



# Removing Chassis Components

---

- [Removing Chassis Components, page 1](#)

## Removing Chassis Components

This chapter provides instructions on how to remove components from the Cisco CRS 8-Slot Line Card Chassis Enhanced router.

This chapter presents the following topics:

### Removing Line Cards, PLIMs and Associated Components

This section provides instructions on how to remove the Cisco CRS 8-Slot Line Card Chassis Enhanced router cards, physical layer interface modules (PLIMs), and any associated components.

For general information about installing and removing cards, PLIMs, and associated components, see [About Installing and Removing Cards and Associated Components, page 6-1](#) .

For information on installing and removing the slot covers and impedance carriers, see [Installing or Removing a Slot Cover, page 6-13](#) and [Installing or Removing an Impedance Carrier, page 6-17](#) .

This section presents the following topics:

#### Replacing a Pillow Block

This section describes how to install a replacement pillow block on the chassis after removing a damaged pillow block. A pillow block is a bracket with a pin that is attached to the chassis above and below each card slot. When you install or remove a card from the chassis, the card ejector levers hook into the pillow blocks above and below the card slot to secure the cards to the slot and allow you to install and remove the cards.

#### Prerequisites

Before performing this task, you must first remove the front cover, if installed. Have the pillow block replacement kit (Cisco product number: CRS-PILLBLK=) at hand.

### Required Tools and Equipment

You need the following tools and parts to perform this task:

- ESD-preventive wrist strap
- Pillow block replacement kit (Cisco product number: CRS-PILLBLK=)

The following items are included in the CRS-PILLBLK= pillow block replacement kit:

- 2 replacement pillow blocks
- 6 Torx-head screws
- 1 T10 Torx screwdriver (See item 1 in [#task\\_1084430/fig\\_1090076](#).)

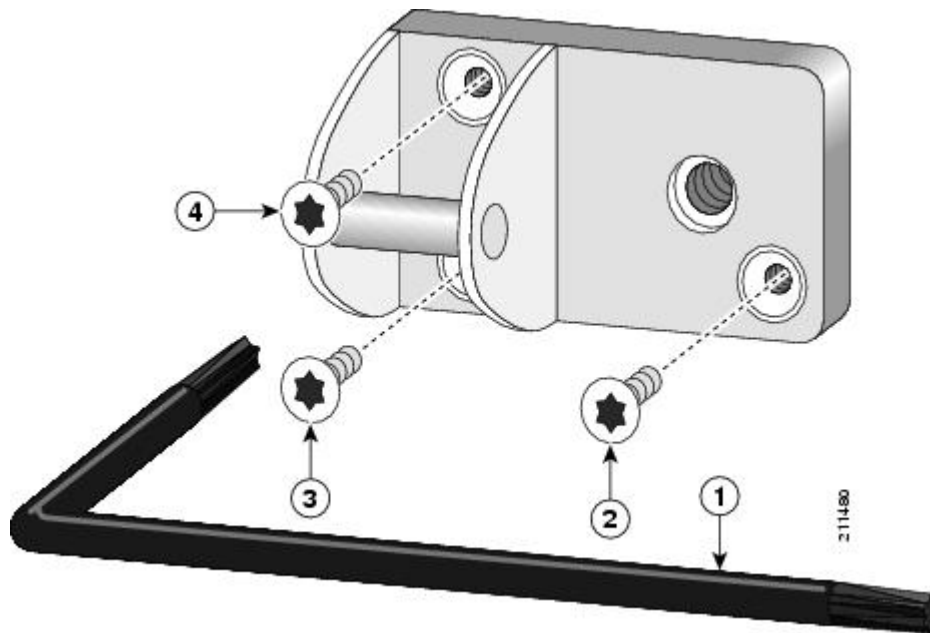
### Steps

To replace a pillow block, follow these steps:

#### Procedure

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.
- Step 2** Locate the pillow block to be replaced. Use the T10 Torx screwdriver to remove the lower right screw.

**Figure 1: Replacing a Pillow Block**



1	T10 Torx screwdriver	3	Lower left screw
---	----------------------	---	------------------

2	Lower right screw	4	Top left screw
---	-------------------	---	----------------

- Step 3** Remove the lower left screw (located below the pillow block pin). (See item number 3 in above figure.)
- Step 4** Remove the top left screw (located above the pillow block pin). (See item number 4 in above figure.)
- Step 5** Remove the pillow block and set it aside.
- Step 6** Repeat this procedure for the card slot's other pillow block if applicable.
- Step 7** Have the replacement pillow block and T10 Torx-head screws near at hand.
- Step 8** Position the pillow block and align the screw holes.
- Step 9** Use the T10 Torx screwdriver to install the top left screw (located above the pillow block pin). (See item number 2 in above figure)
- Step 10** Install the lower right screw (see item number 3 in above figure).
- Step 11** Install the lower left screw (located below the pillow block pin). (See item number 4 in above figure)
- Step 12** Repeat this procedure for the card slot's other pillow block if applicable.

### What to Do Next

After performing this task, replace the front cover, if applicable.

## Removing a Switch Fabric Card

This section describes how to remove a switch fabric card from the Cisco CRS 8-Slot Line Card Chassis Enhanced router. See [Figure 6-20](#) for the CRS-8-FC400/S fabric card and [Figure 6-21](#) for the back-to-back CRS-8-FC400/M fabric card.



#### Note

For detailed cabling information for the back-to-back fabric card, see the [Cisco CRS-3 Carrier Routing System 16-Slot Back-to-Back Cabling and Upgrade Guide](#).

