



Cisco Communication Media Module for Catalyst 6500 Series Switch and Cisco 7600 Series Router Installation and Verification Note

Product Number: WS-SVC-CMM

Last Updated: March 23, 2009

This publication contains the procedures for installing and configuring the Catalyst 6500 series switch and Cisco 7600 series router Communication Media Module (CMM). Installation and configuration procedures are provided for the following CMM port adapters:

- 6-port T1 port adapter (WS-SVC-CMM-6T1)
- 6-port E1 port adapter (WS-SVC-CMM-6E1)
- 24-port FXS port adapter (WS-SVC-CMM-24FXS)
- 128-port ad-hoc conferencing and transcoding (ACT) port adapter (WS-SVC-CMM-ACT)



Note

Except where specifically differentiated, the term “Catalyst 6500 series switches” includes both the Catalyst 6500 series switches and the Catalyst 6000 series switches.



Note

Throughout this publication, except where specifically differentiated, the term *supervisor engine* refers to Supervisor Engine 1, Supervisor Engine 2, Supervisor Engine 720, and the Supervisor Engine 32. Additionally, the term *Multilayer Switch Feature Card (MSFC)* refers to MSFC, MSFC2, and MSFC3.



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Front Panel Descriptions

These sections describe the front panel features of the module and the port adapters:

- [CMM Module, page 2](#)
- [6-Port T1 and E1 Port Adapters, page 4](#)
- [24-Port FXS Port Adapter, page 5](#)
- [Ad-Hoc Conferencing and Transcoding Port Adapter, page 6](#)

CMM Module

The front panel features of the modules are as follows:

- **STATUS LED**—When the module powers up, it initializes various hardware components and communicates with the supervisor engine. The STATUS LED shows the dialog with the supervisor engine and the results of the initialization. During the normal initialization sequence, the STATUS LED changes from off to red, to orange, and then to green. [Table 1](#) describes the STATUS LED operation.
- **Port adapter slots**—[Figure 1](#) and [Figure 2](#) show the E1 port adapter in the left and middle slots, with a blank filler plate in the right slot.
- **REAR MODULE STATUS LED**—[Table 2](#) describes the REAR MODULE STATUS LED operation.

**Note**

For information on the supervisor engine LEDs, see the *Catalyst 6500 Series Switch Supervisor Engine Guide* at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/Module_Installation/Sup_Eng_Guide/supe_gd.html

Figure 1 CMM Front Panel Features

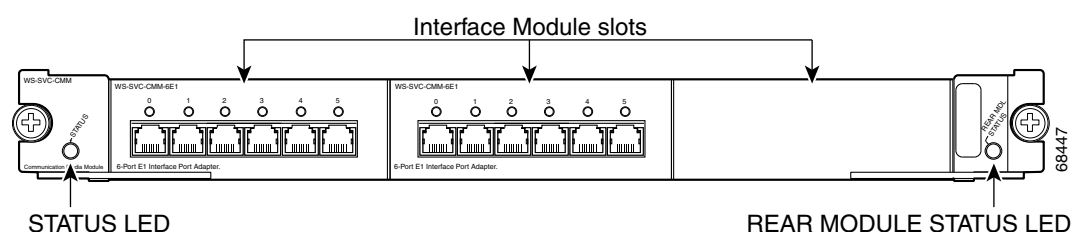


Table 1 Module STATUS LED

Color	Description
Off	<ul style="list-style-type: none"> The module is waiting for the supervisor engine to provide power. The module is not online. The module is not receiving power, which could be caused by the following: <ul style="list-style-type: none"> Power is not available to the module. Module temperature is over the limit¹.
Red	<ul style="list-style-type: none"> The module is released from reset by the supervisor engine and is booting. If the boot code fails to execute, the LED stays red after power up.
Orange	<ul style="list-style-type: none"> The module is initializing hardware or communicating with the supervisor engine. A fault occurred during the initialization sequence. If the module fails to download its Field Programmable Gate Arrays (FPGAs) on startup, it continues initializing and is granted module online status from the supervisor engine, but the LED stays orange. If the module is not granted module online status from the supervisor engine, the LED stays orange. This problem could be caused by the supervisor engine detecting a failure in an external loopback test that it issued to the module.
Green	<ul style="list-style-type: none"> The module is operational; the supervisor engine has granted module online status.

1. Enter the **show environment temperature mod** command to display the temperature of each of the four sensors on the module.

Table 2 **Rear Module STATUS LED**

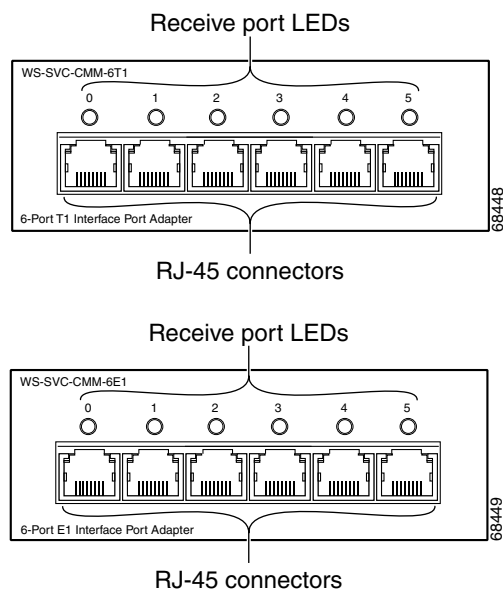
Color	Description
Green	Port adapter in slot 4 is up and operational.
Red	Port adapter in slot 4 is shut down.
No light	Slot 4 port adapter is not located by the system.

6-Port T1 and E1 Port Adapters

The front panel features of the 6-port T1 and E1 port adapters are as follows:

- Receive port LEDs—The LEDs on the front panel indicate the status of each T1 and E1 interface. [Table 3](#) describes the receive port LED operation.
- RJ-45 connectors—See the “[RJ-45 Port Connector and Cabling Specifications](#)” section on [page 25](#) for details.

[Figure 2](#) shows the front panels of the 6-port T1 and E1 port adapters.

Figure 2 6-Port T1 and E1 Port Adapter Front Panel Features**Table 3** 6-Port T1 and E1 Port Adapters Receive Port LEDs

Color	Description
Green	T1/E1 interface is operational.
Red	T1/E1 receive alarm.
Yellow	T1/E1 remote alarm.
Off	T1/E1 interface has been administratively shut down, or there is no power.

24-Port FXS Port Adapter

The front panel features of the 24-port FXS port adapter are as follows:

- Receive port LEDs—The LEDs on the front panel indicate the status of each FXS interface. [Table 4](#) describes the receive port LED operation.
- RJ-21 connector—See the “[RJ-21 Port Connector and Cabling Specifications](#)” section on page 27 for details.



If the symbol of suitability with an overlaid cross appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe personal injury or can damage the unit. Statement 1031

[Figure 3](#) shows the front panel of the 24-port FXS port adapter.

Figure 3 24-Port FXS Port Adapter Front Panel Features

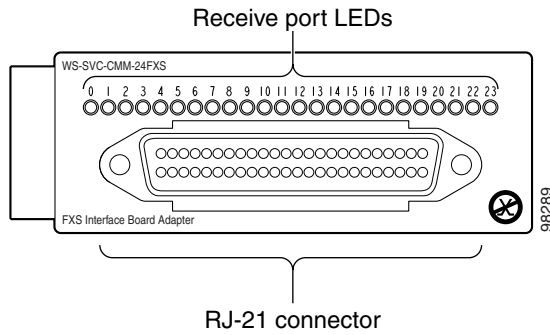


Table 4 24-Port FXS Port Adapter Receive Port LEDs

Color	Description
Green	Port is off-hook or ringing.
Off	Port is not active (connected device on-hook) or is disabled through the CLI.

