CHAPTER 4

Installing and Removing a Cisco 7600 Series Ethernet Services 20G Line Card

This chapter describes how to install or remove Cisco 7600 Series Ethernet Services 20G (ES20) line cards on the Cisco 7600 series routers. This chapter contains the following sections:

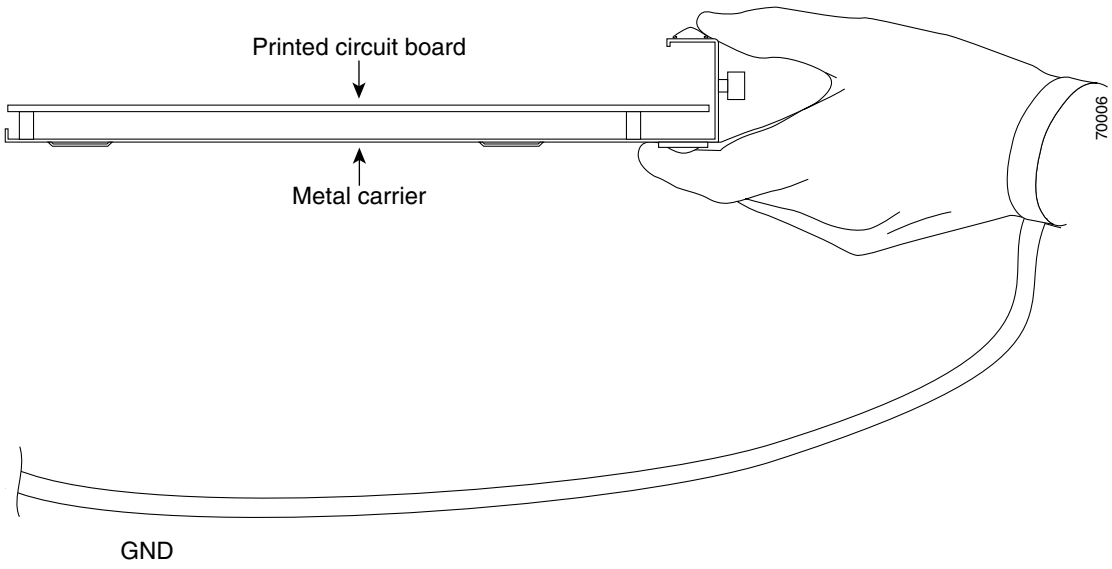
Handling Cisco 7600 Series Ethernet Services 20G Line Cards

Each Cisco 7600 ES20 line card circuit board is mounted to a metal carrier and is sensitive to electrostatic discharge (ESD) damage. Before you begin installation, read Chapter 4, "Preparing to Install a Cisco 7600 Series Ethernet Services 20G Line Card," for a list of parts and tools required for installation.

Caution Always handle the Cisco 7600 ES20 line card by the carrier edges and handle; never touch the line card components or connector pins. (See Figure 3-1.)

When a slot is not in use, a blank filler plate must be installed in the empty slot to allow the router or switch to conform to electromagnetic interference (EMI) emissions requirements and to allow proper airflow across the installed modules. If you plan to install a Cisco 7600 ES20 line card in a slot that is not in use, you must first remove the blank filler plate.

Figure 3-1 Handling a Cisco 7600 ES20 Line Card



Online Insertion and Removal

The Cisco 7600 series routers support online insertion and removal (OIR) of the Cisco 7600 ES20 line card, as well as OIR for the SFP or XFP modules. Therefore, you can remove a Cisco 7600 ES20 line card with its SFP or XFP modules still intact, or you can remove SFP or XFP modules independently from the Cisco 7600 ES20 line card, leaving the line card installed in the router.

This section includes the following topics on OIR support:

Preparing for Online Removal of a Cisco 7600 Series Ethernet Services 20G Line Card

The Cisco 7600 series routers support OIR of the Cisco 7600 ES20 line card. To do this, you can power down a Cisco 7600 ES20 line card (which automatically deactivates any installed SFP or XFP modules) and remove the Cisco 7600 ES20 line card with the SFP or XFP modules still intact.

Although graceful deactivation of a ES20 line card is preferred using the **no power enable module** command, the Cisco 7600 series routers do support removal of the ES20 line card without deactivating it first.

If you plan to remove a Cisco 7600 ES20 line card, you can deactivate the Cisco 7600 ES20 line card first, using the **no power enable module** global configuration command.

