Upgrading and Maintaining the Cisco 6260 System

This chapter describes upgrade and maintenance procedures for the Cisco 6260 system.

6.1 Backing Up Software

We recommend that you maintain, on a TFTP server, current copies of three files for each Cisco 6260 system:

- The Cisco IOS software image
- The configuration file (running-config)
- The bootflash file

If you keep copies of these files on a TFTP server, you can easily recover from a fault in an NI-2 card: simply replace the NI-2 card, and download the software image and configuration file from the TFTP server. Remember to update your backup files whenever you change your configuration or upgrade your Cisco IOS software.

Complete the following steps to copy the Cisco IOS software image and configuration file to a TFTP server:

Step 1   Log in to the Cisco 6260 node whose software you wish to back up.

Step 2   Enter the **dir** command to display the names of the files:

```
6260# dir
```

Step 3   Enter a **copy** command to copy the IOS software file to the node TFTP server:

```
6260# copy bootflash:<image-name> tftp
```

Step 4   Enter a second **copy** command to copy the configuration file to the node TFTP server:

```
6260# copy running-config tftp
```

6.2 Fan Tray Maintenance

The following sections describe the preventive maintenance procedures for the fan tray:

- Replacing or Cleaning the Air Filter
- Removing and Replacing the Fan Tray

6.2.1 Replacing or Cleaning the Air Filter

You must periodically clean or replace the two air filters in the Cisco 6260.

Once a month (or more often in dusty environments), examine the air filters and clean or replace them if they are dirty. Keep a log recording the date of each filter cleaning and filter replacement.

You can clean or replace the air filters while the Cisco 6260 remains powered up and fully operational. You can order a replacement air filter through Cisco.

The remainder of this section explains how to remove, clean, and replace the filters.

6.2.1.1 Required Tools and Equipment

To clean the air filters, you need one of the following:

- Vacuum cleaner (preferred)
- Clean water
- Mild detergent, if the filter is very dirty

New air filters are the only parts you need if you decide that the old filters need replacing.

6.2.1.2 Removing an Air Filter

This procedure tells you how to remove an air filter from the Cisco 6260 chassis. Perform this procedure for each of the two air filters in each chassis.

Step 1 Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2 Using a Phillips-head screwdriver, loosen the screw and remove the metal bezel that covers the air filters. (See Figure 6-1.)

Figure 6-1   Removing the Bezel and Air Filters
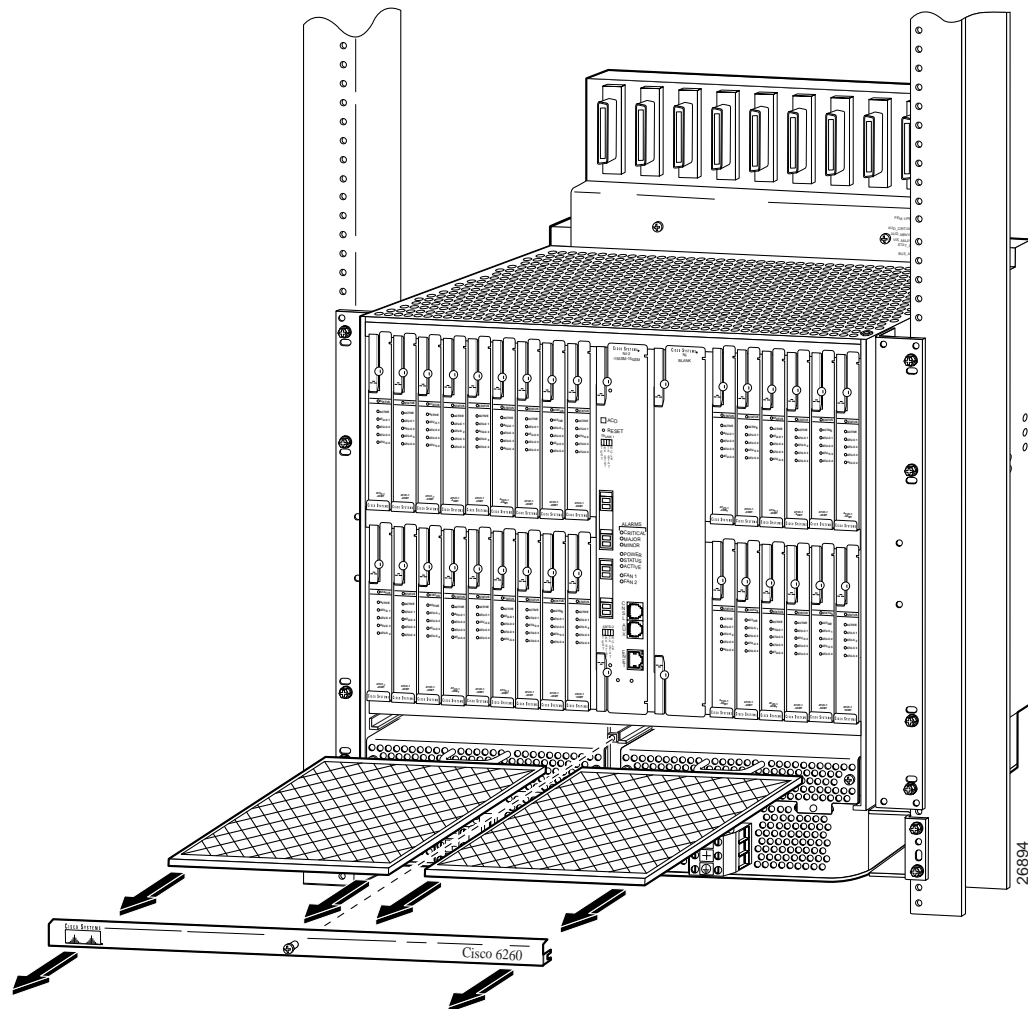
Step 3 The air filter slides out from the top of the fan tray. Gently pull the filter toward you to remove it from the tray.

Step 4 If you are replacing the air filter, discard it and go to the "Replacing the Air Filter" section on page 6-4.