Ad-Hoc Conferencing and Transcoding Port Adapter

The front panel features of the ad-hoc conferencing and transcoding port adapter are shown in [Figure 4](#), and the STATUS LED is described in [Table 5](#).

Figure 4 Ad-Hoc Conferencing and Transcoding Port Adapter Front Panel Features

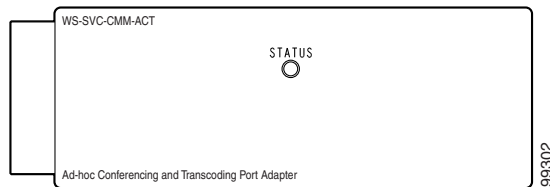


Table 5 Ad-Hoc Conferencing and Transcoding Port Adapter STATUS LED

Color	Description
Green	Port adapter is up and operational.
Red	Port adapter is shut down.
Off	Port adapter is not located by the system.

Requirements

These sections describe the hardware and software requirements:

- [Hardware Requirements, page 7](#)
- [Software Requirements, page 7](#)

Hardware Requirements

The hardware requirements for the modules are as follows:

- Catalyst 6500 series switch.
- Cisco 7600 series router.
- 252.0 Watts (6.00 A @ 42 V) of available system power
- A Supervisor Engine 2, Supervisor Engine 720, or Supervisor Engine 32—The supervisor engine can have an MSFC, MSFC2, or MSFC3, but the CMM does not require one for configuration or operation.
- Supervisor Engine 32—The minimum version for the CMM is 12.4(3) and the recommended version is 12.4(7a). The minimum version for the Supervisor Engine 32 is 12.2(18)SXF4 and the recommended version is 12.2(18)SXF4.
- Port adapters—You can install up to three T1, E1, or FXS port adapters into slots 1 through 3 on either base module.

You can install up to four ACT port adapters into either base module. (The internally located slot 4 is reserved for the ACT port adapter.)



Note You cannot mix T1 port adapters with E1 port adapters, but any other combination of port adapters is supported.

- Module blank filler plate (WS-SVC-CMM-BLANK) for unused port adapter slots.

Software Requirements

For software requirements, see the *Release Notes for the Cisco Catalyst 6500 Series and the Cisco 7600 Series Communication Media Module* at this URL:

http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html

Safety Overview

Throughout this publication, safety warnings appear in procedures that, if performed incorrectly, can harm you. A warning symbol precedes each warning statement.



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS



Warning

Ultimate disposal of this product should be handled according to all national laws and regulations.
Statement 1040



Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.
Statement 1030



Warning



If the symbol of suitability with an overlaid cross appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe personal injury or can damage the unit. Statement 1031



Warning

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94



Warning

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051



Warning

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.
Statement 1029



Warning

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034



Warning

Before opening the unit, disconnect the telephone-network cables to avoid contact with telephone-network voltages. Statement 1041



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity.
Statement 1001



Warning

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Statement 1036



Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Statement 1037



Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first. Statement 1026



To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables. Statement 1021



To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023

Required Tools



Warning

Only trained and qualified personnel should be allowed to install, replace, or service this equipment. Statement 1030

These tools are required to remove and replace the module and port adapters:

- Flat-blade screwdriver (for the module)
- Number 1 Phillips screwdriver (for the screws and standoffs)
- Antistatic mat or foam pad
- Your own ESD-prevention equipment or the disposable grounding wrist strap that is included with all upgrade kits, field-replaceable units (FRUs), and spares

Whenever you handle a module, always use a wrist strap or other grounding device to prevent electrostatic discharge (ESD). For information on preventing ESD, see the “Preventing ESD” section of the *Regulatory Compliance and Safety Information* publication.

Installing and Removing the Module

This section describes the procedures for installing and removing the module:

- [Installing the Module, page 10](#)
- [Removing the Module, page 17](#)

Installing the Module

This section describes how to install the module into the Catalyst 6500 series switch or the Cisco 7600 series router.



Note

All modules, including the supervisor engine (if you have redundant supervisor engines), support hot swapping. You can add, replace, or remove modules without interrupting the system power or causing other software or interfaces to shut down. For more information about hot-swapping modules, see the *Catalyst 6500 Series Switch Module Installation Guide*.



Warning

During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94

To install the module into the Catalyst 6500 series switch or the Cisco 7600 series router, perform these steps:

- Step 1** Make sure that you take the necessary precautions to prevent ESD damage.
- Step 2** Choose a slot for the module.

- Step 3** Verify that there is enough clearance to accommodate any interface equipment that you will connect directly to the module ports. If possible, place modules between empty slots that contain only module filler plates.
- Step 4** Verify that the captive installation screws are tightened on all modules that are installed in the chassis. This action ensures that the EMI gaskets on all modules are fully compressed to maximize the opening space for the replacement module.



Note If the captive installation screws are loose, the EMI gaskets on the installed modules will push adjacent modules toward the open slot, reducing the opening size and making it difficult to install the replacement module.

- Step 5** Remove the module filler plate by removing the two Phillips pan-head screws from the filler plate. (To remove a module, see the [“Removing the Module” section on page 17.](#))
- Step 6** Fully open both ejector levers on the new or replacement module. (See [Figure 5.](#))
- Step 7** Depending on the orientation of the slots in the chassis (horizontal or vertical), perform one of the following sets of substeps:

Horizontal slots

- a. Position the module in the slot. Make sure that you align the sides of the module carrier with the slot guides on each side of the slot. (See [Figure 5.](#))
- a. Carefully slide the module into the slot until the EMI gasket along the top edge of the module makes contact with the module in the slot above it and both ejector levers have closed to approximately 45 degrees with respect to the module faceplate. (See [Figure 6.](#))

