



# Switch Fabric Functionality

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- [Prerequisites for Switch Fabric Functionality, page 17-1](#)
- [Restrictions for Switch Fabric Functionality, page 17-1](#)
- [Information About the Switch Fabric Functionality, page 17-2](#)
- [Default Settings for Switch Fabric Functionality, page 17-2](#)
- [How to Configure the Switch Fabric Functionality, page 17-3](#)
- [Monitoring the Switch Fabric Functionality, page 17-4](#)



**Note**

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- For complete syntax and usage information for the commands used in this chapter, see these publications:
  - Cisco IOS Release 15.1SY supports only Ethernet interfaces. Cisco IOS Release 15.1SY does not support any WAN features or commands.
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**Tip**

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For additional information about Cisco Catalyst 6500 Series Switches (including configuration examples and troubleshooting information), see the documents listed on this page:

[http://www.cisco.com/en/US/products/hw/switches/ps708/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html)

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## Prerequisites for Switch Fabric Functionality

None.

## Restrictions for Switch Fabric Functionality

None.

# Information About the Switch Fabric Functionality

- [Switch Fabric Functionality Overview, page 17-2](#)
- [Forwarding Decisions for Layer 3-Switched Traffic, page 17-2](#)

## Switch Fabric Functionality Overview

The switch fabric functionality is built into the supervisor engine 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 functionality, fabric-enabled modules also have a direct connection to the forwarding bus.

## Forwarding Decisions for Layer 3-Switched Traffic

Either a PFC or a Distributed Feature Card makes the forwarding decision for Layer 3-switched traffic as follows:

- A PFC makes all forwarding decisions for each packet that enters the switch through a module without a DFC.
- A DFC makes all forwarding decisions for each packet that enters the switch on a DFC-equipped module in these situations:
  - If the egress port is on the same module as the ingress port, the DFC forwards the packet locally (the packet never leaves the module).
  - If the egress port is on a different fabric-enabled module, the DFC 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 DFC sends the packet to the supervisor engine. The supervisor engine fabric interface transfers the packet to the switching bus where it is received by the egress module and is sent out the egress port.

## Default Settings for Switch Fabric Functionality

Traffic is forwarded to and from modules in one of the following modes:

- Compact mode—The switch 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 switch uses this mode for traffic between fabric-enabled modules when there are both fabric-enabled and nonfabric-enabled modules installed. In this mode, the switch sends a truncated version of the traffic (the first 64 bytes of the frame) over the switch fabric channel.
- Bus mode (also called flow-through mode)—The switch 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 17-1](#) shows the switching modes used with fabric-enabled and nonfabric-enabled modules installed.

Table 17-1 Switch Fabric Functionality Switching Modes

Modules	Switching Modes
Between fabric-enabled modules (when no nonfabric-enabled modules are installed)	Compact <b>Note</b> In <b>show</b> commands, displayed as dcef mode for fabric-enabled modules with a DFC installed; displayed as fabric mode for other fabric-enabled modules.
Between fabric-enabled modules (when nonfabric-enabled modules are also installed)	Truncated <b>Note</b> Displayed as fabric mode in <b>show</b> commands.
Between fabric-enabled and nonfabric-enabled modules	Bus
Between non-fabric-enabled modules	Bus

## How to Configure the Switch Fabric Functionality

To configure the switching mode, perform this task:

Command	Purpose
Router(config)# [ <b>no</b> ] <b>fabric switching-mode allow</b> { <b>bus-mode</b>   { <b>truncated</b> [{ <b>threshold</b> [ <i>number</i> }]}}	Configures the switching mode.

When configuring the switching mode, note the following information:

- To allow 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 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 switch.

- 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

- [Displaying the Switch Fabric Redundancy Status, page 17-4](#)
- [Displaying Fabric Channel Switching Modes, page 17-4](#)
- [Displaying the Fabric Status, page 17-4](#)
- [Displaying the Fabric Utilization, page 17-5](#)
- [Displaying Fabric Errors, page 17-5](#)

## Displaying the Switch Fabric Redundancy Status

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

Command	Purpose
Router# <b>show fabric active</b>	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# <b>show fabric switching-mode</b> [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 module 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# <b>show fabric status</b> [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
           channel      speed      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# <b>show fabric utilization</b> [ <i>slot_number</i>   <b>all</b> ]	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         0
  9         0           8G      0         0         0         0         0
Router#
```

## Displaying Fabric Errors

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

Command	Purpose
Router# <b>show fabric errors</b> [ <i>slot_number</i>   <b>all</b> ]	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#
```

**Tip**

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