Step 5 If you wish to clean the air filter, go to the "Cleaning the Air Filter" section on page 6-4.

6.2.1.3 Cleaning the Air Filter

This section tells you how to clean a Cisco 6260 air filter. Go to the "Replacing the Air Filter" section on page 6-4 if you are replacing an old filter with a new one.

Use one of the following methods to clean the air filter:

- Vacuum. Vacuum cleaning is preferred because you need not dry the filter afterwards. Vacuum the filter until it is clean and free of dust.

- Clean with plain water. Placing the filter under a stream of plain water is equally effective. Hold the filter under the water with the metal grill facing up and let the water flow down through the filter. (This orientation causes the water to flow through the filter in the direction opposite from the usual air flow, so you dislodge rather than embed matter trapped in the filter.) Allow the filter to dry thoroughly before reinstalling it.

- Clean with hot water and mild detergent. If the filter is too dirty to be completely cleaned with a vacuum or with plain water, immerse the filter in a solution of hot water and mild detergent. Rinse the filter thoroughly in clear water and allow it to dry completely before reinstalling it.

6.2.1.4 Replacing the Air Filter

Use these steps to replace the air filter:

Step 1 Hold the air filter so that

- The side with the metal grill is facing up.

- One of the long sides goes in first.

Step 2 Slide the filter into its slot above the fan tray.

Step 3 Replace the bezel that covers the fan tray and tighten the screw using a Phillips-head screwdriver to secure the bezel.

6.2.2 Removing and Replacing the Fan Tray

If the fans are running too slowly or are no longer operational, the system management software generates an alarm. You will need to replace the nonoperational fan tray. While you are replacing the nonoperational fan tray, the operational fan tray continues to run. You can order a replacement fan tray through Cisco.

The compartments for the two fan trays are located side by side near the bottom of the chassis, just above the PEMs. A narrow bezel fits across the chassis to hold the air filters and fan trays in place (see Figure 6-2).

You need a Number 2 Phillips-head screwdriver to remove and replace the bezel and to tighten the screws that secure the fan tray to the chassis.

Note You need not turn off the power before removing a fan tray. However, if you must remove a fan tray from an operating Cisco 6260, replace it within 5 minutes. If that is not possible, shut the system down and turn off the power to avoid thermal damage.

Warning   **If you do not have a replacement fan tray available, pull all of the line cards away from the backplane connection and power off the system until a replacement fan tray is available.**

Caution   The cooling fans in both fan trays must run while the system is powered up. The system could suffer thermal damage if the fans in either tray stop for more than 5 minutes.

Figure 6-2   Close-up View of Cisco 6260 Chassis with Fan Trays and Bezel
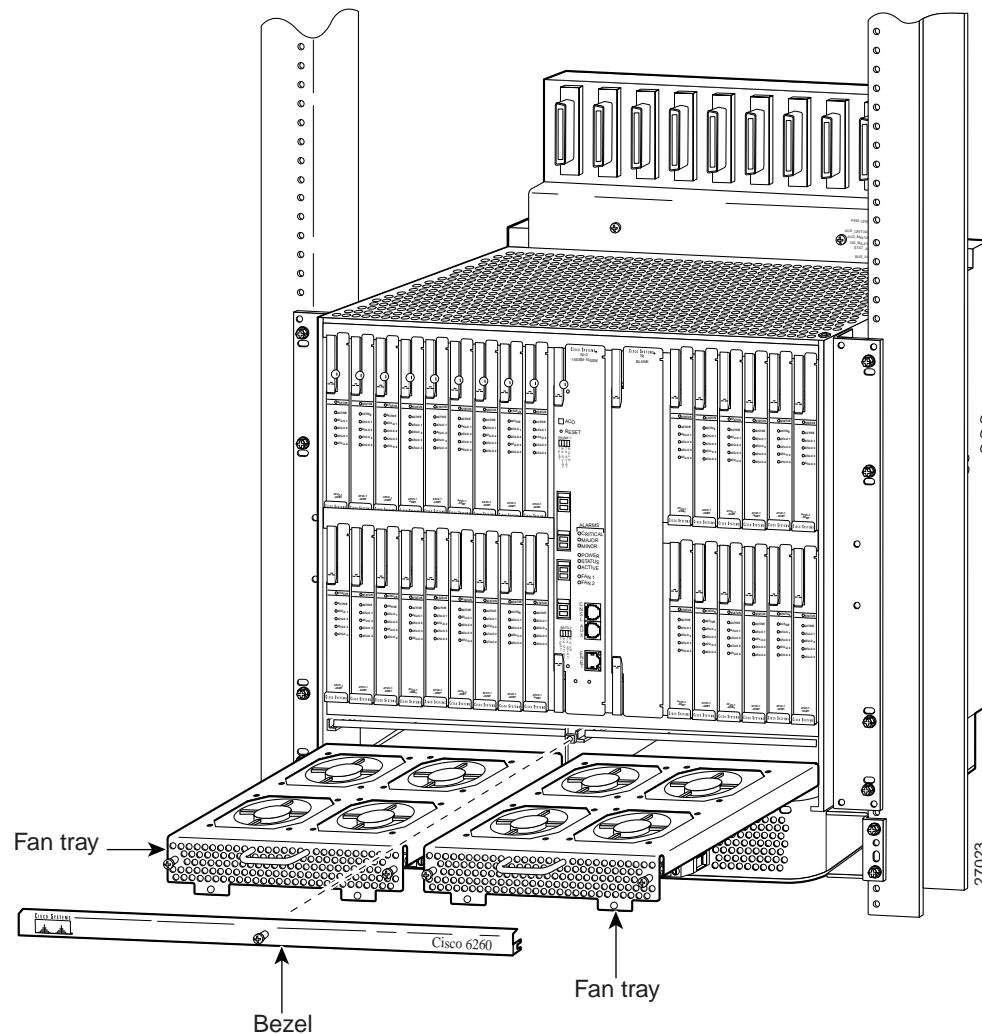
Complete these steps to remove and replace a fan tray in the Cisco 6260:

Step 1   Connect a grounding strap to the ESD grounding jack located on the top right of the Cisco 6260 card cage.

