CHAPTER 4

Configuring a Supervisor Engine 720

This chapter describes how to configure a Supervisor Engine 720 in a Cisco 7600 series router. This chapter contains these sections:

Note

- For complete syntax and usage information for the commands used in this chapter, refer to the Cisco 7600 Series Routers Command References at this URL:

  http://www.cisco.com/en/US/products/hw/routers/ps368/prod_command_reference_list.html
- With a 3-slot chassis, install the Supervisor Engine 720 in either slot 1 or 2.
- With a 6-slot or a 9-slot chassis, install the Supervisor Engine 720 in either slot 5 or 6.
- With a 13-slot chassis, install the Supervisor Engine 720 in either slot 7 or 8.

Using the Bootflash or Bootdisk on a Supervisor Engine 720

Release 12.2SR supports the Supervisor Engine 720 64-MB bootflash device (**sup-bootflash:**). For information about using WS-CF-UPG=, which is available with Release 12.2(18)SXE5 and rebuilds and Release 12.2(18)SXF, see this publication:

http://www.cisco.com/univercd/cc/td/doc/product/lan/cat6000/cfgnotes/78_17277.htm

Note All Sup720 modules require a minimum of 128-MB bootflash to run Release 12.2SRB and later releases. A CompactFlash (CF) adapter with 512-MB bootflash is available for Sup720 modules in Release 12.2(18)SXF and later releases. Use the Cisco part number CF-ADAPTER= for ordering.

Using the Slots on a Supervisor Engine 720

The Supervisor Engine 720 has two CompactFlash Type II slots. The CompactFlash Type II slots support CompactFlash Type II Flash PC cards sold by Cisco Systems, Inc. The keywords for the slots on the active Supervisor Engine 720 are **disk0:** and **disk1:**. The keywords for the slots on a redundant Supervisor Engine 720 are **slavedisk0:** and **slavedisk1:**.

Configuring Supervisor Engine 720 Ports

Supervisor Engine 720 port 1 has a small form-factor pluggable (SFP) connector and has no unique configuration options.

Supervisor Engine 720 port 2 has an RJ-45 connector and an SFP connector (default). To use the RJ-45 connector, you must change the configuration.

To configure port 2 on a Supervisor Engine 720 to use either the RJ-45 connector or the SFP connector, perform this task:

	Command	Purpose
Step 1	`Router(config)# interface gigabitethernet` *slot/2*	Selects the Ethernet port to be configured.
Step 2	`Router(config-if)# media-type {rj45 | sfp}`	Selects the connector to use.
	`Router(config-if)# no media-type`	Reverts to the default configuration (SFP).

This example shows how to configure port 2 on a Supervisor Engine 720 in slot 5 to use the RJ-45 connector:

```
Router(config)# interface gigabitethernet 5/2
Router(config-if)# media-type rj45
```

Configuring and Monitoring the Switch Fabric Functionality

These sections describe how to configure the switching mode and monitor the switch fabric functionality that is included on a Supervisor Engine 720:

Understanding How the Switch Fabric Functionality Works

These sections describe how the switch fabric functionality works:

Switch Fabric Functionality Overview

The switch fabric functionality is built into the Supervisor Engine 720 and creates a dedicated connection between fabric-enabled modules and provides uninterrupted transmission of frames between these modules. In addition to the direct connection between fabric-enabled modules provided by the switch fabric funtionality, fabric-enabled modules also have a direct connection to the 32-Gbps forwarding bus.

Forwarding Decisions for Layer 3-Switched Traffic

Either a PFC3 or a Distributed Feature Card 3 (DFC3) makes the forwarding decision for Layer 3-switched traffic, as follows:

- A PFC3 makes all forwarding decisions for each packet that enters the router through a module without a DFC3.
- A DFC3 makes all forwarding decisions for each packet that enters the router on a DFC3-enabled module in these situations:
  - If the egress port is on the same module as the ingress port, the DFC3 forwards the packet locally (the packet never leaves the module).
  - If the egress port is on a different fabric-enabled module, the DFC3 sends the packet to the egress module, which sends it out the egress port.
  - If the egress port is on a different nonfabric-enabled module, the DFC3 sends the packet to the Supervisor Engine 720. The Supervisor Engine 720 fabric interface transfers the packet to the 32-Gbps switching bus where it is received by the egress module and is sent out the egress port.

Switching Modes

With a Supervisor Engine 720, traffic is forwarded to and from modules in one of the following modes:

- Compact mode—The router uses this mode for all traffic when only fabric-enabled modules are installed. In this mode, a compact version of the DBus header is forwarded over the switch fabric channel, which provides the best possible performance.
- Truncated mode—The router uses this mode for traffic between fabric-enabled modules when there are both fabric-enabled and nonfabric-enabled modules installed. In this mode, the router sends a truncated version of the traffic (the first 64 bytes of the frame) over the switch fabric channel.
- Bus mode—The router uses this mode for traffic between nonfabric-enabled modules and for traffic between a nonfabric-enabled module and a fabric-enabled module. In this mode, all traffic passes between the local bus and the supervisor engine bus.