Figure 5 Positioning the Module in a Horizontal Slot Chassis

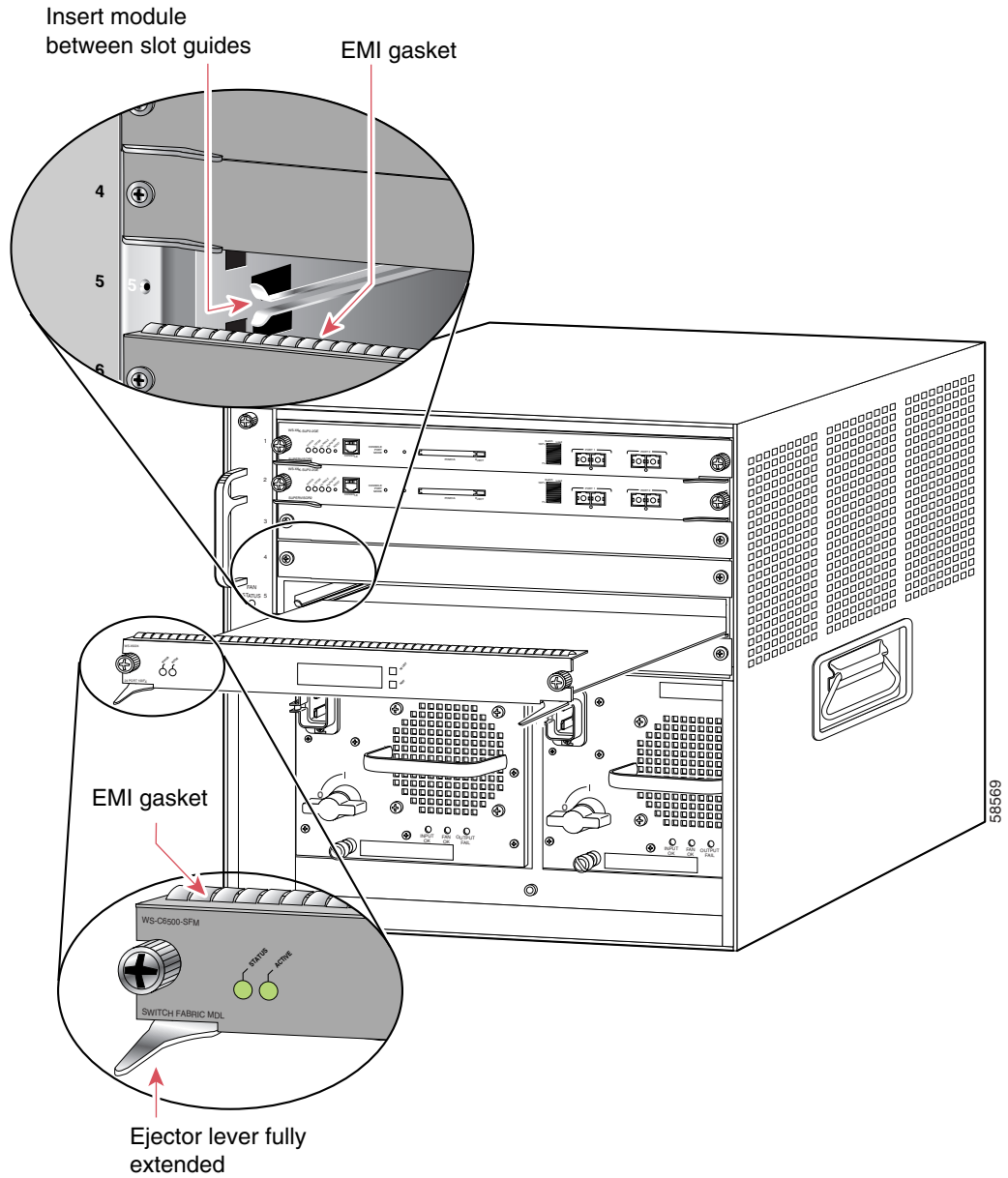
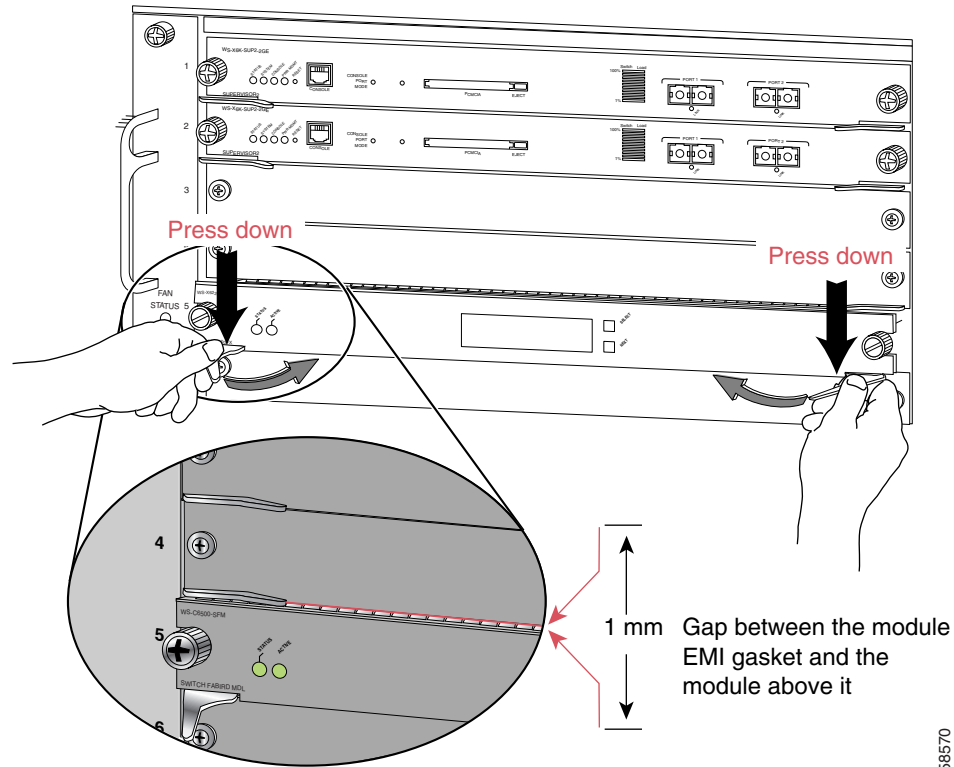


Figure 6 Clearing the EMI Gasket in a Horizontal Slot Chassis



- b. Using the thumb and forefinger of each hand, grasp the two ejector levers and press down to create a small (0.040 inch [1 mm]) gap between the EMI gasket and the module above it. (See [Figure 6](#).)

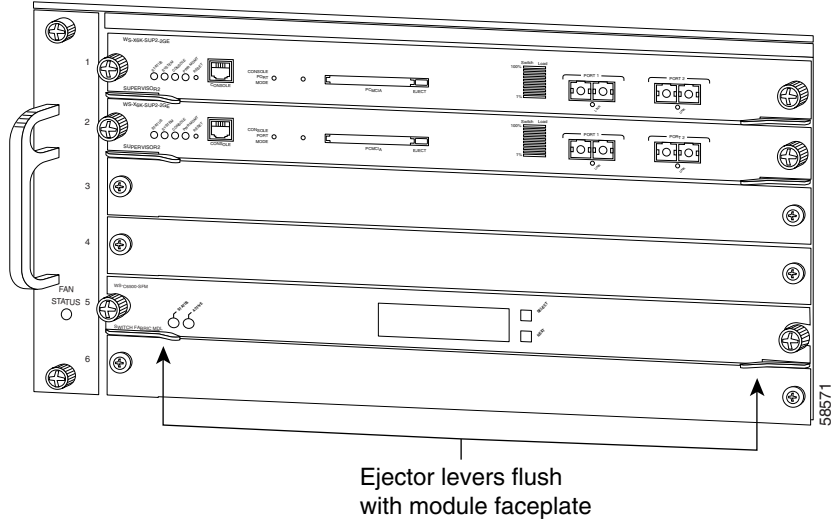


Caution

Pressing down too firmly on the levers will bend and damage them.

- c. While pressing down, simultaneously close the left and right ejector levers to fully seat the module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate. (See [Figure 7](#).)

Figure 7 Ejector Lever Closure in a Horizontal Slot Chassis



Note Failure to fully seat the module in the backplane connector can result in error messages.

- d. Tighten the two captive installation screws on the module.

