



## CHAPTER 4

# Installing and Removing a Cisco 7600 Series Ethernet Services Plus Line Card

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

- [Handling Cisco 7600 Series Ethernet Services Plus Line Cards](#), page 4-1
- [Online Insertion and Removal](#), page 4-2

## Handling Cisco 7600 Series Ethernet Services Plus Line Cards

Each Cisco 7600 Series ES+ line card circuit board is mounted to a metal carrier and is sensitive to electrostatic discharge (ESD) damage. Before you begin installation, read [Chapter 3, “Preparing to Install a Cisco 7600 Series Ethernet Services Plus Line Card,”](#) for a list of parts and tools required for installation.



### Caution

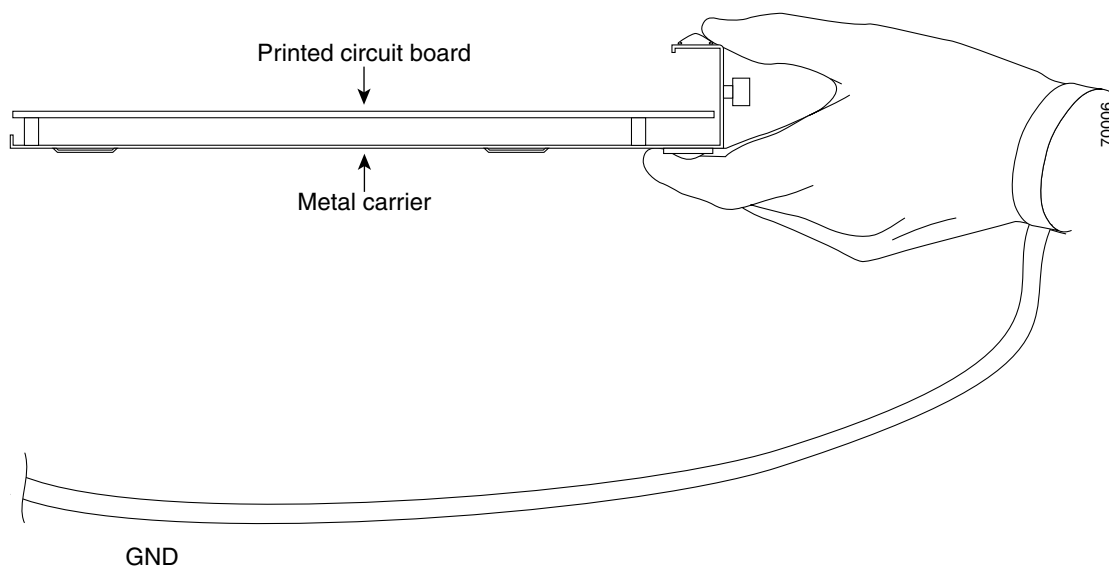
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Always handle the Cisco 7600 Series ES+ line card by the carrier edges and handle; never touch the line card components or connector pins. (See [Figure 4-1](#).)

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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 Series ES+ line card in a slot that is not in use, you must first remove the blank filler plate.

Figure 4-1 Handling a Cisco 7600 Series ES+ line card



## Online Insertion and Removal

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



### Note

The 40 port versions (7600-ES+40G3C and 7600-ES+40G3CXL) require longer maintenance time for card replacement.

This section includes the following topics on OIR support:

- [Preparing for Online Removal of a Cisco 7600 Series Ethernet Services Plus Line Card, page 4-2](#)
- [Verifying Deactivation and Activation of a Cisco 7600 Series Ethernet Services Plus Line Card, page 4-4](#)
- [Preparing for Online Removal of a SFP or XFP Modules, page 4-5](#)

## Preparing for Online Removal of a Cisco 7600 Series Ethernet Services Plus Line Card

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

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

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

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

## Deactivating a Cisco 7600 Series Ethernet Services Plus Line Card

To deactivate a 7600 ES+ Ethernet line card and its installed SFPs or XFPs prior to removal of the 7600 ES+ line card, use the following command in global configuration mode:

Command	Purpose
Router(config)# <b>no power enable module</b> <i>slot</i>	Shuts down any installed interfaces, and deactivates the 7600 ES+ line card in the specified slot, where: <ul style="list-style-type: none"> <li><i>slot</i>—Specifies the chassis slot number where the 7600 ES+ line card is installed.</li> </ul>

For more information about chassis slot numbering, refer to the “[Identifying Slots and Subslots for the Cisco 7600 Cisco 7600 Series ES+ Line Cards](#)” section on page 2-3 section in this guide.