### Prerequisites



#### Caution

Removing more than one switch fabric card at a time can misalign the chassis and may damage the card or chassis when reinserting the cards. Remove and reinsert only one card at a time.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Number 2 Phillips or number 2 common (flat-head) screwdriver

**Steps**

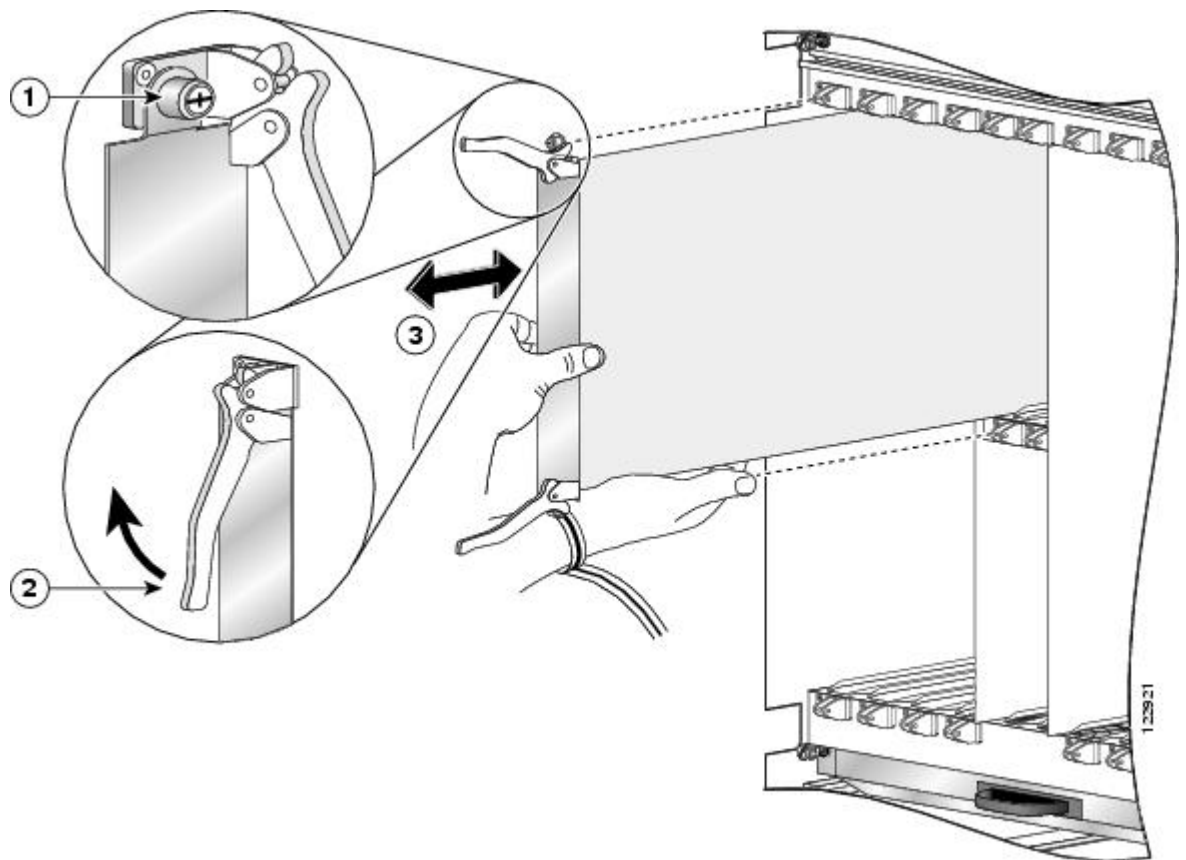
To remove a switch fabric card, see [Figure 2: Removing a Switch Fabric Card, on page 4](#) and follow these steps:



**Caution**

For CRS back-to-back fabric card installations: If the fiber bundles are already attached on the fabric card, remove the fiber bundles, add the metal caps on the cable, and put the dust caps on the card. This prevents contamination or damage to the cable.

**Figure 2: Removing a Switch Fabric Card**



1	Captive screw	3	Direction of installation or removal
2	Ejector lever		

## Procedure

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket on the rear (MSC) side or a bare metal surface on the chassis.
  - Step 2** Identify the switch fabric card to be removed from the card cage.
  - Step 3** To loosen the card from the slot, turn the two captive screws on the front panel of the card counterclockwise.
  - Step 4** To unseat the card from the midplane connector, grasp the two card ejector levers and simultaneously pivot both ejector levers 90 degrees (70 degrees for a newer switch fabric card) away from the front edge of the card carrier.
  - Step 5** Touching only the metal card carrier, slide the card from the slot and place it directly into an antistatic sack or other ESD-preventive container. If you plan to return the defective card to the factory, repackage it in its original shipping container.
- 

## What to Do Next

If you need to install a replacement switch fabric card, see [Installing a Switch Fabric Card, page 6-26](#) .

## Removing an MSC, FP, or LSP

This section describes how to remove a line card from the Cisco CRS 8-Slot Line Card Chassis Enhanced router.

## Prerequisites



### Caution

Use the cable management bracket to slide cards from the card carrier. *Do not lift cards by the cable management bracket* . Rotate cards onto their vertical axes, then lift them from the bottom, using the cable management bracket only as an aid for balance.

---

## Required Tools and Equipment

You need the following tools and part to perform this task:

- ESD-preventive strap
- Number 2 Phillips or number 2 common (flat-head) screwdriver
- Impedance carrier (Cisco Product number CRS-MSC-IMPEDENCE=)

## Steps

To remove an MSC, FP, or LSP line card, see [Figure 3: Removing a Line Card](#), on page 6 and follow these steps:

**Figure 3: Removing a Line Card**



1	Captive screw	3	Direction of installation or removal
2	Ejector lever		

## Procedure

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket on the rear (MSC) side or a bare metal surface on the chassis.
- Step 2** Use a screwdriver to loosen the captive screw next to each MSC ejector lever.  
**Caution** To prevent ESD damage, handle a line card by its ejector levers or the card carrier edges only. Do not touch any of the electrical components, pins, or circuitry.
- Step 3** Simultaneously pivot the ejector levers away from the faceplate to release the line card from the midplane connectors.
- Step 4** Grasp the cable management bracket and gently pull the line card halfway from the slot.
- Step 5** Move one hand under the line card to guide it.  
 Avoid touching the line card printed circuit board, components, or any connector pins. *Do not lift cards by the cable management bracket*—lift the cards from the bottom, using the cable management bracket only as an aid for balance.
- Step 6** Place the removed line card on an antistatic mat, or immediately place it in an antistatic bag if you plan to return it to the factory.
- Step 7** If the MSC slot is to remain empty, install an MSC impedance carrier to keep dust from the chassis and maintain proper airflow through the MSC compartment.
- Step 8** Use a screwdriver to tighten the captive screws next to each impedance carrier ejector lever to ensure proper EMI shielding and to maintain proper airflow throughout the chassis.
- 

## What to Do Next

If you need to install a replacement MSC, FP, or LSP line card, see [“Installing an MSC, FP, or LSP” section on page 6-32](#).

## Removing an RP, PRP, or DRP Card

This section describes how to remove a route processor (RP), performance route processor (PRP), or distributed route processor (DRP) card from the chassis.

Every Cisco CRS 8-Slot Line Card Chassis Enhanced router contains two route processor cards in dedicated slots on the front (PLIM) side of the chassis.