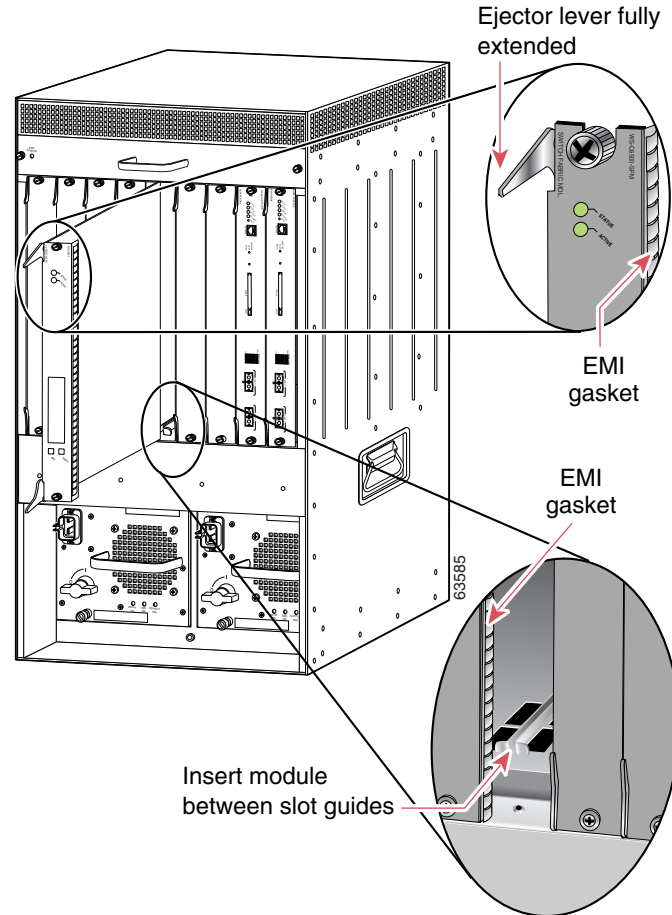


Note Make sure that the ejector levers are fully closed before tightening the captive installation screws.

Vertical slots

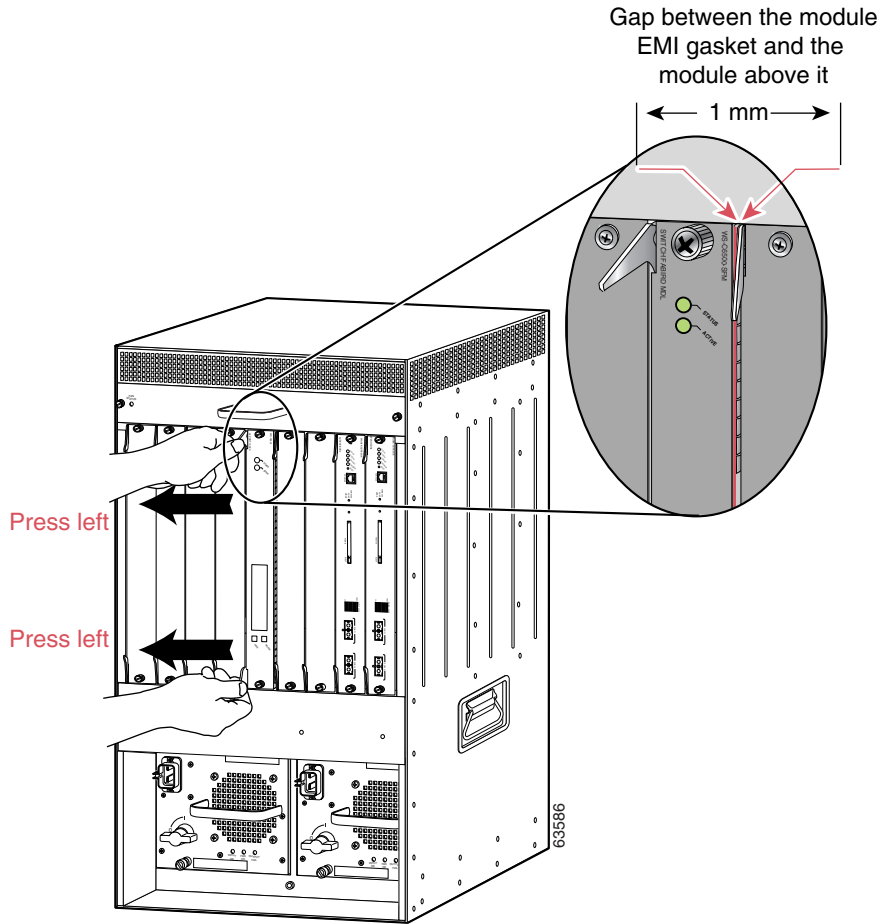
- a. Position the module in the slot. (See [Figure 8](#).) Make sure that you align the sides of the module carrier with the slot guides on the top and bottom of the slot.

Figure 8 Positioning the Module in a Vertical Slot Chassis



- b. Carefully slide the module into the slot until the EMI gasket along the right edge of the module makes contact with the module in the slot adjacent to it and both ejector levers have closed to approximately 45 degrees with respect to the module faceplate. (See [Figure 9](#).)
- c. Using the thumb and forefinger of each hand, grasp the two ejector levers and exert a slight pressure to the left, deflecting the module approximately 0.040 inches (1 mm) to create a small gap between the module's EMI gasket and the module adjacent to it. (See [Figure 9](#).)

Figure 9 Clearing the EMI Gasket in a Vertical Slot Chassis

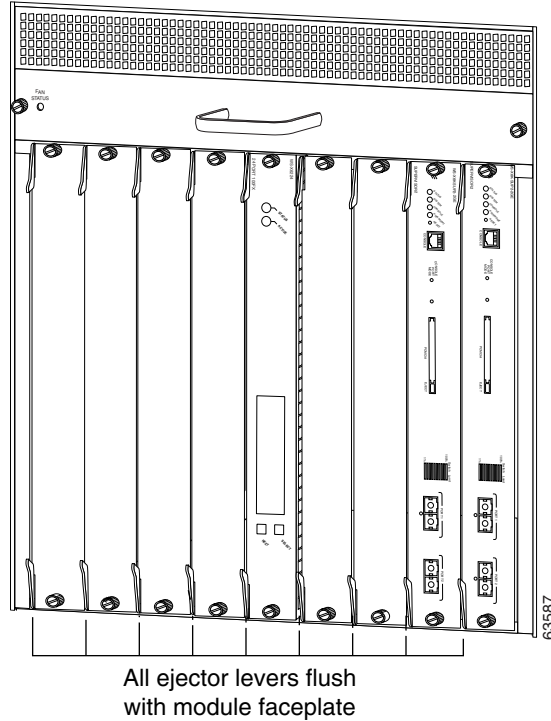


Caution

Exerting too much pressure on the ejector levers will bend and damage them.

- d. While pressing on the ejector levers, simultaneously close them to fully seat the module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate. (See [Figure 10](#).)

Figure 10 Ejector Lever Closure in a Vertical Slot Chassis



- e. Tighten the two captive installation screws on the module.



Note Make sure that the ejector levers are fully closed before tightening the captive installation screws.

This completes the module installation procedure.

Removing the Module

This section describes how to remove the module from a Catalyst 6500 series switch or the Cisco 7600 series router.



Caution

During this procedure, wear grounding wrist straps to avoid ESD damage to the module. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.



Warning

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

To remove a module from the chassis, perform these steps:

-
- Step 1** Disconnect any network interface cables that are attached to the module.
 - Step 2** Verify that the captive installation screws on all of the modules in the chassis are tight. This step assures that the space that is created by the removed module is maintained.



Note If the captive installation screws are loose, the electromagnetic interference (EMI) gaskets on the installed modules will push the modules toward the open slot, reducing the opening size and making it difficult to install the replacement module.