Table 4-1 shows the switching modes used with fabric-enabled and nonfabric-enabled modules installed.

Table 4-1 Switch Fabric Functionality Switching Modes

Modules	Switching Modes
Between fabric-enabled modules (when no nonfabric-enabled modules are installed)	Compact[1]
Between fabric-enabled modules (when nonfabric-enabled modules are also installed)	Truncated[2]

Table 4-1 Switch Fabric Functionality Switching Modes

Modules	Switching Modes
Between fabric-enabled and nonfabric-enabled modules	Bus
Between non-fabric-enabled modules	Bus

1. In **show** commands, displayed as dcef mode for fabric-enabled modules with DFC3 installed; displayed as fabric mode for other fabric-enabled modules.
2. Displayed as fabric mode in **show** commands.

Configuring the Switch Fabric Functionality

To configure the switching mode, perform this task:

Command	Purpose
`Router(config)# [no] fabric switching-mode allow {bus-mode | {truncated [{threshold [number]}]}}`	Configures the switching mode.

When configuring the switching mode, note the following information:

- To allow the use of nonfabric-enabled modules or to allow fabric-enabled modules to use bus mode, enter the **fabric switching-mode allow bus-mode** command.
- To prevent the use of nonfabric-enabled modules or to prevent fabric-enabled modules from using bus mode, enter the **no fabric switching-mode allow bus-mode** command.

Caution When you enter the **no fabric switching-mode allow bus-mode** command, power is removed from any nonfabric-enabled modules installed in the router.

- To allow fabric-enabled modules to use truncated mode, enter the **fabric switching-mode allow truncated** command.
- To prevent fabric-enabled modules from using truncated mode, enter the **no fabric switching-mode allow truncated** command.
- To configure how many fabric-enabled modules must be installed before they use truncated mode instead of bus mode, enter the **fabric switching-mode allow truncated threshold** *number* command.
- To return to the default truncated-mode threshold, enter the **no fabric switching-mode allow truncated threshold** command.

Monitoring the Switch Fabric Functionality

The switch fabric functionality supports a number of **show** commands for monitoring purposes. A fully automated startup sequence brings the module online and runs the connectivity diagnostics on the ports.

These sections describe how to monitor the switch fabric functionality:

- Displaying the Switch Fabric Redundancy Status, page 4-5
- Displaying Fabric Channel Switching Modes, page 4-5
- Displaying the Fabric Status, page 4-5

Displaying the Switch Fabric Redundancy Status

To display the switch fabric redundancy status, perform this task:

Command	Purpose
`Router# show fabric active`	Displays switch fabric redundancy status.

```
Router# show fabric active
Active fabric card in slot 5
No backup fabric card in the system
Router#
```

Displaying Fabric Channel Switching Modes

To display the fabric channel switching mode of one or all modules, perform this task:

Command	Purpose
`Router# show fabric switching-mode [module {slot_number | all]`	Displays fabric channel switching mode of one or all modules.

This example shows how to display the fabric channel switching mode of all modules:

```
Router# show fabric switching-mode all
%Truncated mode is allowed
%System is allowed to operate in legacy mode

Module Slot     Switching Mode     Bus Mode
    5                   DCEF     Compact
    9               Crossbar     Compact
Router#
```

Displaying the Fabric Status

To display the fabric status of one or all switching modules, perform this task:

Command	Purpose
`Router# show fabric status [slot_number | all]`	Displays fabric status.

This example shows how to display the fabric status of all modules:

```
Router# show fabric status
 slot    channel      speed              module              fabric
                                         status              status
    1          0         8G                  OK                  OK
    5          0         8G                  OK          Up- Timeout
    6          0        20G                  OK         Up- BufError
    8          0         8G                  OK                  OK
```

```
    8          1          8G                    OK                    OK
    9          0          8G          Down- DDRsync                   OK
Router#
```

Displaying the Fabric Utilization

To display the fabric utilization of one or all modules, perform this task:

Command	Purpose
Router# **show fabric utilization** [*slot_number* | **all**]	Displays fabric utilization.

This example shows how to display the fabric utilization of all modules:

```
Router# show fabric utilization all
Lo% Percentage of Low-priority traffic.
Hi% Percentage of High-priority traffic.

 slot    channel      speed  Ingress Lo%   Egress Lo%  Ingress Hi% Egress Hi%
    5          0        20G            0            0            0          0
    9          0         8G            0            0            0          0
Router#
```

Displaying Fabric Errors

To display fabric errors of one or all modules, perform this task:

Command	Purpose
Router# **show fabric errors** [*slot_number* | **all**]	Displays fabric errors.

This example shows how to display fabric errors on all modules:

```
Router# show fabric errors

Module errors:
 slot    channel        crc      hbeat       sync   DDR sync
    1          0          0          0          0          0
    8          0          0          0          0          0
    8          1          0          0          0          0
    9          0          0          0          0          0

Fabric errors:
 slot    channel       sync     buffer    timeout
    1          0          0          0          0
    8          0          0          0          0
    8          1          0          0          0
    9          0          0          0          0
Router#
```