**Note**

---

For enhanced immunity to external electromagnetic disturbance levels of 10V per meter and 10V RMS, you must use a shielded Ethernet (CAT5 or better STP) cable on the Management Ethernet connection of the RP card (CRS-8-RP). The use of a shielded Ethernet cable on the Management Ethernet connection of the PRP card (CRS-8-PRP-6G or CRS-8-PRP-12G) is optional. The grounded end of the shielded Ethernet cable should be at the RP (or PRP) end.

---

### Prerequisites

Because chassis operation may be impacted by the removal of an RP card, perform these tasks only if one of the following conditions exists:

- When you are certain that the second RP in the chassis is operational and, if not already the active RP, ready to assume control (this happens automatically)
- When the chassis is undergoing scheduled maintenance
- When the Cisco CRS 8-Slot Line Card Chassis Enhanced router is powered down

Failure to follow these guidelines can result in interruptions in data communications and network connectivity. Before performing this task, remove the front cover, if installed.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Number 2 Phillips or number 2 common (flat-head) screwdriver

### Steps

To remove an RP or DRP card, follow these steps:

## Procedure

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket on the front (PLIM) side or a bare metal surface on the chassis.
- Step 2** Identify the card to be removed from the card cage. Remove any cables connected to the front panel of the card.
- Step 3** Use the screwdriver to turn the two captive screws on the front panel of the card counterclockwise to loosen the card from the slot.
- Step 4** Grasp the two card ejector levers and simultaneously pivot both ejector levers 90 degrees away from the front edge of the card carrier to unseat the card from the backplane connector.
- Step 5** Touching only the metal card carrier, slide the card from the slot and place it directly into an antistatic sack or other ESD-preventive container. If you plan to return the defective card to the factory, repackage it in the shipping container you received with the replacement card.
- 

## What to Do Next

After performing this task, reinstall the front cover, if applicable. If you need to install a replacement RP, DRP, or PRP card, see [Installing an RP, PRP, or DRP Card, page 6-20](#).

## Removing a PLIM

This section describes how to remove a PLIM from the Cisco CRS 8-Slot Line Card Chassis Enhanced router.



### Caution

The system may indicate a hardware failure if you do not follow proper procedures. Remove or install only one PLIM at a time. Allow at least 15 seconds for the system to complete the preceding tasks before removing or installing another PLIM.



### Note

We strongly recommend that you use the **shutdown** command before removing a PLIM to prevent anomalies when you reinstall a new or reconfigured PLIM.

## Prerequisites

Before performing this task, remove the front cover, if installed.

## Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Number 2 Phillips or number 2 common (flat-head) screwdriver



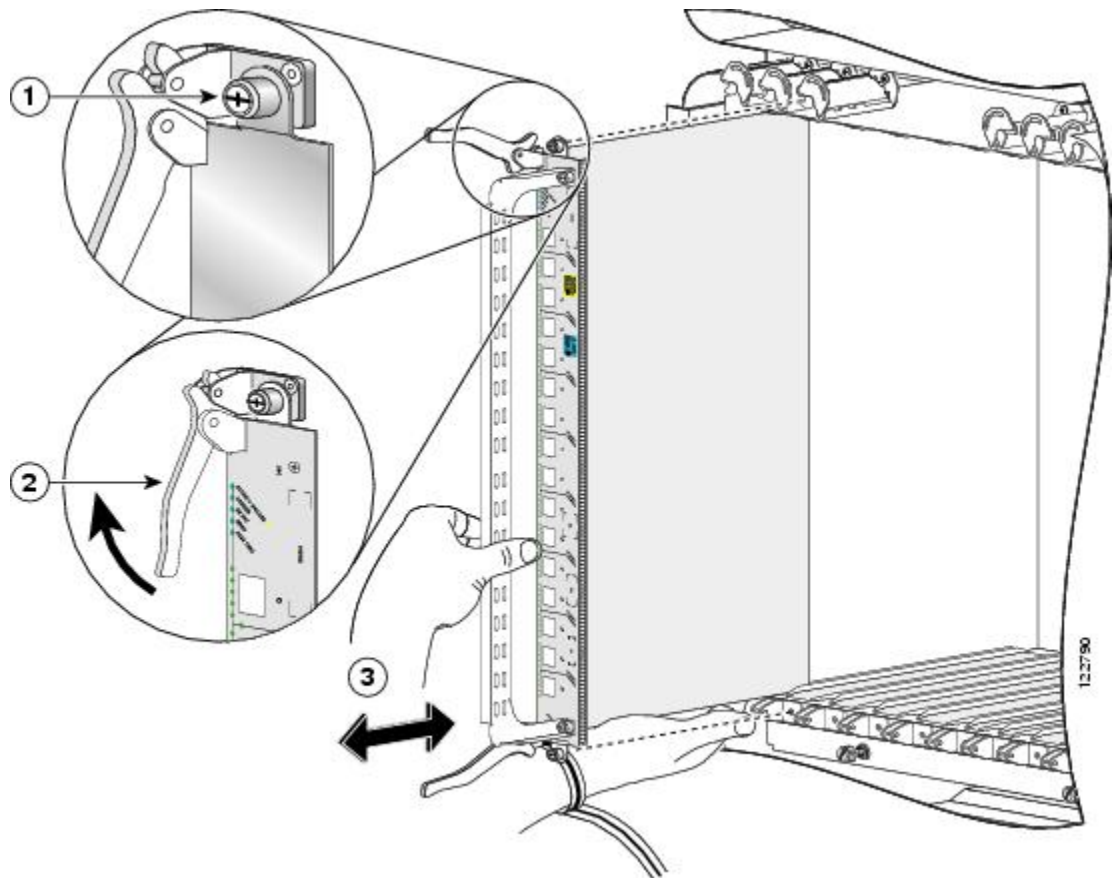
**Steps**

To remove a PLIM, follow these steps:

**Procedure**

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket on the front (PLIM) side or a bare metal surface on the chassis.
- Step 2** Identify the card to be replaced.
- Step 3** Loosen the two captive screws holding the card in place.
- Step 4** Grasp the two card ejector levers and simultaneously pivot both ejector levers 90 degrees (70 degrees for a newer PLIM) away from the front edge of the card carrier to unseat the card from the backplane connector.
- Step 5** Grasp the handle and gently pull the PLIM halfway from the slot .