- Step 3** Loosen the two captive installation screws on the module.
- Step 4** Depending on the orientation of the slots in the chassis (horizontal or vertical), perform one of the following sets of substeps:

Horizontal slots

- a. Place your thumbs on the left and right ejector levers, and simultaneously rotate the levers outward to unseat the module from the backplane connector.
- b. Grasp the front edge of the module, and slide the module part of the way out of the slot. Place your other hand under the module to support the weight of the module. Do not touch the module circuitry.

Vertical slots

- a. Place your thumbs on the ejector levers that are located at the top and bottom of the module, and simultaneously rotate the levers outward to unseat the module from the backplane connector.
- b. Grasp the edges of the module, and slide the module straight out of the slot. Do not touch the module circuitry.

- Step 5** Place the module on an antistatic mat or antistatic foam, or immediately reinstall it in another slot.
- Step 6** If the slot from which you removed the module is to remain empty, install a module filler plate to keep dust out of the chassis and to maintain proper airflow through the chassis.



Warning

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Statement 1029

Removing and Replacing Port Adapters

Follow the procedures in this section to remove and replace the port adapters on the CMM:

- [Removing a Port Adapter from Module Slots 1 through 3, page 19](#)
- [Installing a Port Adapter in Module Slots 1 through 3, page 22](#)
- [Installing and Removing an Ad-Hoc Conferencing and Transcoding Port Adapter in Slot 4, page 23](#)

Removing a Port Adapter from Module Slots 1 through 3



Note

When you face the module front panel, slot 1 is on the left, slot 2 is in the middle, and slot 3 is on the right. Slot 4 is located internally. (See [Figure 13](#).)

To remove a port adapter, perform these steps:



Warning

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034

- Step 1** Remove the module from the Catalyst 6500 series switch or the Cisco 7600 series router; see the [“Removing the Module” section on page 17](#).
- Step 2** Carefully place the module, component-side down, on an antistatic mat or foam pad with the front of the module facing toward you. (See [Figure 11](#).)
- Step 3** Remove the two Phillips screws securing the port adapter. (See [Figure 11](#).)
- Step 4** Carefully turn the module component-side up and place it on the antistatic mat or foam pad.
- Step 5** Remove the two standoffs and the two remaining Phillips screws securing the port adapter. (See [Figure 12](#).)
- Step 6** Note the location of the two connectors in [Figure 13](#) and remove the port adapter, taking care when lifting up and disconnecting the port adapter from the connectors.



Tip

To unseat the port adapter from the two connectors, grasp the rear of the port adapter with one hand, and gently but firmly pull up on the rear of the port adapter until it is free of the connectors.

- Step 7** Place the removed port adapter in an antistatic bag.
- Step 8** If leaving an empty slot, install a blank filler plate.



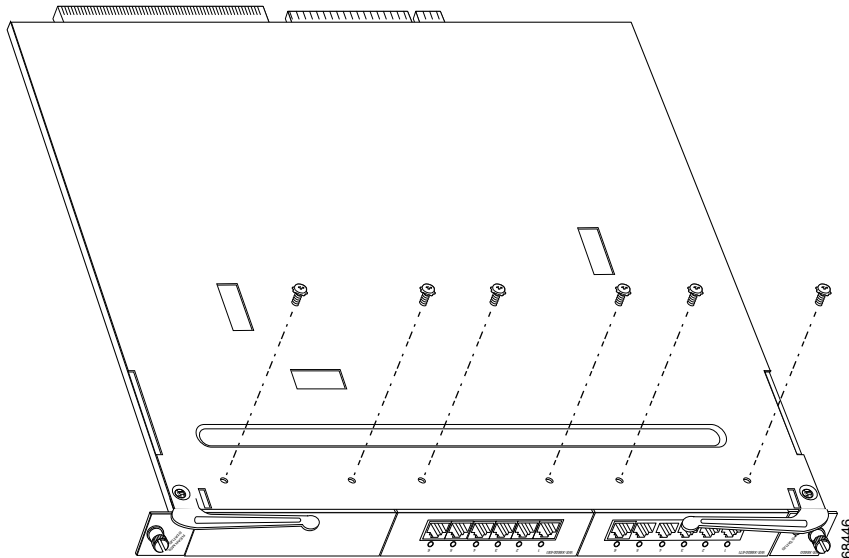
Warning

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.

Statement 1029

Step 9 To install the module into the Catalyst 6500 series switch or the Cisco 7600 series router, see the [“Installing the Module”](#) section on page 10.

Figure 11 **Module (Bottom View)**



Phillips screws (6)
(installed from bottom)

Figure 12 *Module (Top View with Port Adapters Installed)*

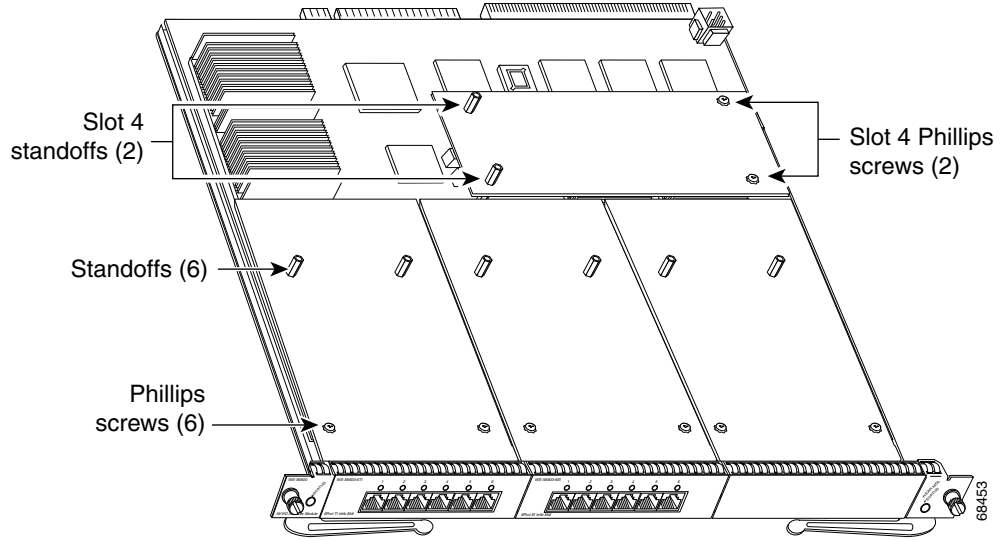
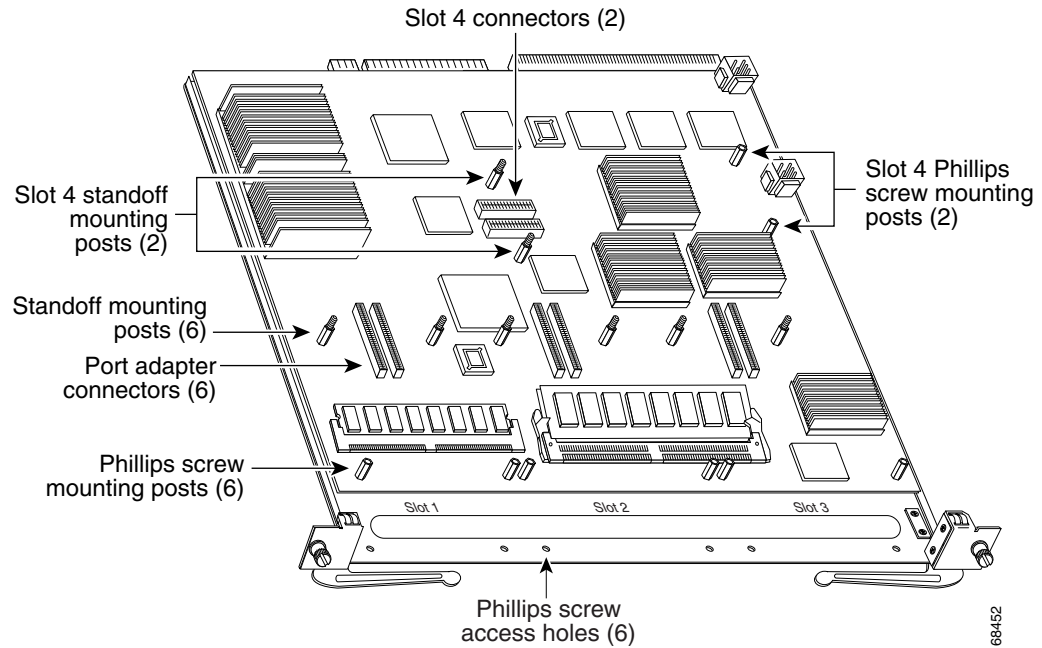


