-address subnet-mask`	Remove the IP address and subnet mask from the EtherChannel interface.
Step 3	`SLB-Switch(config-if)# exit` `SLB-Switch(config)#`	Exit interface configuration mode.

To remove Ethernet interfaces assigned to the EtherChannel, perform this task beginning in global configuration mode:

	Command	Purpose

Step 1	`SLB-Switch(config)# interface fastethernet interface_number`
	or
	`SLB-Switch(config)# interface gigabitethernet interface_number`
	`SLB-Switch(config-if)#`
		Enter Ethernet interface configuration mode to configure the Fast Ethernet or Gigabit Ethernet interface in the EtherChannel.

Step 2	`SLB-Switch(config-if)# no channel-group channel-number`	Remove the Ethernet interface assigned to the EtherChannel. The channel number must be the same channel number you assigned from the EtherChannel interface.

	Command	Purpose
Step 3	`SLB-Switch(config-if)# end` `SLB-Switch#`	Exit interface configuration mode. Repeat Steps 1 through 3 to remove any other interfaces from the EtherChannel.
Step 4	`SLB-Switch# copy system:running-config nvram:startup-config`	Save your configuration changes to NVRAM.

Cisco IOS software automatically removes a Fast Ethernet or Gigabit Ethernet interface from the EtherChannel if the interface goes down, and the software automatically adds the interface to the EtherChannel when the interface is back up.

EtherChannel relies on keepalive signals to detect whether the line protocol is up or down. Keepalive signals are enabled by default on the Fast Ethernet and Gigabit Ethernet interfaces. If the line protocol on the interface goes down because it did not receive a keepalive signal, the EtherChannel detects that the line protocol is down and removes the interface from the EtherChannel.

However, if the line protocol remains up because keepalive signals are disabled on the Fast Ethernet or Gigabit Ethernet interface, the EtherChannel cannot detect this link failure (other than a cable disconnect) and does not remove the interface from the EtherChannel even if the line protocol goes down. This can result in unpredictable behavior.

Note When configuring encapsulation on EtherChannel, you cannot configure both ISL and 802.1Q on the same EtherChannel interface.

Configuring Encapsulation over EtherChannel

When configuring encapsulation over FEC or GEC, be sure to configure the ISL or 802.1Q over the EtherChannel (that is, the port channel interface), not its member ports. Also make sure that you do not apply protocol-level configuration (such as an IP address or a bridge group assignment) to the member interfaces. All protocol-level configuration should be on the port channel or on its subinterface. You must configure ISL or 802.1Q encapsulation on the partner system of the EtherChannel as well.

Note When configuring encapsulation on EtherChannel, you cannot configure both ISL and 802.1Q on the same EtherChannel interface.

To configure encapsulation on a subinterface over EtherChannel, perform this task:

	Command	Purpose
Step 1	`SLB-Switch(config)# interface port-channel` *channel-number* `SLB-Switch(config-if)#`	Create the EtherChannel (or port channel) virtual interface. The channel number can be from 1 to 64 for FEC and GEC.
Step 2	`SLB-Switch(config-if)# exit`	Return to global configuration mode.
Step 3	`SLB-Switch(config)# interface fastethernet` *interface_number* or `SLB-Switch(config)# interface gigabitethernet` *interface_number* `SLB-Switch(config-if)#`	Configure the port channel member.

	Command	Purpose
Step 4	`SLB-Switch(config-if)# channel-group` *channel-number*	Add this interface to the EtherChannel. Up to four interfaces can be added.
Step 5	`SLB-Switch(config-if)# interface port-channel` *channel-number.subinterface-number*	Configure the subinterface on the port channel.
Step 6	`SLB-Switch(config-if)# encapsulation isl` *vlan-id*	Assign the ISL encapsulation and VLAN ID to the subinterface.
Step 7	`SLB-Switch(config-if)# ip address` *ip-address subnet-mask*	Assign the protocol IP address and subnet mask to the subinterface.
Step 8	`SLB-Switch(config-if)# end` `SLB-Switch#`	Return to privileged EXEC mode. Optionally, you can remain in interface configuration mode and enable other supported interface commands to meet your requirements.
Step 9	`SLB-Switch# copy system:running-config nvram:startup-config`	Save your configuration changes to NVRAM.

This example shows how to configure a subinterface and encapsulation over an EtherChannel:

```
SLB-Switch(config)# interface port-channel 3
SLB-Switch(config-if)# exit
SLB-Switch(config-if)# interface fastethernet 3
SLB-Switch(config-if)# channel-group 3
SLB-Switch(config-if)# interface port-channel 3.3
SLB-Switch(config-subif)# encapsulation isl 11
SLB-Switch(config-subif)# ip address 10.3.4.5 255.0.0.0
SLB-Switch(config-subif)# end
SLB-Switch# copy system:running-config nvram:startup-config
```