**Figure 4: Removing a PLIM**



1	Captive screw	3	Direction of installation or removal
2	Ejector lever		

**Step 6** Move one hand under the PLIM to guide it. Avoid touching the PLIM printed circuit board, components, or any connector pins.

**Tip** *Do not lift cards by the handle* ; lift from the bottom, using the handle only as an aid for balance.

**Step 7** Slide the card from the slot and place it directly into an antistatic sack or other ESD-preventive container.

---

### What to Do Next



**Danger**

Because invisible laser radiation may be emitted from the aperture of the port when no cable is connected, avoid exposure to laser radiation and do not stare into open apertures. Statement 70

---

Some PLIMs contain Class 1 lasers, and some contain Class 1M. See the documentation for the specific PLIM for details.

### What to Do Next

After performing this task, reinstall the front cover, if applicable. If you need to install a replacement PLIM, see [Installing a Physical Layer Interface Module, page 6-39](#) .

## Removing an RP PCMCIA Card

This section describes how to remove a PCMCIA card from an RP or a DRP card PCMCIA slot. For more detailed information on PCMCIA cards, see the [About Hard Drives and PCMCIA Cards, page 6-12](#) ,

### Prerequisites

Before performing this task, remove any front (PLIM) side cover plates.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive strap
- Number 2 Phillips or number 2 common (flat-head) screwdriver

### Steps

To remove the PCMCIA card, follow these steps:

## Procedure

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket on the front (PLIM) side or a bare metal surface on the chassis.
  - Step 2** Using the screwdriver, loosen the captive screw at the bottom of the PCMCIA slot door on the faceplate of the card.
  - Step 3** While lifting the hinged PCMCIA slot door up, press the release button for the card slot to disengage the card from the card.
  - Step 4** Carefully pull out the far-left removable PCMCIA flash card.
  - Step 5** Place the removed PCMCIA card on an antistatic mat, or place it in an antistatic bag if you plan to return it to the factory.
  - Step 6** If the PCMCIA card slot is to remain empty, close the door to keep dust out, and tighten the captive screw with the screwdriver. Otherwise, install the new PCMCIA card.
- 

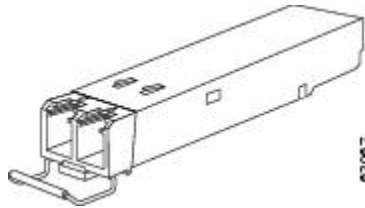
## What to Do Next

After performing this task, reinstall the front cover, if applicable. If you intend to install a new PCMCIA card, see [Installing a PCMCIA Card, page 6-44](#).

## Removing a Bale-Clasp SFP Module

This section describes how to remove a bale-clasp SFP module. The module has a clasp used to install and remove the module.

*Figure 5: Bale-Clasp SFP Module*



## Prerequisites

Before performing this task, remove the front cover, if installed. Before removing a module, disconnect any connected interface cables.

## Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Small flat-blade screwdriver

## Steps

To remove a bale clasp SFP module (from a PLIM), follow these steps:

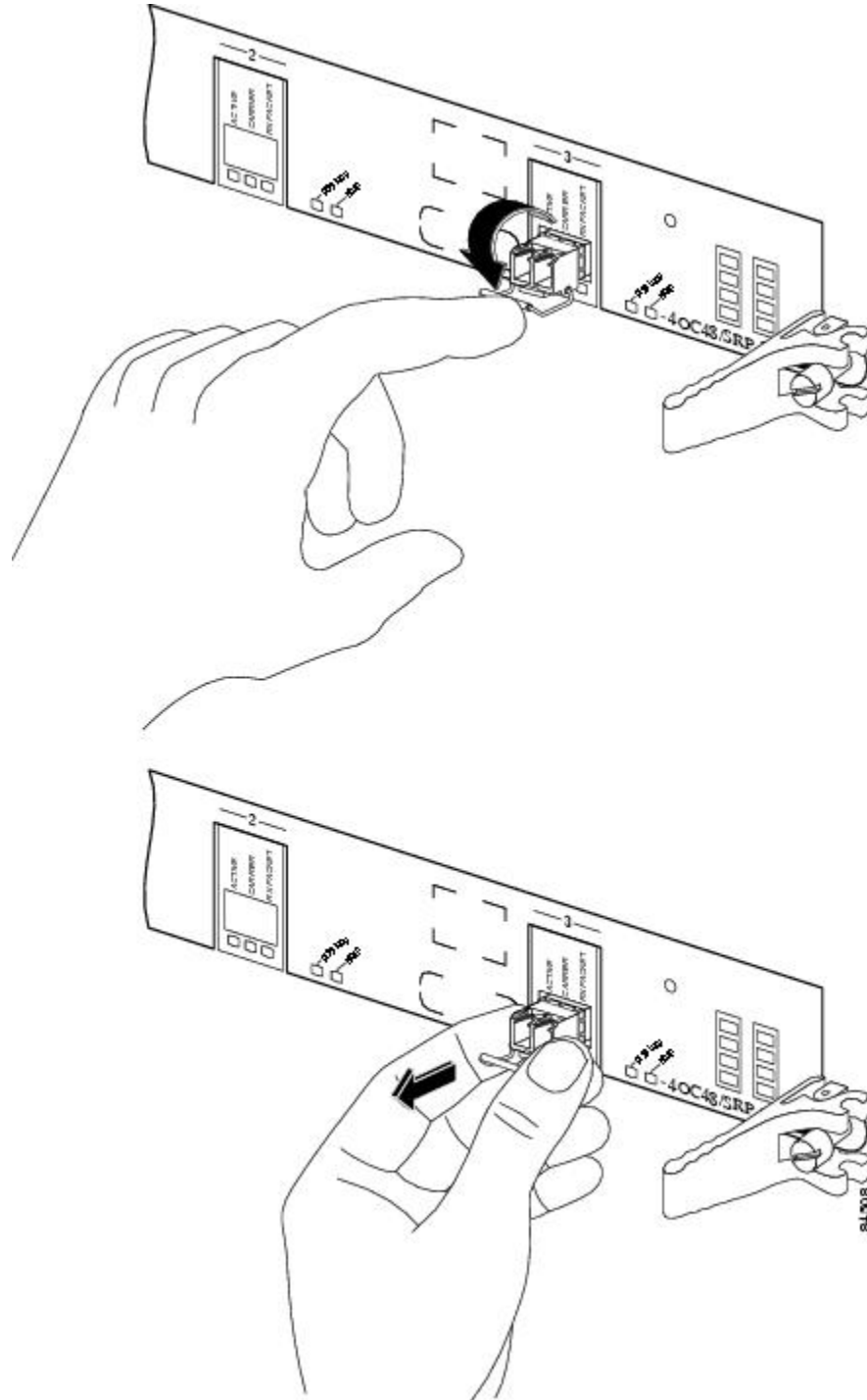
### Procedure

---

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket on the front (PLIM) side or a bare metal surface on the chassis.
- Step 2** Disconnect and remove all interface cables from the ports. Be sure to note the current connections of the cables to the ports on the PLIM.
- Step 3** Open the bale clasp on the module with your index finger in a downward direction . If the bale clasp is obstructed and you cannot use your index finger to open it, use a small screwdriver or other long, narrow instrument to open the bale clasp.
- Step 4** Grasp the module between your thumb and index finger and carefully remove it from the port .