When you deactivate a Cisco 7600 ES20 line card using this command, it automatically deactivates each of the SFP or XFP modules that are installed in that Cisco 7600 ES20 line card. Therefore, it is not necessary to deactivate each of the SFP or XFP modules prior to deactivating the Cisco 7600 ES20 line card.

Deactivating a Cisco 7600 Series Ethernet Services 20G Line Card

To deactivate a ES20 Ethernet line card and its installed SFPs or XFPs prior to removal of the ES20 line card, use the following command in global configuration mode:

Command	Purpose
Router(config)# **no power enable module** *slot*	Shuts down any installed interfaces, and deactivates the ES20 line card in the specified slot, where: • *slot*—Specifies the chassis slot number where the ES20 line card is installed.

For more information about chassis slot numbering, refer to the Chapter 2, "Identifying Slots and Subslots for the Cisco 7600 Series Ethernet Services 20G Line Cards," section in this guide.

Reactivating a Cisco 7600 Series Ethernet Services 20G Line Card

Once you deactivate a Cisco 7600 ES20 line card, whether or not you have performed an OIR, you must use the **power enable module** global configuration command to reactivate the Cisco 7600 ES20 line card.

If you did not issue a command to deactivate the SFP or XFP modules installed in a Cisco 7600 ES20 line card, but you did deactivate the Cisco 7600 ES20 line card using the **no power enable module** command, then you do not need to reactivate the SFP or XFP modules after an OIR of the Cisco 7600 ES20 line card. The installed SFP or XFP modules automatically reactivate upon reactivation of the Cisco 7600 ES20 line card in the router.

For example, consider the case where you remove a Cisco 7600 ES20 line card from the router to replace it with another Cisco 7600 ES20 line card. You reinstall the same SFP or XFP modules into the new Cisco 7600 ES20 line card. When you enter the **power enable module** command on the router, the SFP or XFP modules will automatically reactivate with the new Cisco 7600 ES20 line card.

To activate a Cisco 7600 ES20 line card and its installed SFP or XFP modules after the Cisco 7600 ES20 line card has been deactivated, use the following command in global configuration mode:

Command	Purpose
Router(config)# **power enable module** *slot*	Activates the ES20 line card in the specified slot and its installed SFPs or XFPs, where: • *slot*—Specifies the chassis slot number where the ES20 line card is installed.

For more information about chassis slot numbering, refer to the Identifying Slots and Subslots for the Cisco 7600 Series Ethernet Services 20G Line Cards, page 2-2 section in this guide.

Verifying Deactivation and Activation of a Cisco 7600 Series Ethernet Services 20G Line Card

To verify the deactivation of a ES20 line card, enter the **show module** command in privileged EXEC configuration mode. Observe the Status field associated with the ES20 line card that you want to verify.

The following example shows that the ES20 line cards located in slots 2 and 4 are deactivated. This is indicated by its "PwrDown" status.

```
Router# show module
Mod Ports Card Type                                  Model              Serial No.
--- ----- -------------------------------------- ------------------ -----------
  2    0  ESM20G                                  7600-ES20-BASE     JAB1030007C
  4    0  ESM20G                                  7600-ES20-BASE     JAB10230687
  5    1  1-subslot SPA Interface Processor-600  7600-SIP-600       JAB091604D2
  6    2  Supervisor Engine 720 (Active)         WS-SUP720-3BXL     SAL1026SW03

Mod MAC addresses                       Hw    Fw           Sw           Status
--- ----------------------------------- ------ ------------ ------------ -------
  2  00e0.aabb.cc00 to 00e0.aabb.cc00   1.0   12.2(2006032 12.2(2006110 PwrDown
  4  00e0.aabb.cc00 to 00e0.aabb.cc00   0.32  12.2(2006032 12.2(2006110 PwrDown
  5  0016.468f.554c to 0016.468f.558b   1.0   12.2(18r)SX4 12.2(2006110 Ok
  6  0014.a982.2684 to 0014.a982.2687   5.2   8.4(2)       12.2(2006110 Ok

Mod  Sub-Module                  Model               Serial       Hw     Status
---- --------------------------- ------------------ ----------- ------- -------
  2  ESM20G/PFC3C Distributed Fo 7600-ES20-D3C      JAB1030008H  1.0    PwrDown
  4  ESM20G Distributed Forwardi 7600-ESM-DFC-3CXL  JAB10230672  0.16   PwrDown
  5  SIP-600 Distributed Forward 7600-SIP-600-DC    JAB091604DU  1.0    Ok
 5/0 1x10GE XFP SPA              SPA-1XTENGE-XFP    PRTA2104311  3.2    Ok
  6  Policy Feature Card 3       WS-F6K-PFC3BXL     SAL1025SEF8  1.8    Ok
  6  MSFC3 Daughterboard         WS-SUP720          SAL09253VH8  2.5    Ok

Mod  Online Diag Status
---- -------------------
  2  Not Applicable
  4  Not Applicable
  5  Bypass
 5/0 Bypass
  6  Bypass
Router#
```