Step 2   Use a Phillips-head screwdriver to loosen the screw to remove the bezel that partially covers the fan trays.

Step 3   Use a Phillips-head screwdriver to loosen the two screws on the fan tray.

Step 4   Grasp the fan tray by the handle and pull it from the chassis. If the fans are running, you will hear them slow down as the tray disengages from its power connector.

Warning   **The fans continue to turn at high speed for several seconds after the fan tray is removed from the chassis. To avoid injury to your hands, touch the fan tray only by its handle until the fans have stopped.**

Note   If there is a second fan tray in the chassis, you will hear it speed up when you remove the first fan tray.

Step 5   Insert the replacement fan tray into the chassis. Make sure that the pins in the lower lip of the fan tray front panel engage with the holes in the PEM below.

Step 6   Press the fan tray firmly into its slot to ensure that the power connectors mate. If the power is on, you will hear the fans start to turn. The fault light for the fan tray you are installing will stay on until the fans reach full speed, which takes several seconds. (Fan fault LEDs are Fan Tray 1 and Fan Tray 2 on the PEM.)

Note   When you insert a fan tray, you might hear the fans in the other fan tray slow down; this is normal.

Step 7   Use the Phillips-head screwdriver to tighten the two fasteners on the fan tray.

Step 8   Use the Phillips-head screwdriver to replace the bezel.

6.3 Installing and Replacing Hardware

The following sections detail the installation and removal procedures for the following field replaceable unit (FRU) hardware components:

- *x*TU-C line card
- DS3/2DS3 (E3/E3) NI-2 card
- DS3+T1/E1 IMA NI-2 card
- OC-3c/OC-3c NI-2 card

Note   See the "Installation and Replacement Suggestions" section on page 2-11 for examples of recommended card installation and replacement practices.

Caution   Proper ESD protection is required whenever you handle Cisco digital subscriber line access multiplexer (DSLAM) equipment. Installation and maintenance personnel should be properly grounded by means of ground straps to eliminate the risk of ESD damage to the equipment. Cards are subject to ESD damage whenever they are removed from the chassis.

6.3.1 *x*TU-C Line Card

The following sections describe how to remove and replace or install an *x*TU-C line card.

6.3.1.1 Installing an *x*TU-C Line Card

Complete the following steps to install the *x*TU-C line card in the chassis.

> ✎
>
> **Note**   It is important that you complete each step before moving on to the next step.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Hold the *x*TU-C line card vertically, with the line card faceplate toward you and the connectors facing the chassis slot.

Step 3   Align the upper and lower edges of the *x*TU-C line card with the upper and lower guides in the chassis slot.

Step 4   Lift up on the ejector lever and gently apply pressure to the bottom of the faceplate while pushing the line card into the slot.

Figure 6-3 shows the line card installation for a Cisco 6260 chassis.

Figure 6-3   xTU-C Line Card Installation
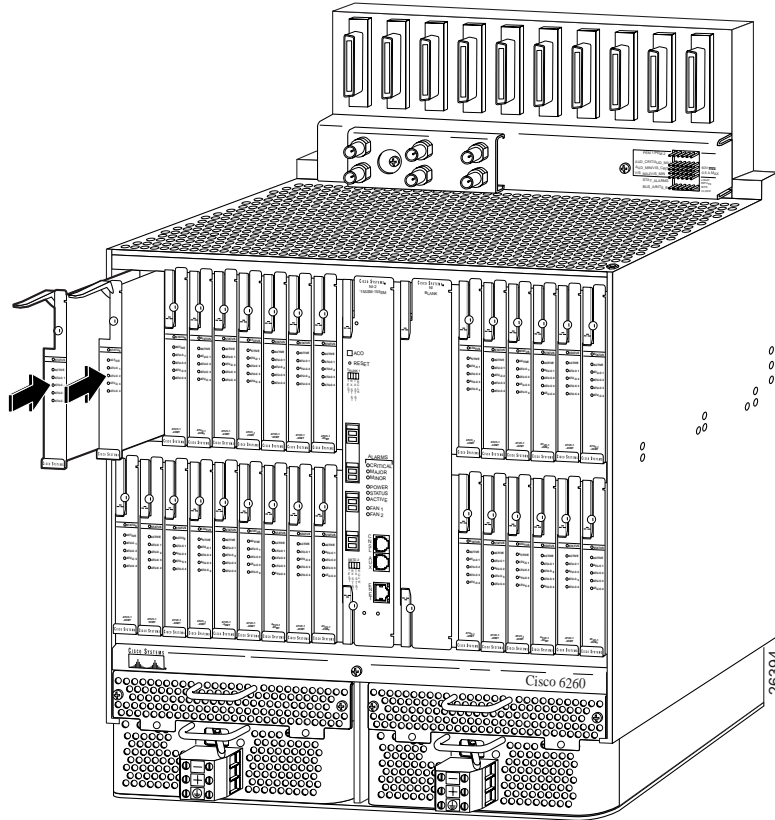
Step 5   Push on the faceplate of each line card to fully seat the line card.

Step 6   Press down on the ejector lever to secure the line card and connect it to the backplane.

Step 7   Use a flat-head screwdriver to turn the locking tab so that it overlaps the *x*TU-C line card to prevent inadvertent dislodging. Figure 6-4 shows how to position the locking tab.

Figure 6-4   Positioning the Locking Tab for the xTU-C Line Card Installation and Removal
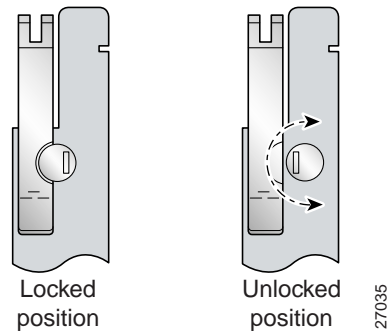
Note   It is not necessary to lock the *x*TU-C line cards in the Cisco 6260 chassis.