Figure 13 *Module (Top View with Port Adapters Removed)*



Installing a Port Adapter in Module Slots 1 through 3



Note

When you face the module front panel, slot 1 is on the left, slot 2 is in the middle, and slot 3 is on the right. Slot 4 is located internally. (See [Figure 13](#).)

To install a port adapter in module slots 1 through 3, perform these steps:



Warning

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034

- Step 1** Remove the module from the Catalyst 6500 series switch or the Cisco 7600 series router; see the [“Removing the Module” section on page 17](#).
- Step 2** Carefully place the module, component-side up, on an antistatic mat or foam pad with the front of the module facing toward you.
- Step 3** If there is a blank filler plate installed, remove it.
- Step 4** Remove the new port adapter from its antistatic bag.
- Step 5** Locate the slot in which you are going to install the port adapter. Note the location of the following items (see [Figure 13](#)):
 - Two port adapter connectors
 - Two standoff mounting posts
 - Two Phillips screw mounting posts
 - Two Phillips screw access holes
- Step 6** Align the port adapter with the mounting posts and mounting holes. Ensure that the connectors on the port adapter are aligned with the connectors on the module.
- Step 7** When all mounting posts and mounting holes are aligned, gently push down on the port adapter edges to ensure that the keys on the connectors are properly aligned. If necessary, while applying pressure with your left hand, rock the module up and down slightly with your right hand to seat the port adapter.



Tip

To seat the port adapter into the two connectors, grasp the rear of the port adapter with one hand, and gently but firmly push down on the rear of the port adapter until it is seated in the connectors. You will hear a distinctive “click” when the port adapter seats in the connectors.



Caution

Use care not to damage the connectors on the port adapter. If you damage a connector, you will have to return the port adapter to Cisco for repair.

**Caution**

Using the screws or standoffs to seat the port adapter could warp the port adapter. *Before* you install and tighten the securing screws, ensure that the port adapter is fully seated by visually verifying that the bottom of the port adapter is in contact with the top of the mounting posts.

- Step 8** Install the two standoffs and two Phillips screws to secure the port adapter. (See [Figure 12](#).)
- Step 9** Carefully turn the module component-side down, and place it on the antistatic mat or foam pad.
- Step 10** Install the two remaining Phillips screws. (See [Figure 11](#).)
- Step 11** Install the module into the Catalyst 6500 series switch or the Cisco 7600 series router; see the “[Installing the Module](#)” section on page 10.

Installing and Removing an Ad-Hoc Conferencing and Transcoding Port Adapter in Slot 4

**Note**

The ad-hoc conferencing and transcoding port adapter is the only port adapter that can be installed in slot 4. Slot 4 is located internally. (See [Figure 13](#).)

**Warning**

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing. Statement 1034

Follow these procedures to remove and install an ad-hoc conferencing and transcoding port adapter in slot 4:

- [Removing an Ad-Hoc Conferencing and Transcoding Port Adapter in Slot 4, page 23](#)
- [Installing an Ad-Hoc Conferencing and Transcoding Port Adapter in Slot 4, page 24](#)

Removing an Ad-Hoc Conferencing and Transcoding Port Adapter in Slot 4

To remove a port adapter in module slot 4, perform these steps:

- Step 1** Remove the module from the Catalyst 6500 series switch or Cisco 7600 series router; see the “[Removing the Module](#)” section on page 17.
- Step 2** Carefully place the module, component side up, on an antistatic mat or foam pad with the front of the module facing toward you.
- Step 3** In [Figure 13](#), note the location of the two slot 4 Phillips screw mounting posts. Remove the two Phillips screws that secure the right-hand side of the port adapter.

Step 4 In [Figure 13](#), note the location of the two slot 4 standoff mounting posts. Remove the two mounting posts that secure the port adapter.

Step 5 In [Figure 13](#), note the location of the two slot 4 connectors. Carefully remove the port adapter, taking care when lifting up and disconnecting the port adapter from the connectors.



Tip To unseat the port adapter from the two connectors, grasp the left-hand side of the port adapter with one hand, and gently but firmly pull up on the port adapter until it is free of the connectors.

Step 6 Place the removed port adapter in an antistatic bag.

Step 7 Install the module into the Catalyst 6500 series switch or the Cisco 7600 series router; see the [“Installing the Module”](#) section on page 10.

Installing an Ad-Hoc Conferencing and Transcoding Port Adapter in Slot 4

To install a port adapter in module slot 4, perform these steps:



Note To install a port adapter in module slot 4, you need to remove the face plate from the port adapter. To remove the face plate, position the port adapter with the face plate facing toward you, turn the port adapter component side down on an antistatic mat or foam pad, and then remove the two Phillips screws that secure the face plate.

Step 1 Remove the module from the Catalyst 6500 series switch or the Cisco 7600 series router; see the [“Removing the Module”](#) section on page 17.

Step 2 Carefully place the module, component side up, on an antistatic mat or foam pad with the front of the module facing toward you.

Step 3 In [Figure 13](#), note the location of the two, slot 4 Phillips screw mounting posts, and note the location of the two, slot 4 standoff mounting posts.

Step 4 Align the port adapter with the two slot 4 Phillips screw mounting posts and two slot 4 standoff mounting posts. Ensure that the connectors on the port adapter are aligned with the connectors on the module.

Step 5 When all mounting posts and mounting holes are aligned, gently push down on the port adapter edges that ensure that the keys on the connectors are properly aligned. If necessary, while applying pressure with your left hand, rock the module up and down slightly with your right hand to seat the port adapter.



Tip To seat the port adapter into the two connectors, grasp the left-hand side of the port adapter with one hand, and gently but firmly push down on the left-hand side of the port adapter until it is seated in the connectors. You will hear a distinctive “click” when the port adapter seats in the connectors.



Caution Use care not to damage the connectors on the port adapter. If you damage a connector, you will have to return the port adapter to Cisco for repair.

**Caution**

Using the screws or standoffs to seat the port adapter could warp the port adapter. *Before* you install and tighten the securing screws, ensure that the port adapter is fully seated by visually verifying that the bottom of the port adapter is in contact with the top of the mounting posts.

Step 6 Install the two standoffs and two Phillips screws to secure the port adapter. (See [Figure 12.](#))

Step 7 Install the module into the Catalyst 6500 series switch or Cisco 7600 series router; see the [“Installing the Module”](#) section on page 10.