**Note** Be careful to hold the module in such a way so as to not damage the bale clasp.

**Figure 6: Removing a Bale-Clasp SFP Module**



- Step 5** If you plan to return it to the factory, place the removed module on an antistatic mat, or immediately place it in a static-shielding bag.
- Step 6** Protect the PLIM by inserting clean SFP module cage covers into the optical module cage when there is no module installed.
- 

### What to Do Next

After performing this task, reinstall the front cover.

## Removing the Front Cable Management Bracket

The following sections shows how to remove the Front Cable Management Bracket.

### Prerequisites

The front cable management bracket arrives pre-installed on the chassis. Remove any cables from the bracket before you begin removing it.

Before performing this task, remove the front cover, if installed.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- 6 in. long number 1 Phillips screwdriver
- Medium flat-blade screwdriver

### Steps

To remove the cable management bracket, follow these steps:

#### Procedure

---

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket or a bare metal surface on the chassis.
- Step 2** If applicable, remove the Cisco logo bezel from the front of the chassis.
- Gently insert the flat-blade screwdriver between the edge of the bezel and the face of the chassis and pry the bezel loose.  
The bezel is attached to the front of the chassis with four ball studs.
  - Pull the bezel firmly towards you to detach it.
- Step 3** Remove all screws on either side of the front cable management bracket. Refer to [Figure 7-7](#) for the screw locations.

**Tip** For ease of removal, remove the outer screws first.

**Caution** Be careful not to damage the plastic bracket arms.

**Step 4** Set the bracket carefully aside.

---

### What to Do Next

You may now install a replacement front cable management bracket, if applicable. See [Installing the Cable Management Bracket, page 6-46](#) for more information.

## Removing the Rear Cable Management Bracket

The following sections shows how to remove the Rear Cable Management Bracket.

### Prerequisites

Remove any cables from the bracket before you begin removing it.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- 6 in. long number 1 Phillips screwdriver

### Steps

To remove the rear cable management bracket, follow these steps:

#### Procedure

---

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to an ESD connection socket or a bare metal surface on the chassis.
- Step 2** Remove the two screws on the rear cable management bracket to be removed. Refer to the [Figure 6-38](#) for the screw locations.
- Step 3** Set the bracket carefully aside.
- Step 4** Insert and tighten the two screws back onto the chassis.
-

## What to Do Next

You may now install a replacement rear cable management bracket, if applicable. See [Installing the Front Cable Management Bracket, page 6-47](#) for more information.

## Replacing a SFP on a Line Card that Uses an Articulated Bracket

To replace a failed, defective, or retired SFP from a line card that is currently in service, and using an articulated cable management bracket, proceed as follows:

### Procedure

- 
- Step 1** For a line card with multiple articulated brackets, select the fibers to be removed from the bracket with the SFP to be removed.  
For a line card with a single articulated bracket, begin with [#task\\_1108016/\\_1108024](#).
- Step 2** Undo and remove the Velcro from the articulated bracket to release the fibers.
- Step 3** From the physical location of the SFP to be removed, determine which end of the articulated bracket will be unscrewed:
- For the upper half of the line card, remove the top screw.
  - For the lower half of the line card, remove the lower screw.
  - If there is any interference with another installed bracket, choose the other screw location.
- Step 4** Pivot the articulated bracket up or down, depending on which screw was removed.
- Step 5** Label and disconnect the fibers from the port and put them aside.
- Step 6** Remove the SFP.
- Step 7** Replace with the new SFP (or a dust cap if the port is not going to be reused).
- Step 8** Re-install the fibers that were removed in [#task\\_1108016/\\_1108031](#) per the labels.
- Step 9** Pivot the articulated bracket back into position and secure.
- Step 10** Re-dress and secure the fibers to the articulated bracket with Velcro.
- 

## Removing the Exterior Cosmetic Components

This section describes how to remove exterior cosmetic components from the front (PLIM) side of the chassis. To remove a particular part, see the appropriate step or steps in the procedure that follows.

This section describes how to perform the following tasks:

### Removing the Inlet Grille

This section describes how to remove the inlet grille from a Cisco CRS 8-Slot Line Card Chassis Enhanced router. The grille covers the power module and air intake areas at the bottom of the front (PLIM) side of the chassis, just below the card cage.



**Prerequisites**

No prerequisites exist for this task.

**Required Tools and Equipment**

No tools are required to perform this task.

**Steps**

To remove the inlet grille, perform the following steps:

**Procedure**

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.
  - Step 2** While facing the front (PLIM) side of the chassis, firmly grasp the top outside edges of the inlet grille.
  - Step 3** Pull the top of the grille firmly away from the chassis; it loosens from the connecting ball studs.
  - Step 4** Slide the hooks at the bottom of the grille free of the cutouts at the bottom of the chassis casing.
  - Step 5** Carefully set the inlet grille aside.
- 

**What to Do Next**

Be sure that all parts have been carefully set aside and repackaged appropriately.

**Removing the Front Cover**

This section describes how to remove the front cover. The front cover protects the card cage on the front (PLIM) side of the chassis.

**Prerequisites**

There are no prerequisites for this task.

**Required Tools and Equipment**

No tools are required to perform this task.

**Steps**

To remove the front cover, follow these steps:

## Procedure

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.
- Step 2** While facing the front (PLIM) side of the chassis, firmly grasp the outside edges of the front cover.
- Step 3** Pull the front cover firmly away from the chassis; the four ball studs on the front cover loosen from the four ball stud retainer brackets installed on the vertical chassis rack rails.
- Step 4** Carefully set the inlet grille aside.
- 

## What to Do Next

Be sure that all parts have been carefully set aside and repackaged appropriately.