Step 8 Verify that the STATUS LED is solid green after the brief self-test. If the STATUS LED is not green after the self-test, see Chapter 5, "Troubleshooting," for troubleshooting procedures.

> ✎
>
> **Note** If you are installing the line card for the first time, refer to the provisioning procedures in the appropriate software guide for your chassis.

6.3.1.2 Removing an *x*TU-C Line Card

Complete the following steps to remove a *x*TU-C line card from the chassis:

Step 1 Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2 Use a flat-head screwdriver to move the locking tab from the locked to the unlocked position. Be sure to turn the locking tab so that it does not overlap the *x*TU-C line card ejector lever, as shown in Figure 6-4.

Step 3 Lift up on the ejector lever. This action disconnects the line card from the backplane.

Step 4 Carefully slide the line card out of the slot.

Step 5 Either replace the line card that you remove, or insert a blank faceplate in the empty slot. See the "Installing an xTU-C Line Card" section on page 6-7 for installation instructions for *x*TU-C line cards. For blank faceplate installation instructions, see the appropriate installation chapter for your configuration.

> ✎
>
> **Note** Blank faceplates should occupy any empty slots in the chassis.

6.3.2 DS3/2DS3 NI-2 Card

The following sections describe how to remove and replace or install a DS3/2DS3 NI-2 card.

> ⚠
>
> **Warning** **The ports labeled "ENET," "CNSL," and "AUX" are SELV circuits. SELV circuits should be connected only to other SELV circuits. Because the DSL circuits are treated like telephone-network voltage, avoid connecting the SELV circuit to the TNV circuits.**

> 🔍
>
> **Tip** We recommend that you label each data cable at both ends to identify its destination.

⚠
Caution   Service is interrupted to the entire system when the NI-2 card is removed unless a secondary NI-2 card is installed in the chassis. If a secondary NI-2 card is not installed, ensure that a service interruption is acceptable before proceeding.

If a secondary NI-2 card is installed in the chassis, removing the active NI-2 card causes a switchover to the standby NI-2 card, which interrupts data traffic for approximately 60 seconds.

Removing a standby NI-2 card does not interrupt service to the system.

⚠
Caution   Proper ESD protection is required each time you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded by means of ground straps to eliminate the risk of ESD damage to the equipment. Cards are subject to ESD damage each time they are removed from the chassis.

⚠
Caution   Installing the cards in the chassis with the power leads reversed can damage the cards.

⚠
Warning   **The power supply circuitry for the Cisco DSLAM equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the DSLAM equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.**

⚠
Warning   **Do not reach into a vacant slot or chassis while you install or remove a line card or a fan. Exposed circuitry could constitute an energy hazard.**

✎
Note   All cards must be fully seated in the chassis. A push on the faceplate of each card is required for the card to be fully seated.

6.3.2.1 Installing a DS3/2DS3 NI-2 Card

Complete the following steps to install a DS3/2DS3 NI-2 card in the chassis. It is important to complete each step before moving on to the next step.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Inspect the NI-2 card. Verify that the daughterboard is fully seated on the main board.

Step 3   Verify that slots 10 and 11 of the Cisco 6260 chassis have no bent pins.

Step 4   Vertically align the card edge with the card guides at the top and bottom of slot 10 or slot 11 in the chassis.

Figure 6-5 shows the NI-2 card installation for a Cisco 6260 chassis. The basic installation procedures are the same for all NI-2 card types.

Figure 6-5   NI-2 Card Installation
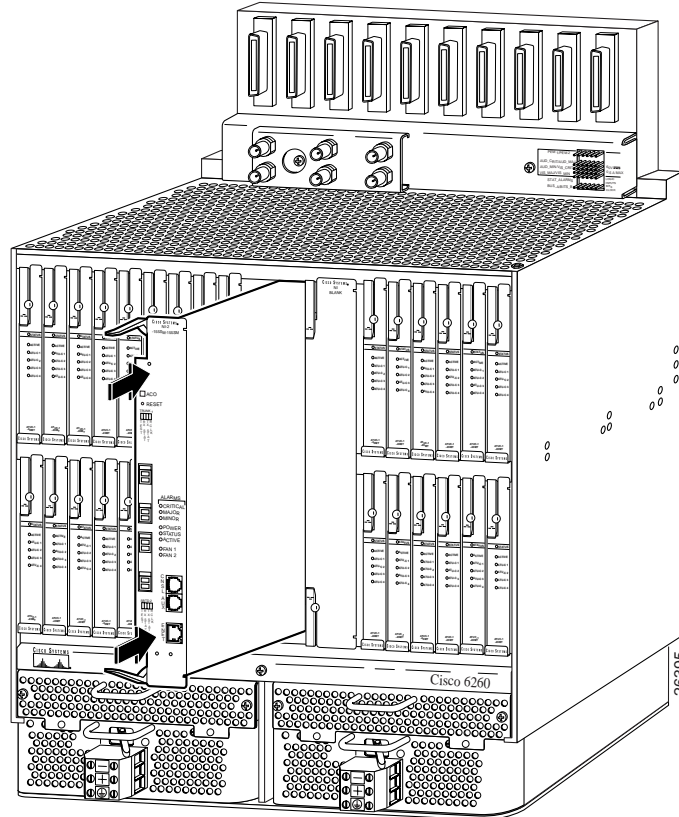
Step 5   Lift up on the ejector levers and gently apply pressure to the bottom of the faceplate while pushing the card into the slot.

Step 6   Push on the faceplate of the card to fully seat the card.

Step 7   Press down on the ejector levers to secure the card and connect it to the backplane.

Step 8   Use a flat-head screwdriver to turn the locking tabs on the faceplate so that they overlap the NI-2 card ejector levers to prevent inadvertent dislodging, as shown in Figure 6-6.