To verify activation and proper operation of a ES20 line card, enter the **show module** command and observe "Ok" in the Status field as shown in the following example:

```
Router# show module
Mod Ports Card Type                                  Model              Serial No.
--- ----- -------------------------------------- ------------------ -----------
  2   20  ESM20G                                  7600-ES20-BASE     JAB1030007C
  4    2  ESM20G                                  7600-ES20-BASE     JAB10230687
  5    1  1-subslot SPA Interface Processor-600  7600-SIP-600       JAB091604D2
  6    2  Supervisor Engine 720 (Active)         WS-SUP720-3BXL     SAL1026SW03

Mod MAC addresses                       Hw    Fw           Sw           Status
--- ----------------------------------- ------ ------------ ------------ -------
  2  00e0.aabb.cc00 to 00e0.aabb.cc00   1.0   12.2(2006032 12.2(2006110 Ok
  4  00e0.aabb.cc00 to 00e0.aabb.cc00   0.32  12.2(2006032 12.2(2006110 Ok
  5  0016.468f.554c to 0016.468f.558b   1.0   12.2(18r)SX4 12.2(2006110 Ok
  6  0014.a982.2684 to 0014.a982.2687   5.2   8.4(2)       12.2(2006110 Ok

Mod  Sub-Module                  Model               Serial       Hw     Status
---- --------------------------- ------------------ ----------- ------- -------
```

```
  2  ESM20G/PFC3C Distributed Fo 7600-ES20-D3C      JAB1030008H  1.0    Ok
 2/0 10XGE Port                 7600-ES20-20XGE    JAB10350313  1.0    Ok
 2/1 10XGE Port                 7600-ES20-20XGE    JAB10350313  1.0    Ok
  4  ESM20G Distributed Forwardi 7600-ESM-DFC-3CXL  JAB10230672  0.16   Ok
 4/0 1x10GE XFP Port            ESM-2X10GE-LINK    JAB1023069L  0.32   Ok
 4/1 1x10GE XFP Port            ESM-2X10GE-LINK    JAB1023069L  0.32   Ok
  5  SIP-600 Distributed Forward 7600-SIP-600-DC    JAB091604DU  1.0    Ok
 5/0 1x10GE XFP SPA             SPA-1XTENGE-XFP    PRTA2104311  3.2    Ok
  6  Policy Feature Card 3       WS-F6K-PFC3BXL     SAL1025SEF8  1.8    Ok
  6  MSFC3 Daughterboard         WS-SUP720          SAL09253VH8  2.5    Ok

Mod  Online Diag Status
---- -------------------
  2  Bypass
 2/0 Bypass
 2/1 Bypass
  4  Bypass
 4/0 Bypass
 4/1 Bypass
  5  Bypass
 5/0 Bypass
  6  Bypass
Router#
```

Preparing for Online Removal of a SFP or XFP Modules

The Cisco 7600 series routers support OIR of a SFP or XFP modules independently of removing the Cisco 7600 ES20 line card. This means that a Cisco 7600 ES20 line card can remain installed in the router with one XFP remaining active, while you remove another XFP from one of the line card ports. Or, that an Cisco 7600 ES20 line card can remain installed in the router with some number of SFP modules remaining active, while you remove other SFP modules from the line card ports.

The interface configuration is retained (recalled) if a Cisco 7600 ES20 line card or SFP or XFP is removed and then replaced with one of the same type.

If you are planning to remove a Cisco 7600 ES20 line card along with its SFP or XFP modules, then you do not need to follow the instructions in this section. To remove a Cisco 7600 ES20 line card, see the "Preparing for Online Removal of a Cisco 7600 Series Ethernet Services 20G Line Card" section on page 4-2.

SFP Module or XFP Module OIR

The SFP and XFP modules support online insertion and removal (OIR). However, if the line card is already installed in the router and the system is operational, we recommend that you administratively shut down the SFP or XFP module port before installing a new module.