Verifying the Installation

Enter the **show module *mod-num*** command to verify that the system acknowledges the new module and has brought it online.

This example shows the output of the **show module** command with a module in slot 4:

```

Console> (enable) show module 4
Mod Slot Ports Module-Type           Model           Sub Status
-----
4   4   5   Communication Media Mod.  WS-SVC-CMM     no  ok

Mod Module-Name      Serial-Num
-----
4                    sad054206jc

Mod MAC-Address(es)      Hw   Fw   Sw
-----
4   00-01-64-46-6a-0e to 00-01-64-46-6a-17  1.0   12.2(2002)12.2(2002)0530:100440

```

RJ-45 Port Connector and Cabling Specifications

**Warning**

Before opening the unit, disconnect the telephone-network cables to avoid contact with telephone-network voltages. Statement 1041

**Warning**

Do not work on the system or connect or disconnect cables during periods of lightning activity. Statement 1001

**Warning**

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations. Statement 1036

**Warning**

Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface. Statement 1037


Warning

Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first. Statement 1026


Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables. Statement 1021


Warning

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord. Statement 1023

The T1 and E1 port adapter RJ-45 port connector and cabling specifications are described in this section:

- [Figure 14](#) shows the RJ-45 port cable connector pin orientation.
- [Table 6](#) describes the RJ-45 port pinouts.

Figure 14 RJ-45 Port Connector

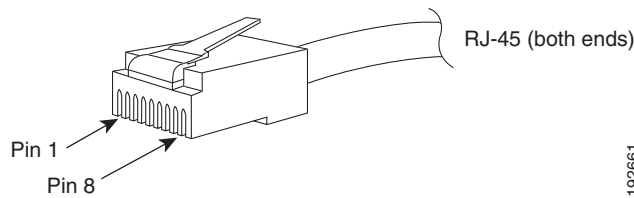


Table 6 6-Port T1 and E1 Port Adapter RJ-45 Port Pinouts

Pin ¹	Description
1	Receive R1
2	Receive T1
3	Not connected
4	Transmit R
5	Transmit T
6	Not connected
7	Not connected
8	Not connected

1. [Table 6](#) lists the pinouts for the RJ-45 port connector, not the pinouts of the cable connecting to the port.

RJ-21 Port Connector and Cabling Specifications



Warning



If the symbol of suitability with an overlaid cross appears above a port, you must not connect the port to a public network that follows the European Union standards. Connecting the port to this type of public network can cause severe personal injury or can damage the unit. Statement 1031



Caution

Do not connect the WS-SVC-CMM-24FXS port adapter directly to a voicemail server, IVR application, or fax server if the servers have unused wiring pairs with voltage on them. We recommend that you connect the 25-pair cables to punch-down blocks and cross connect to the voicemail, IVR, or fax servers. If you do not use punch-down blocks and cross connects to the WS-SVC-CMM-24FXS port adapter, you could damage the port adapter. For example, the FLT-8 card for the Octel 250 uses every other pair for its voice ports. The unused pairs have +36 VDC across ring-to-ground in an on-hook condition, and this high voltage has been known to damage the WS-SVC-CMM-24FXS port adapter.

Use a standard RJ-21 Category 5 telco connector and cable to connect to the RJ-21 connector. Two types of RJ-21 connectors are shown in [Figure 15](#) and [Figure 16](#). A pinout for the module's RJ-21 connector is provided in [Table 7](#).

Figure 15 *RJ-21 Telco Interface 90-Degree Cable Connector*

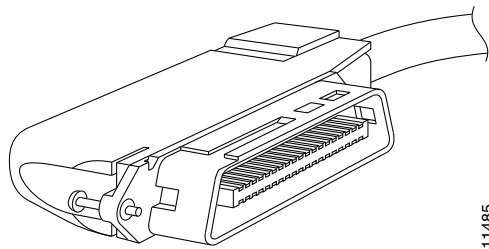


Figure 16 *RJ-21 Telco Interface 180-Degree Cable Connector*

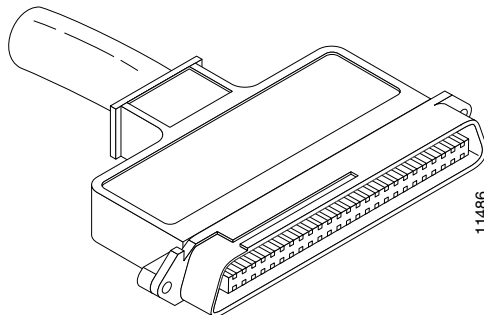


Table 7 RJ-21 Connector Pinouts

Port Number	Connector Pin Number	Signal	Port Number	Connector Pin Number	Signal
1	1 26	Ring Tip	13	13 38	Ring Tip
2	2 27	Ring Tip	14	14 39	Ring Tip
3	3 28	Ring Tip	15	15 40	Ring Tip
4	4 29	Ring Tip	16	16 41	Ring Tip
5	5 30	Ring Tip	17	17 42	Ring Tip
6	6 31	Ring Tip	18	18 43	Ring Tip
7	7 32	Ring Tip	19	19 44	Ring Tip
8	8 33	Ring Tip	20	20 45	Ring Tip
9	9 34	Ring Tip	21	21 46	Ring Tip
10	10 35	Ring Tip	22	22 47	Ring Tip
11	11 36	Ring Tip	23	23 48	Ring Tip
12	12 37	Ring Tip	24	24 49	Ring Tip
–	–	–	–	25, 50, 51, 52	GND

Accessing the Port Adapter Ports

From the module command-line interface (CLI), you identify each port adapter by *interface_name* followed by *slot_num/port_num*. For example, to configure the first port on a 6-port T1 port adapter that is installed in slot 2, specify **T1 2/0**. For the second port, specify **T1 2/1**, and so on.

Configuring the Port Adapter Ports

Configuring the module interfaces is similar to configuring the voice interfaces on other Cisco products. module interface configuration requirements are dependent on your AVVID network requirements.



Note

The module requires a static IP address. Obtaining an IP address through a DHCP server is not supported. You assign an IP address to the module Gigabit Ethernet backplane interface through the CLI by using the **interface GigabitEthernet1/0** command.

Configuring the Port Adapter Clock Source

The module T1/E1 port adapter clock configuration is the same as the configuration on many other Cisco gateways. The CLI commands that are used for configuring the clock are identical to other gateways. To set clocking for individual T1 or E1 ports, enter the **clock source** command in controller configuration mode as follows:

```
clock source {line [primary | secondary {1..17}] | internal}
```

To return to the default configuration, use the **no clock source** command.



Note

We do not recommend that you use the **clock source line** command. You must enter either the **clock source line primary** command or the **clock source line secondary** command.

If you configure the clock source for a port adapter port as primary, the Rx clock that is received from the remote end is used to supply the clock for all module T1/E1 ports that are configured for the internal clock on that module. Only one port adapter port can be configured as the primary clock source on a module. If you do not configure any of the port adapter ports as the primary clock source, the internal TDM system clock uses the free running clock on one of the port adapters.

If you configure the clock source for a port adapter port as secondary, you must also specify the priority preference level of the source. The system automatically switches among the secondary sources to use the highest level of preference that has the Rx clock available when the specified primary clock source is absent.

If you configure the clock source for a port adapter port as internal, the port uses the clock that is provided by the system. This system clock could be a module internal clock or the Rx clock from the port that is configured as the primary clock source.