Figure 6-6   Positioning the Locking Tab for NI-2 Card Removal and Installation
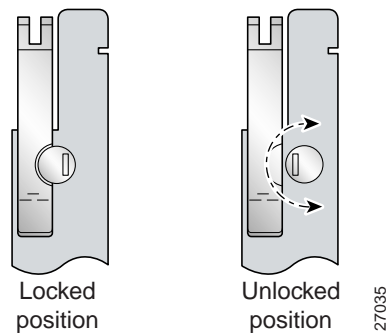
Locked position   Unlocked position

Step 9   Verify that the STATUS, ACTIVE, and POWER LEDs on the NI-2 card are solid green after the self-test is complete. This self-test procedure takes several minutes. If the STATUS LEDs are not green after the self-test, see Chapter 5, "Troubleshooting," for troubleshooting procedures.

Step 10 Perform a software update if the STATUS LED on the NI-2 card is flashing.

✎
Note If you are installing the card for the first time, refer to the provisioning procedures in the appropriate software guide for your chassis.

The network connection to the ATM switch and the subtending connections are made from the I/O module. For more information on these connection procedures, see the installation chapter in this guide that corresponds to your configuration.

Step 11 Connect the Ethernet to the management network.

Step 12 Connect a VT100-compatible terminal to the NI-2 card CNSL connector.

Step 13 Connect a terminal, a modem, or another serial device to the NI-2 RJ-45 AUX.

✎
Note See the appropriate installation chapter in this guide for connection procedures for the ENET, CNSL, and AUX ports.

6.3.2.2 Removing a DS3/2DS3 NI-2 Card

Complete the following steps to remove a DS3/2DS3 NI-2 card from the chassis. It is important that you complete each step before moving on to the next step.

Step 1 Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 chassis.

Step 2 Disconnect the cable connected to the AUX receptacle on the NI-2 card, if necessary.

Step 3 Disconnect the cable connected to the CNSL receptacle on the NI-2 card, if necessary.

Step 4 Disconnect the cable connected to the ENET receptacle on the NI-2 card, if necessary.

Step 5 Use a flat-head screwdriver to move the locking tabs from the locked to the unlocked position. Be sure to turn the locking tabs so that they do not overlap the card, as shown in Figure 6-6.

Step 6 Lift up on the NI-2 card ejector tabs. This action disconnects the card from the backplane.

Step 7 Carefully slide the card out of the slot.

See the for NI-2 card installation procedures.

✎
Note The network connection to the ATM switch and the subtending connections are made from the I/O module. For more information on these connection procedures, see the installation chapter in this guide that corresponds to your configuration.

6.3.3 DS3+T1/E1 IMA NI-2 Card

The following sections describe how to remove and replace or install a DS3+T1/E1 IMA NI-2 card.

Warning   **The ports labeled "ENET," "CNSL," and "AUX" are SELV circuits. SELV circuits should be connected only to other SELV circuits. Because the DSL circuits are treated like telephone-network voltage, avoid connecting the SELV circuit to the TNV circuits.**

Tip   We recommend that you label each data cable at both ends to identify its destination.

Caution   Proper ESD protection is required each time you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded by means of ground straps to eliminate the risk of ESD damage to the equipment. Cards are subject to ESD damage each time they are removed from the chassis.

Caution   Installing the cards in the chassis with the power leads reversed can damage the cards.

Warning   **The power supply circuitry for the Cisco DSLAM equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the DSLAM equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.**

Warning   **Do not reach into a vacant slot or chassis while you install or remove a line card or a fan. Exposed circuitry could constitute an energy hazard.**

Note   All cards must be fully seated in the chassis. A push on the faceplate of each card is required for the card to be fully seated.

6.3.3.1 Installing a DS3+T1/E1 IMA NI-2 Card

Complete the following steps to install a DS3+T1/E1 IMA NI-2 card in the chassis. It is important that you complete each step before moving on to the next step.

Note   All cards must be fully seated in the chassis. A push on the faceplate of each card is required for the card to be fully seated.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Inspect the NI-2 card. Verify that the daughterboard is fully seated on the main board.

Step 3   Verify that the NI-2 card slot in the chassis has no bent pins.

Step 4   Hold the NI-2 card with the faceplate toward you and the connectors facing the chassis slot.

Step 5   Align the card edge with the slot guides in the chassis.

Step 6   Lift up on the ejector levers and gently apply pressure to the faceplate while pushing the card into the slot.

Step 7   Push on the faceplate of the card to fully seat the card.

Step 8   Press down on the ejector levers to secure the card and connect it to the backplane.

Step 9   Use a flat-head screwdriver to turn the locking tabs on the faceplate so that they overlap the NI-2 card ejector levers to prevent inadvertent dislodging. Figure 6-6 shows how to position the locking tabs.

Step 10   Verify that the STATUS, ACTIVE, and POWER LEDs on the NI-2 card are solid green after the self-test is complete. This self-test procedure takes several minutes. If the LEDs are not green after the self-test, refer to Chapter 5, "Troubleshooting" for troubleshooting procedures.

> ✎
> **Note**   If you are installing the card for the first time, refer to the provisioning procedures in the appropriate software guide for your chassis.

Step 11   Perform a software update if the STATUS LED on the NI-2 card is flashing. Refer to the appropriate software guide for your chassis for software upgrade procedures.

> ✎
> **Note**   The network connection to the ATM switch and the subtending connections are made from the I/O module. For more information on these connection procedures, see the installation chapter in this guide that corresponds to your configuration.

Step 12   Connect the Ethernet to the management network.

Step 13   Connect a VT100-compatible terminal to the NI-2 card CNSL connector.

Step 14   Connect a terminal, a modem, or another serial device to the NI-2 RJ-45 AUX.

> ✎
> **Note**   See the appropriate installation chapter in this guide for connection procedures for the ENET, CNSL, and AUX ports.

6.3.3.2 Removing a DS3+T1/E1 IMA NI-2 Card

Complete the following steps to remove a DS3+T1/E1 IMA NI-2 card from the chassis. It is important that you complete each step before moving on to the next step.

> ⚠
> **Caution**   Service is interrupted to the entire system when the NI-2 card is removed. Before removing the NI-2 card, ensure that a service interruption is acceptable.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 chassis.

Step 2   Disconnect the cable connected to the AUX receptacle on the NI-2 card, if necessary.