# Removing Air Circulation Components

This section provides instructions on how to remove the Cisco CRS 8-Slot Line Card Chassis Enhanced router air circulation components.

This section presents the following topics:

## Removing the Rear Exhaust Grille

This section describes how to remove a rear exhaust grille on the Cisco CRS 8-Slot Line Card Chassis Enhanced router.

## Prerequisites

There are no prerequisites for this task.

## Required Tools and Equipment

You need the following tools and part to perform this task:

- ESD-preventive wrist strap
- Number 2 Phillips screwdriver

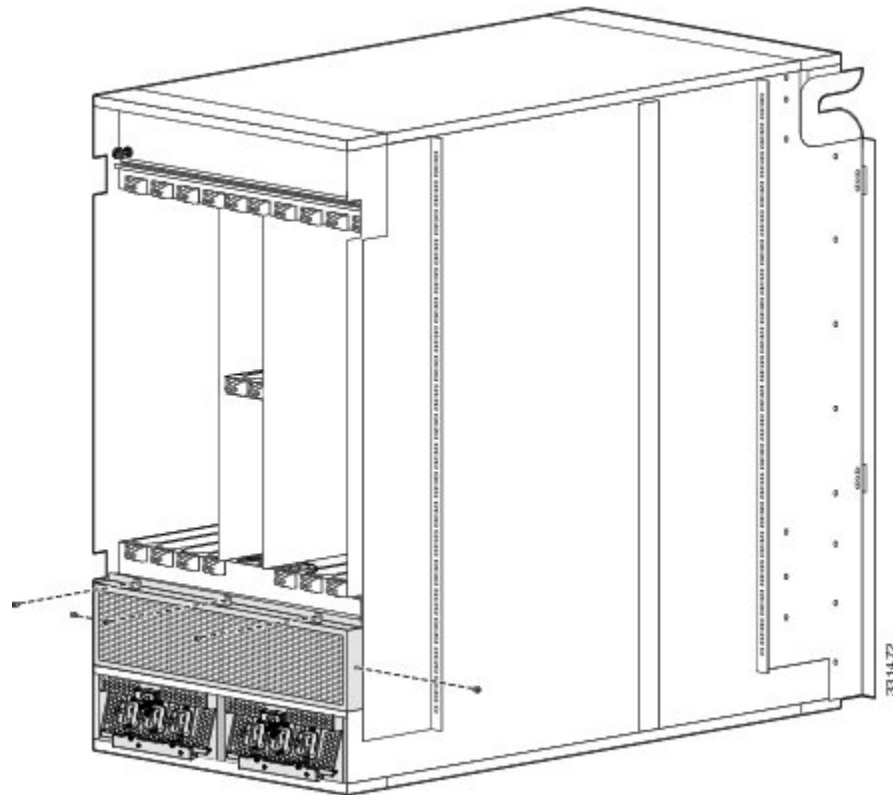
## Steps

To remove a rear exhaust grille, follow these steps:

**Procedure**

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the rear (MSC) side of the chassis or a bare metal surface on the chassis.
- Step 2** Remove the five panel fasteners that attach the rear exhaust grille to the chassis.

**Figure 7: Removing Rear Exhaust Grille**



1	Rear exhaust grille
---	---------------------

- Step 3** Remove the rear exhaust grille from the rear of the chassis, and carefully set it aside.

**What to Do Next**

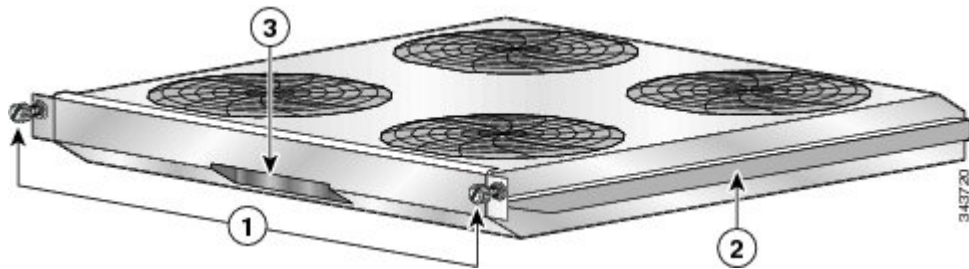
Be sure that all parts have been carefully set aside and repackaged appropriately.

## Removing a Lower Fan Tray

This section describes how to remove a fan tray from the lower fan tray slot of the Cisco CRS 8-Slot Line Card Chassis Enhanced router. For information on the chassis airflow and circulation, see [About Line Card Chassis Airflow, page 4-1](#) . For complete information on regulatory compliance and safety, see [Regulatory Compliance and Safety Information for the Cisco CRS Carrier Routing System](#) .

A Cisco CRS 8-Slot Line Card Chassis Enhanced router fan tray operates in either the upper or lower fan tray slot. Each fan tray is installed into the rear (MSC) side of the chassis .

**Figure 8: Fan Tray**



1	Captive screws	3	Fan tray handle
2	Fan tray rail		

### Prerequisites

Before performing this task, you must first remove the optional rear exhaust grille, if installed.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Large flat-blade screwdriver

### Steps

To remove a lower fan tray, follow these steps:

#### Procedure

**Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the rear (MSC) side of the chassis or a bare metal surface on the chassis.

**Step 2** Using the screwdriver, loosen the two captive screws on the fan tray.

**Caution** A fan tray weighs approximately 19.15 pounds (8.69 kg). Use both hands when handling a fan tray.

**Step 3** Use your free hand to support the fan tray, then slide the fan tray completely from the fan tray bay.

**Step 4** Set the fan tray safely aside.

**Caution** Do not set the fan tray down on the connector; doing so could damage it.

---

### What to Do Next

If you need to install a new lower fan tray, see [Installing a Lower Fan Tray, page 4-2](#) for more information.

## Removing an Upper Fan Tray

This section describes how to remove a fan tray from the upper fan tray slot of the Cisco CRS 8-Slot Line Card Chassis Enhanced router. For information on the chassis airflow and circulation, see [About Line Card Chassis Airflow, page 4-1](#).

A Cisco CRS 8-Slot Line Card Chassis Enhanced router fan tray operates in either the upper or lower fan tray slot. Each fan tray is installed into the rear (MSC) side of the chassis (see [#con\\_1099876/fig\\_1086095](#)).

### Prerequisites

There are no prerequisites.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Large Phillips screwdriver

### Steps

To remove an upper fan tray, follow these steps:

#### Procedure

---

**Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the rear (MSC) side of the chassis or a bare metal surface on the chassis.