Disaster Recovery for Module Software Upgrades

This section describes how to recover in the event that the CMM software image fails to load properly. If there is a corrupted image in the CMM bootflash, the CMM does not come online and stays at the ROMMON prompt. You will need to perform these steps to replace the corrupted image:

- Step 1** Copy a new image to the supervisor engine flash memory.
- Step 2** Download the image from the supervisor engine to the CMM bootflash.
- Step 3** Configure the system by using the power management bits to control which image is booted when the CMM is reset.



Note The downloaded image must be the same version that was previously operating on the CMM. Failure to perform the disaster recovery with the same image version could result in corrupted port adapters.



Note To successfully perform disaster recovery on the Supervisor Engine 720, you must have the ROMMON version 12.2(1r)T2 on the CMM.

Use [Table 8](#) for configuring the filename aliases and the boot or power management options for different Catalyst 6500 series supervisor engines.

Table 8 CMM Filename Aliases and Boot Options for Disaster Recovery

Supervisor Engine Model	File Name Alias	Boot/Power Management Option	
Supervisor Engine 1	slot0:ws-svc-cmm	Cisco IOS Software	Catalyst Operating System Software
Supervisor Engine 2		6 — For supervisor engine in slot 1 7 — For supervisor engine in slot 2	10 — For supervisor engine in slot 1 11 — For supervisor engine in slot 2
Supervisor Engine 32			
Supervisor Engine 720	disk0:ws-svc-cmm	10 — For supervisor engine in slot 5 or 7 11 — For supervisor engine in slot 6 or 8	

These sections provide disaster recovery procedures:

- [Disaster Recovery for Supervisor Engines Running Catalyst Operating System Software, page 31](#)
- [Disaster Recovery for Supervisor Engines Running Cisco IOS Software, page 31](#)



Tip If the CMM image fails to load properly, a crash information file is generated and then saved in the CMM bootflash.

Disaster Recovery for Supervisor Engines Running Catalyst Operating System Software

To perform disaster recovery on systems that use the Catalyst operating system software on the supervisor engine, perform these steps:

-
- Step 1** Before performing the disaster recovery, remove the port adapters from the CMM.
See the [“Removing and Replacing Port Adapters” section on page 19](#) for removal procedures.
- Step 2** Enter the **copy tftp** *[device]* command to copy the golden image for the CMM to the supervisor engine flash memory where *[device]* can be any flash file system on the supervisor engine.
- Step 3** Enter the **set filename-alias** *[alias-name]* *[device]:[golden-image]* command to translate the filename of the downloaded file.

The *[golden-image]* is the file to be downloaded, and the *[device]* can be any flash file system on the supervisor engine. See [Table 8](#) for configuring the appropriate *[alias-name]* corresponding to the supervisor engine type in use.
- Step 4** Enter the **set module power down** *[mod]* *[pm_option]* command to power down the CMM.
See [Table 8](#) for configuring the appropriate *[pm_option]* corresponding to the supervisor engine type in use.
- Step 5** Enter the **set poll disable** command to disable polling.
- Step 6** Enter the **set module power up** *[mod]* command to power up the CMM.
When the CMM powers up, disaster recovery is complete.
- Step 7** After you complete the disaster recovery, enter the **clear filename-alias** *[alias-name]* command to terminate the filename translation.
- Step 8** Set the power management option for the CMM to zero (0).

This step is necessary to prevent the download mechanism from triggering every time that the CMM is reset.
- Step 9** Enter the **set poll enable** command to enable polling.
-

Disaster Recovery for Supervisor Engines Running Cisco IOS Software



Note

This procedure requires supervisor engine software release 12.2(18)SFX or later.


To perform disaster recovery on systems that use Cisco IOS software on the supervisor engine, perform these steps:

-
- Step 1** Before performing the disaster recovery, remove the port adapters from the CMM.
See the [“Removing and Replacing Port Adapters” section on page 19](#) for removal procedures.
- Step 2** Enter the **copy tftp** *[device]* command to copy the golden image for the CMM to the supervisor engine flash memory where *[device]* can be any flash file system on the supervisor engine.

- Step 3** Under the CLI Config mode, enter the **tftp-server** *[device]:[golden-image]* **alias** *[alias-name]* command to translate the filename of the downloaded file.
- The *[golden-image]* is the file to be downloaded, and the *[device]* can be any flash file system on the supervisor engine. See [Table 8](#) for configuring the appropriate *[alias-name]* corresponding to the supervisor engine type in use.
- Step 4** Under the CLI exec mode, enter the **hw-module module** *[mod]* **boot** *[pm_option]* command to set the power management option for the CMM.
- See [Table 8](#) for configuring the appropriate *[pm_option]* corresponding to the supervisor engine type in use.
- Step 5** Enter the **hw-module module** *[mod]* **reset** command to reset the module.
- When the CMM powers up, disaster recovery is complete.
- Step 6** After you complete the disaster recovery, under CLI config mode, enter the **no tftp-server** *[device]:[golden-image]* command to remove the filename translation.
- Step 7** Set the power management option for the CMM to zero (0) by entering the command **hw-module module** *[mod]* **boot config-register**.
- This step is necessary to prevent the download mechanism from triggering every time that the CMM is reset.
-

Password Recovery

Before performing the password recovery procedure, you must console into the CMM by performing these steps:

- Step 1** Remove the CMM from the chassis. For removal information, see the [“Removing the Module” section on page 17](#).
-
-  **Note** There are two RJ-45 ports on the CMM motherboard. The second one towards the edge or end of the motherboard is the console port.
-
- Step 2** Connect a straight-through cable, not a regular rolled flat cable, to the console port on the motherboard.
- Step 3** Remove the module directly above the CMM to allow a space for the console cable to run from the CMM motherboard to outside of the chassis.
- Step 4** Reinstall the CMM into the chassis.
- Step 5** Perform the recovery procedure in [Password Recovery Procedure for the Catalyst 6500/6000 Series Switches Running Cisco IOS System Software](#) to recover the password for the CMM.
-

Regulatory Standards Compliance

Catalyst 6500 series switches and modules comply with the regulatory standards that are listed in the *Regulatory Compliance and Safety Information for the Catalyst 6500 Series Switches* publication at this URL:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/hardware/RC/78_12928.html

Cisco 7600 series routers comply with the regulatory standards that are listed in the *Regulatory Compliance and Safety Information for the Cisco 7600 Series Routers* publication at this URL:

http://www.cisco.com/en/US/docs/routers/7600/Hardware/RCSI/78_13690.html

California Perchlorate Contamination Prevention Act (Title 22, California Code of Regulations, Chapter 33)

The battery inside this product may contain perchlorate material, a known hazardous substance, so special handling and disposal of this product might be necessary.

For more information about perchlorate and best management practices for perchlorate-containing substances, see <http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>.

Related Documentation

For more detailed installation and configuration information, see these publications:

- *Regulatory Compliance and Safety Information for the Catalyst 6500 Series Switches*
- *Regulatory Compliance and Safety Information for the Cisco 7600 Series Routers*
- *Catalyst 6500 Series Switch Module Installation Guide*
- *Cisco 7600 Series Router Module Installation Guide*
- *Catalyst 6500 Series Switch Cisco IOS Software Configuration Guide*
- *Cisco 7600 Series Router Cisco IOS Software Configuration Guide*
- *Catalyst 6500 Series Switch Cisco IOS Command Reference*
- *Cisco 7600 Series Router Cisco IOS Command Reference*

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

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