Step 3   Disconnect the cable connected to the CNSL receptacle on the NI-2 card, if necessary.

Step 4   Disconnect the cable connected to the ENET receptacle on the NI-2 card, if necessary.

Step 5   Use a flat-head screwdriver to move the locking tabs on the faceplate from the locked to the unlocked position. Be sure to turn the locking tabs so that they do not overlap the NI-2 card ejector levers, as shown in Figure 6-6.

Step 6   Lift up on the ejector levers. This action disconnects the card from the backplane.

Step 7   Carefully slide the card out of the slot.

See the "Installing a DS3+T1/E1 IMA NI-2 Card" section on page 6-13 for NI-2 card installation procedures.

6.3.4 OC-3c/OC-3c NI-2 Card

The following sections describe how to remove and replace or install an OC-3c/OC-3c NI-2 card.

Warning   **The ports labeled "ENET," "CNSL," and "AUX" are SELV circuits. SELV circuits should be connected only to other SELV circuits. Because the DSL circuits are treated like telephone-network voltage, avoid connecting the SELV circuit to the TNV circuits.**

Timesaver   We recommend that you label each data cable at both ends to identify its destination.

Caution   Service is interrupted to the entire system when the NI-2 card is removed unless a secondary NI-2 card is installed in the chassis. If a secondary NI-2 card is not installed, ensure that a service interruption is acceptable before proceeding.

If a secondary NI-2 card is installed in the chassis, removing the active NI-2 card causes a switchover to the standby NI-2 card, which interrupts data traffic for approximately 60 seconds.

Removing a standby NI-2 card does not interrupt service to the system.

Caution   Proper ESD protection is required each time you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded by means of ground straps to eliminate the risk of ESD damage to the equipment. Cards are subject to ESD damage each time they are removed from the chassis.

Caution   Installing the cards in the chassis with the power leads reversed can damage the cards.

Warning   **The power supply circuitry for the Cisco DSLAM equipment can constitute an energy hazard. Before you install or replace the equipment, remove all jewelry (including rings, necklaces, and watches). Metal objects can come into contact with exposed power supply wiring or circuitry inside the DSLAM equipment. This could cause the metal objects to heat up and cause serious burns or weld the metal object to the equipment.**

⚠

Warning   **Do not reach into a vacant slot or chassis while you install or remove a line card or a fan. Exposed circuitry could constitute an energy hazard.**

⚠

Warning   **Do not stare into the beam or view it directly with optical instruments.**

✎

Note   All cards must be fully seated in the chassis. A push on the faceplate of each card is required for the card to be fully seated.

6.3.4.1 Installing an OC-3c/OC-3c NI-2 Card

Complete the following steps to install an OC-3c/OC-3c NI-2 card in the chassis. It is important that you complete each step before moving on to the next step.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Inspect the NI-2 card. Verify that the daughterboard is fully seated on the main board.

Step 3   Verify that slots 10 and 11 of the chassis have no bent pins.

Step 4   Vertically align the card edge with the card guides at the top and bottom of slot 10 in the chassis.

Figure 6-5 shows the NI-2 installation in a Cisco 6260 chassis.

Step 5   Lift up on the ejector levers and gently apply pressure to the bottom of the faceplate while pushing the card into the slot.

Step 6   Push on the faceplate of each card to fully seat the card.

Step 7   Press down on the ejector levers to secure the card and connect it to the backplane.

Step 8   Use a flat-head screwdriver to turn the locking tab so that it overlaps the NI-2 card to prevent inadvertent dislodging, as shown in Figure 6-6.

Step 9   Verify that the STATUS, ACTIVE, and POWER LEDs on the NI-2 card are solid green after the self-test is complete. This self-test procedure takes several minutes. If the STATUS LEDs are not green after the self-test, see Chapter 5, "Troubleshooting," for troubleshooting procedures.

Step 10   Perform a software update if the STATUS LED on the NI-2 card is flashing. Refer to the appropriate software guide for your chassis for software upgrade procedures.

Step 11   Attach the RX cable from the ATM switch to the TRNK 1 TX connector in the inset on the NI-2 card. See Figure 1-18 for the OC-3c network interface connection location.

Step 12   Attach the TX cable from the ATM switch to the TRNK 1 RX connector in the inset on the NI-2 card. See Figure 1-18 for the OC-3c network interface connection location.

✎

Note   To cable the chassis for OC-3c subtending, see the installation chapter in this guide that corresponds to your configuration.

Step 13   Connect the Ethernet to the management network.

Step 14   Connect a VT100-compatible terminal to the NI-2 card CNSL connector.

Step 15 Connect a terminal, a modem, or another serial device to the NI-2 RJ-45 AUX.

Note See the appropriate installation chapter in this guide for connection procedures for the ENET, CNSL, and AUX ports.

Step 16 To connect your system for APS link redundancy, repeat Step 2 through Step 12 for slot 11.

6.3.4.2 Removing an OC-3c/OC-3c NI-2 Card

Complete the following steps to remove an OC-3c/OC-3c NI-2 card from the chassis. It is important that you complete each step before moving on to the next step.

Step 1 Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2 Disconnect the cable connected to the AUX port on the NI-2 card, if necessary.

Step 3 Disconnect the cable connected to the CNSL port on the NI-2 card, if necessary.

Step 4 Disconnect the cable connected to the ENET port on the NI-2 card, if necessary.

Step 5 Disconnect the cable from the TRNK 1 TX connector on the NI-2 card, if necessary.

Step 6 Disconnect the cable from the TRNK 1 RX connector on the NI-2 card, if necessary.

Step 7 Disconnect the cable from the SBTD 2 RX connector on the NI-2 card, if necessary.

Step 8 Disconnect the cable from the SBTD 2 RX connector on the NI-2 card, if necessary.

Step 9 Use a flat-head screwdriver to move the locking tabs on the NI-2 card faceplate from the locked to the unlocked position. Be sure to turn the locking tabs so that they do not overlap the NI-2 card ejector levers, as shown in Figure 6-6.