**Step 2** Using the screwdriver, unscrew the two captive screws holding the fan tray bay door in place.

**Step 3** Lift the door up; you may need a second person to hold it in the open position.

**Step 4** Pull firmly and steadily on the fan tray handle to unseat it from the chassis connector, and then slide it partway from the fan tray bay.

**Caution** Do not pull too hard on the fan tray; too strong a pull can cause the tray to slide out too quickly, causing your hand to scrape against the fan tray door.

**Step 5** Place your hand under the fan tray to support it from beneath.

**Caution** A fan tray weighs approximately 19.15 pounds (8.69 kg). Use both hands when handling a fan tray.

**Step 6** Slide the fan tray from the bay and set it carefully aside.

**Step 7** Replace the fan tray bay door and tighten the two captive screws on the fan tray cover bay door.

---

## What to Do Next

If you need to install a new lower fan tray, see [Installing an Upper Fan Tray, page 4-6](#) for more information.

## Removing the Chassis Air Filter

This section describes how to remove the air filter in the Cisco CRS 8-Slot Line Card Chassis Enhanced router. For further information, see [About Line Card Chassis Airflow, page 4-1](#).

The Cisco CRS 8-Slot Line Card Chassis Enhanced router air filter plugs into the front (PLIM) side of the chassis.

## Prerequisites

Before performing this task, you must first remove the front cover and inlet grille, if installed.



### Caution

Never operate the Cisco CRS 8-Slot Line Card Chassis Enhanced router without an air filter. Doing so can damage the hardware.

---

## Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- Number 2 Phillips screwdriver

## Steps

To remove the chassis air filter, follow these steps:

## Procedure

- 
- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.
  - Step 2** Using the screwdriver, loosen the two captive screws on the air filter cover faceplate.
  - Step 3** Remove the cover faceplate and set it carefully aside.
  - Step 4** Grasp the air filter and carefully slide it from the slot.
  - Step 5** Set the air filter carefully aside.
- 

## What to Do Next

If you need to install a new air filter, see [Installing the Chassis Air Filter, page 4-4](#) for more information.

# Removing Power Components

This section describes how to remove power components from the Cisco CRS 8-Slot Line Card Chassis Enhanced router.



---

**Note** Although there are differences between the different types of power shelves and PMs (AC and DC), they are installed and removed using the same procedures.

---

While it is possible to remove power components from the Cisco CRS 8-Slot Line Card Chassis Enhanced router separately, some parts (such as the power shelf) require that other parts be removed first.

We recommend that you remove the power components in the order outlined in this section. This section contains the following procedures:

## Removing AC or DC PMs

This section describes how to remove AC or DC PMs from the Cisco CRS 8-Slot Line Card Chassis Enhanced router.



---

**Note** Although there are differences between the AC and DC PMs, they are removed in the same manner.

---

## Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- 6-in. long number 1 Phillips screwdriver

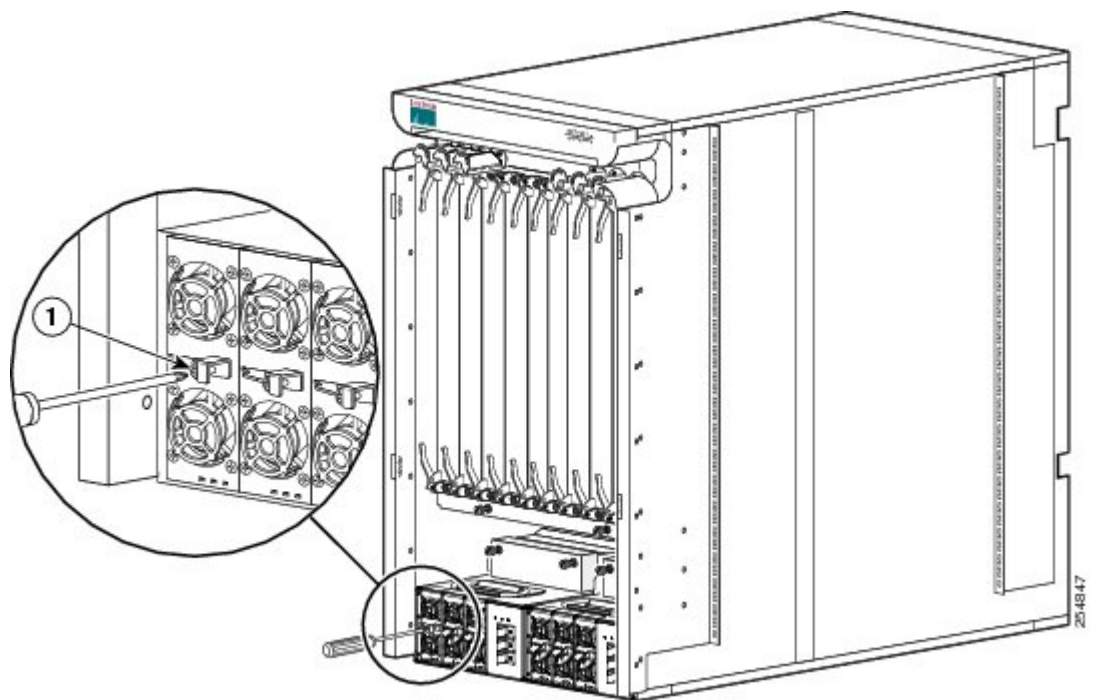
## Steps

To remove the AC or DC PMs, perform the following steps:

### Procedure

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.
- Step 2** At the front of the chassis, unscrew the ejectors from the PMs, as shown in [Figure 9: Unscrew Ejectors from PM](#), on page 24.