## Reactivating a Cisco 7600 Series Ethernet Services Plus Line Card

Once you deactivate a Cisco 7600 Series ES+ 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 Series ES+ line card.

If you did not issue a command to deactivate the SFP or XFP modules installed in a Cisco 7600 Series ES+ line card, but you did deactivate the Cisco 7600 Series ES+ 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 Series ES+ line card. The installed SFP or XFP modules automatically reactivate upon reactivation of the Cisco 7600 Series ES+ line card in the router.

For example, consider the case where you remove a Cisco 7600 Series ES+ line card from the router to replace it with another Cisco 7600 Series ES+ line card. You reinstall the same SFP or XFP modules into the new Cisco 7600 Series ES+ 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 Series ES+ line card.

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

Command	Purpose
Router(config)# <b>power enable module</b> <i>slot</i>	Activates the ES+ line card in the specified slot and its installed SFPs or XFPs, where: <ul style="list-style-type: none"> <li><i>slot</i>—Specifies the chassis slot number where the ES+ line card is installed.</li> </ul>

For more information about chassis slot numbering, refer to the [Identifying Slots and Subslots for the Cisco 7600 Cisco 7600 Series ES+ Line Cards](#), page 2-3 section in this guide.

## Verifying Deactivation and Activation of a Cisco 7600 Series Ethernet Services Plus Line Card

To verify the deactivation of a 7600 ES+ line card, enter the **show module** command in privileged EXEC configuration mode. Observe the Status field associated with the 7600 ES+ line card that you want to verify.

The following example shows 7600 ES+ line cards located in slots 4 and 6. Slot 6 is powered down. This is indicated by its “PwrDown” status.

```
Router# show module
Mod Ports Card Type                               Model                               Serial No.
-----
 1   24  CEF720 24 port 1000mb SFP                    WS-X6724-SFP                       SAL0930696R
 2   48  CEF720 48 port 10/100/1000mb Ethernet          WS-X6748-GE-TX                     SAL0929634V
 3    0  4-subslot SPA Interface Processor-200        7600-SIP-200                       JAB09270AEQ
 4   40  7600 ES+                                     7600-ES+40G3CXL                   JAE1146355M
 5    2  Supervisor Engine 720 (Active)              WS-SUP720-3BXL                     SAD085106Z7
 6    4  7600 ES+                                     7600-ES+4TG3C                     JAE11518648

Mod MAC addresses                               Hw   Fw           Sw           Status
-----
 1  0014.f212.0028 to 0014.f212.003f            2.2  12.2(14r)S5  12.2(nightly Ok
 2  0014.f211.f20c to 0014.f211.f23b            2.2  12.2(14r)S5  12.2(nightly Ok
 3  0014.a8f7.1c40 to 0014.a8f7.1c7f            1.1  12.2(nightly 12.2(nightly Ok
 4  001d.e5e8.1740 to 001d.e5e8.179f            0.301 12.2(33r)SRD 12.2(nightly Ok
 5  0011.21ba.9a48 to 0011.21ba.9a4b            4.1  8.4(2)       12.2(nightly Ok
 6  001d.e5e8.2e00 to 001d.e5e8.2e0f            0.301 12.2(33r)SRD 12.2(nightly PwrDown

Mod  Sub-Module                               Model                               Serial                               Hw   Status
-----
 1  Centralized Forwarding Card              WS-F6700-CFC                       SAL1021PB1F  2.0  Ok
 2  Centralized Forwarding Card              WS-F6700-CFC                       SAL085285LJ  2.0  Ok
 3/2 4xT3E3 SPA                               SPA-4XT3/E3                         JAB09270B3J  1.0  Ok
 4  7600 ES+ DFC XL                           7600-ES+3CXL                       JAE11463519  0.200 Ok
 4  7600 ES+ 40xGE SFP                       7600-ES+40G                        JAE114632R4  0.300 Ok
 5  Policy Feature Card 3                     WS-F6K-PFC3BXL                     SAD0851042D  1.4  Ok
 5  MSFC3 Daughterboard                      WS-SUP720                           SAD085002WF  2.2  Ok
 6  7600 ES+ DFC LITE                         7600-ES+3C                         0.301 PwrDown
 6  7600 ES+ 4x10GE XFP                      7600-ES+4TG                        JAE1151864W  0.201 PwrDown

Mod  Online Diag Status
-----
 1  Pass
 2  Pass
 3  Pass
 3/2 Pass
 4  Pass
 5  Pass
 6  Not Applicable
Router#
```