Step 10 Lift up on the ejector levers. This action disconnects the card from the backplane.

Step 11 Carefully slide the card out of the slot.

See the "Installing an OC-3c/OC-3c NI-2 Card" section on page 6-16 for NI-2 card installation procedures.

6.3.5 I/O Module

The following sections describe how to install or remove an E3, E1, or OC-3c I/O module.

Caution Proper ESD protection is required whenever you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded by means of ground straps to eliminate the risk of ESD damage to the equipment. Modules are subject to ESD damage whenever they are removed from the chassis.

Warning   The ports labeled "CNSL," "AUX," "ENET," "Tx," and "Rx (DS3)" are safety extra-low voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits. Because the Basic Rate Interface (BRI) circuits are treated like telephone-network voltage (TNV), avoid connecting the SELV circuit to the TNV circuits.

Warning   This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.

Warning   This product requires short-circuit (overcurrent) protection, to be provided as part of the building installation. Install only in accordance with national and local wiring regulations.

Warning   The telecommunications lines must be disconnected 1) before unplugging the main power connector or 2) while the housing is open.

Warning   VCCI Compliance for Class B Equipment (Japan).

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

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

Warning   Metal objects heat up when connected to power and ground, and can cause serious burns.

Caution   Any module that is only partially connected to the backplane can disrupt system operation.

6.3.5.1 Installing an I/O Module

Complete the following steps to install and cable the I/O module on the Cisco 6260 chassis.

Tip   We recommend that you label each cable and wire at both ends to identify its destination.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Use a Phillips-head screwdriver to remove the I/O module retaining screws.

Step 3   Carefully align the I/O module with the Cisco 6260 backplane connectors on the upper front side of the chassis.

Step 4   Hold the I/O module vertically and align the holes on the I/O module over the two retaining screws.

Step 5   Carefully press the I/O module onto the Cisco 6260 connectors on the chassis backplane until the I/O module is seated fully.

Step 6   Use a Phillips-head screwdriver and two retaining screws to attach the I/O module to the chassis.

Step 7   Connect the E3 trunk if you are installing an E3 I/O module. See the installation chapter in this guide that corresponds to your configuration for E3 trunk and subtend connection procedures.

Step 8   Connect the E1 trunk if you are installing an E1 I/O module. See the installation chapter in this guide that corresponds to your configuration for E3 trunk and subtend connection procedures.

Note   The next step is optional.

Step 9   Connect the external alarm device and BITS clock to the wire-wrap pins on the I/O module at the top of the chassis. See the installation chapter in this guide that corresponds to your configuration for alarm and BITS clock connection procedures.

6.3.5.2 Removing an I/O Module

Complete the following steps to remove the I/O module from the Cisco 6260 chassis.

Note   It is not necessary to power off the Cisco 6260 system to remove and replace the I/O module.

Timesaver   We recommend that you label each cable and wire at both ends to identify its destination.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Disconnect the E3 BNC connectors from P1, P2, and P3 on the E3 I/O module, if applicable.

Step 3   Disconnect the T1/E1 RJ-45 cables from the RJ-48 receptacle connectors on the E1 I/O module, if applicable.

Step 4   Remove all wire-wrap pin connections from the I/O module.

Step 5   Locate the two retaining screws on the faceplate of the I/O module that secure it to the Cisco 6260 chassis (Figure 6-7).

Figure 6-7   I/O Interface Module Retaining Screws
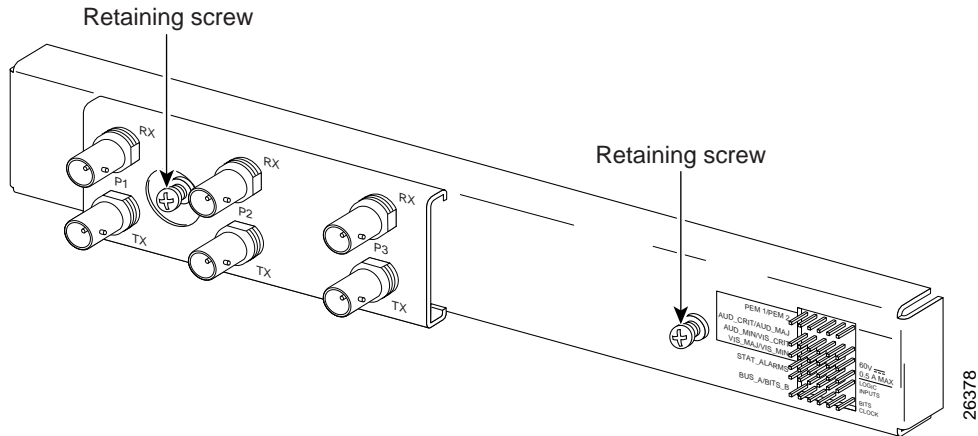
Step 6   Use a Phillips-head screwdriver to remove the I/O module retaining screws.

Step 7   Remove the I/O module from the chassis by carefully pulling the module horizontally away from the chassis.

See the for I/O module installation procedures.

6.3.6 PEM

The following sections describe how to install or remove a PEM.

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Caution   Proper ESD protection is required whenever you handle Cisco DSLAM equipment. Installation and maintenance personnel should be properly grounded by means of ground straps to eliminate the risk of ESD damage to the equipment. Modules are subject to ESD damage whenever they are removed from the chassis.

6.3.6.1 Installing the PEM

Complete the following steps to install or replace the DC PEM in the Cisco 6260 chassis.

Note   Connect each Cisco 6260 PEM to a separate fuse. Do not power the components in the rack by chaining them together.

Step 1   Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2   Verify that the circuit breaker on the PEM is turned to the OFF (0) position, and that the PEM is disconnected from the fuse and alarm panel.

Step 3   Verify that the fan tray above the PEM you wish to install is removed.

Step 4   Horizontally align the module edge with the module guides at the right and left of the slot in the Cisco 6260.

Figure 6-8 depicts the PEM installation.

Figure 6-8   *PEM Installation*
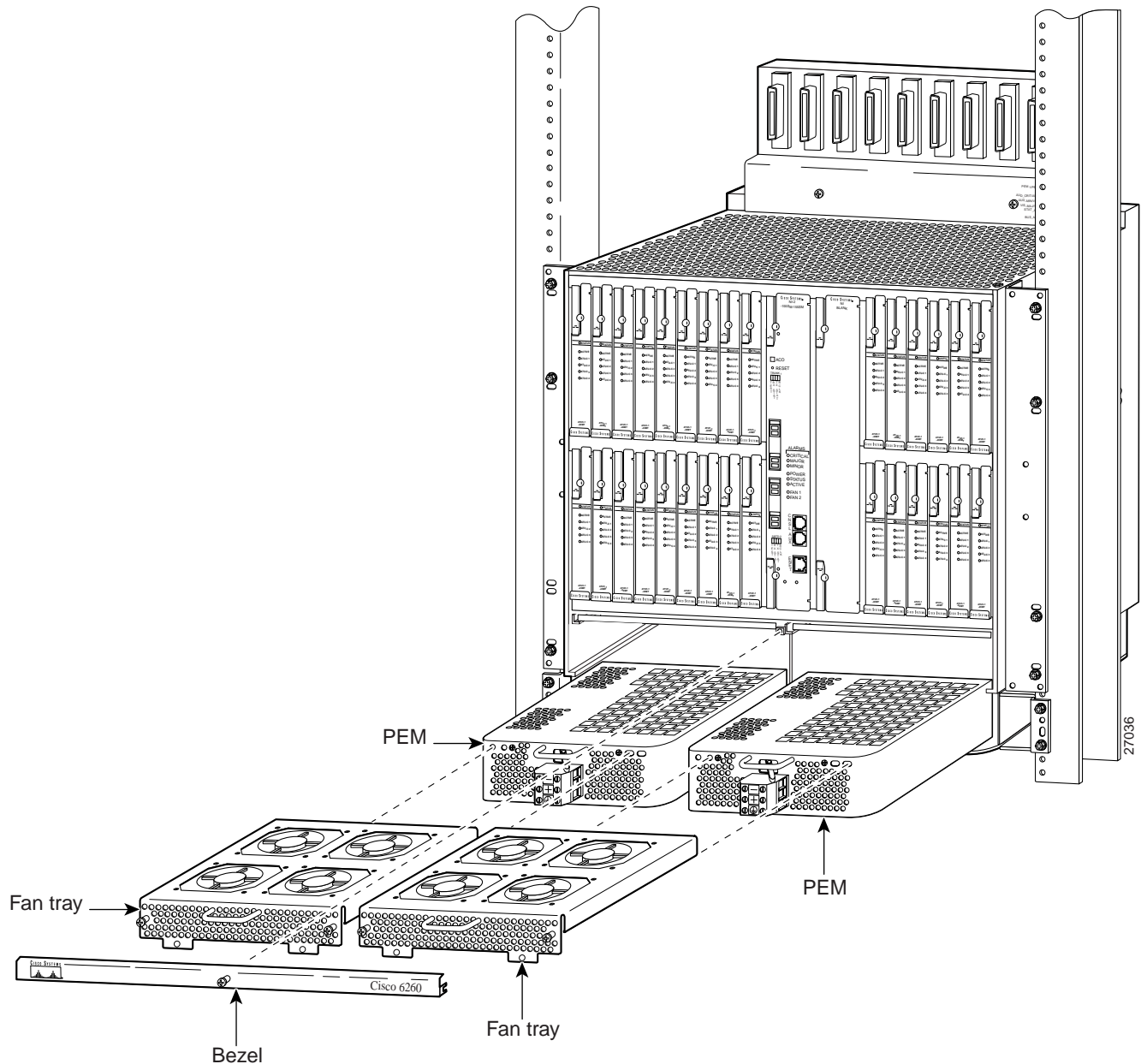
Step 5   Hold the extraction handle on the front of the module and gently apply pressure while carefully pushing the module into the slot.

✎

Note   Forcefully inserting the PEM in the slot could cause damage to the EMI gasket located on the top of the faceplate.

Step 6   Insert the fan tray into the compartment above the PEM. Make sure that the pins in the lower lip of the fan tray front panel engage with the holes in the PEM below.

Step 7 Press the fan tray firmly into its slot to ensure that the power connectors mate.

Step 8 Use a Phillips-head screwdriver to attach the two screws to the Cisco 6260 chassis.

Step 9 Replace the bezel that covers the air filters.

Step 10 Use a Phillips-head screwdriver to tighten the screws on the bezel and on the fan tray.

Warning **When you are installing the unit, the ground connection must always be made first and disconnected last.**

Step 11 Make the ground and power and connections to the PEM. See the installation chapter in this guide that corresponds to your configuration for PEM ground and power connection procedures.

6.3.6.2 Removing the PEM

Complete the following steps to remove the PEM from the Cisco 6260 chassis:

Step 1 Connect a grounding strap to the ESD grounding jack that is located on the top right of the Cisco 6260 card cage.

Step 2 Turn the circuit breaker on the PEM to the OFF (0) position.

Step 3 Remove the fuses from the fuse and alarm panel.

Step 4 Disconnect the wires coming from the fuse and alarm panel to the PEM.

Step 5 Disconnect the grounding wire from the PEM.

Step 6 If a fan tray is present directly above the PEM you wish to remove, use the following steps to remove the fan tray first:

    a. Use a Phillips-head screwdriver to remove the bezel that partially covers the fan trays.

    b. Use a Phillips-head screwdriver to loosen the screws that hold the fan tray in place.

    c. Grasp the fan tray by the handle and pull it away from the chassis. If the fans are running, you will hear them slow down as the tray disengages from its power connector. Wait for the fans to stop before completely removing the tray.

Step 7 Use a Phillips-head screwdriver to unscrew the two screws and prepare to disconnect the PEM from the Cisco 6260 chassis.

Step 8 Hold the extraction handle on the front of the module and carefully slide the module out of the slot.