To verify activation and proper operation of a 7600 ES+ 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.
```

```

-----
 1  24  CEF720 24 port 1000mb SFP                WS-X6724-SFP        SAL0930696R
 2  48  CEF720 48 port 10/100/1000mb Ethernet WS-X6748-GE-TX      SAL0929634V
 3   0  4-subslot SPA Interface Processor-200    7600-SIP-200       JAB09270AEQ
 4  40  7600 ES+                                7600-ES+40G3CXL    JAE1146355M
 5   2  Supervisor Engine 720 (Active)          WS-SUP720-3BXL     SAD085106Z7
 6   4  7600 ES+                                7600-ES+4TG3C      JAE11518648
-----

Mod MAC addresses                Hw    Fw          Sw          Status
-----
 1  0014.f212.0028 to 0014.f212.003f  2.2  12.2(14r)S5  12.2(nightly Ok
 2  0014.f211.f20c to 0014.f211.f23b  2.2  12.2(14r)S5  12.2(nightly Ok
 3  0014.a8f7.1c40 to 0014.a8f7.1c7f  1.1  12.2(nightly 12.2(nightly Ok
 4  001d.e5e8.1740 to 001d.e5e8.179f  0.301 12.2(33r)SRD 12.2(nightly Ok
 5  0011.21ba.9a48 to 0011.21ba.9a4b  4.1  8.4(2)       12.2(nightly Ok
 6  001d.e5e8.2e00 to 001d.e5e8.2e0f  0.301 12.2(33r)SRD 12.2(nightly Ok

Mod  Sub-Module                Model                Serial                Hw    Status
-----
 1  Centralized Forwarding Card WS-F6700-CFC        SAL1021PB1F  2.0  Ok
 2  Centralized Forwarding Card WS-F6700-CFC        SAL085285LJ  2.0  Ok
3/2 4xT3E3 SPA                  SPA-4XT3/E3        JAB09270B3J  1.0  Ok
 4  7600 ES+ DFC XL             7600-ES+3CXL      JAE11463519  0.200 Ok
 4  7600 ES+ 40xGE SFP          7600-ES+40G       JAE114632R4  0.300 Ok
 5  Policy Feature Card 3       WS-F6K-PFC3BXL    SAD0851042D  1.4  Ok
 5  MSFC3 Daughterboard        WS-SUP720         SAD085002WF  2.2  Ok
 6  7600 ES+ DFC LITE          7600-ES+3C        0.301 Ok
 6  7600 ES+ 4x10GE XFP        7600-ES+4TG       JAE1151864W  0.201 Ok

Mod  Online Diag Status
-----
 1  Pass
 2  Pass
 3  Pass
3/2 Pass
 4  Pass
 5  Pass
 6  Pass

Router#
Router2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
PE2(config)#no power enable module 6
PE2(config)#end
PE2#
*May 15 10:30:54.227 UTC: %SYS-5-CONFIG_I: Configured from console by console
PE2#
*May 15 10:30:53.325 UTC: %C6KPWR-SP-4-DISABLED: power to module in slot 6 set off (admin
request)
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 Series ES+ line card. This means that a Cisco 7600 Series ES+ 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 Series ES+ 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 Series ES+ 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 Series ES+ 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 Series ES+ line card, see the [“Preparing for Online Removal of a Cisco 7600 Series Ethernet Services Plus 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.