**Figure 9: Unscrew Ejectors from PM**



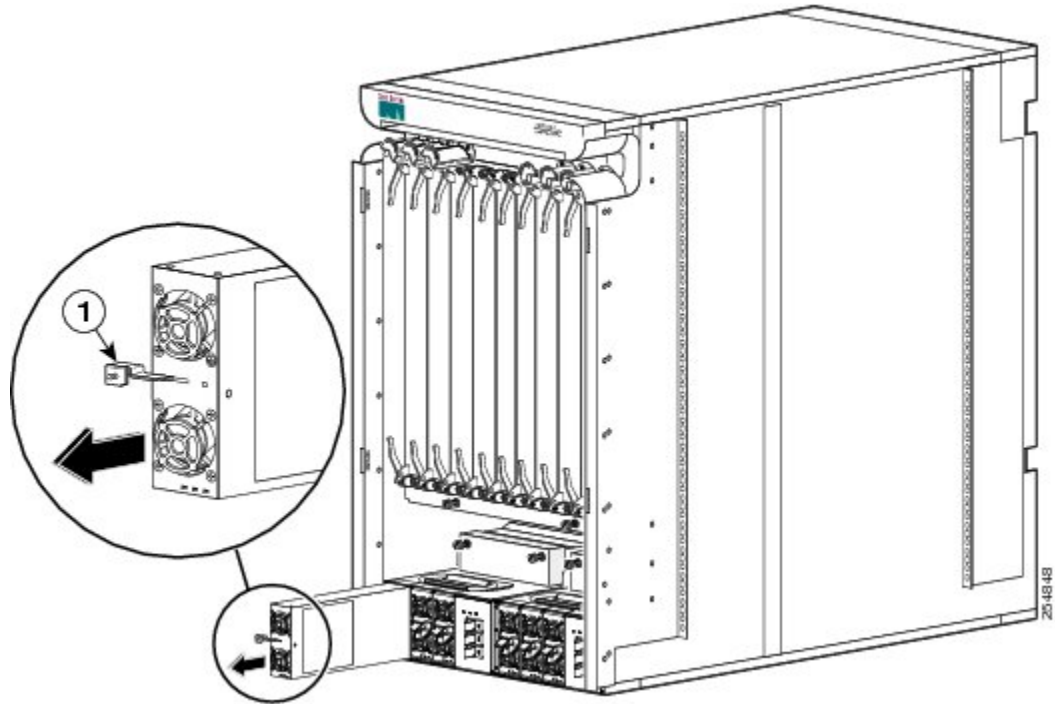
1

Ejector on PM



**Step 3** After unscrewing the ejector, carefully slide the PM out of the power shelf, as shown in [Figure 10: Removing the PM, on page 25](#).

**Figure 10: Removing the PM**



1	Ejector on PM
---	---------------

**What to Do Next**

After the PMs have been removed from the chassis, you can remove the power shelf wiring. Continue to [Removing AC Power Cords or DC Power Shelf Wiring, on page 25](#) for instructions. If you need to install a replacement PM, see [Installing a Power Module, page 3-17](#) for more information.

**Removing AC Power Cords or DC Power Shelf Wiring**

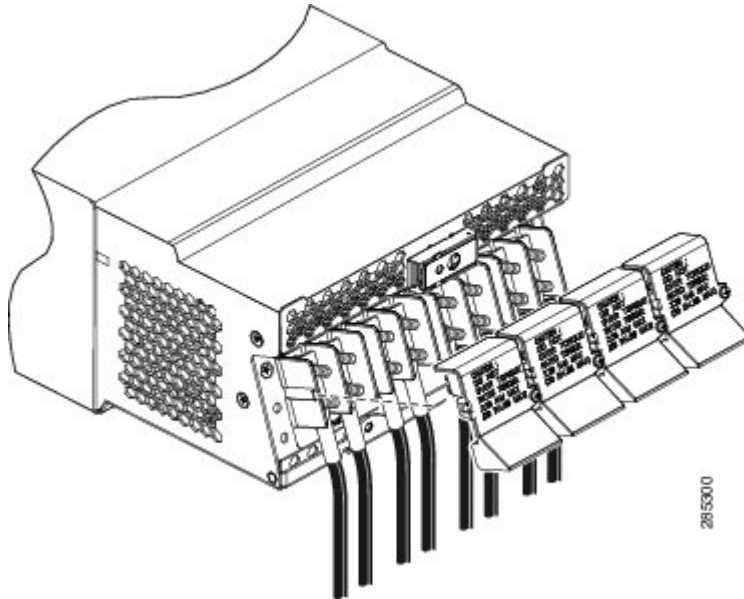
This section describes how to remove the DC input wiring, DC terminal block covers and the AC power cords from the Cisco CRS 8-Slot Line Card Chassis Enhanced router.

**Removing DC Power Shelf Wiring**

This section describes how to remove the DC wiring from the DC power shelf. For more detailed information on chassis DC power systems, see [DC Power Systems, page 3-3](#).

The following figure shows the power cable connections at the rear of the DC power shelf.

**Figure 11: DC Power Shelf Power Cable Connections**



### Prerequisites

Before performing this task, power down and remove DC PMs in the shelf you want to disconnect.



#### Note

Before removing wiring from the power shelf, make sure that the input power cables are not energized.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- 6-in. long number 1 Phillips screwdriver
- 10-mm. socket wrench

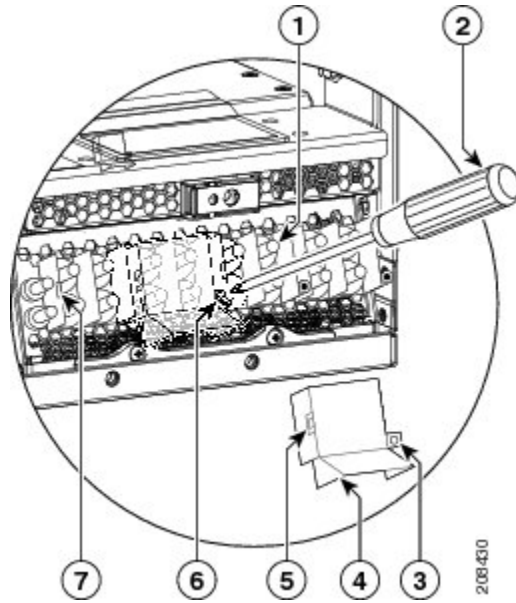
### Steps

To remove the wiring from the DC power shelf, perform the following steps:

**Procedure**

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the rear (MSC) side of the chassis or a bare metal surface on the chassis.
- Step 2** Use the screwdriver to remove the screw that secures the terminal block cover into the mounting standoff.

**Figure 12: Removing the DC Terminal Block Cover**



1	Mounting Standoff	5	Opening that aligns over mounting pins
2	Screwdriver removing the cover	6	Screw to remove
3	Opening that aligns over mounting pins	7	Cover latch tab
4	Terminal block cover		

- Step 3** Remove the terminal block cover.
- Step 4** Using the 10-mm. socket wrench, remove the positive cables from the terminal block.
- Step 5** Using the 10-mm. socket wrench, remove the negative cables from the terminal block.  
**Note** When a cable is removed from the rear of the DC power shelf, we recommend that it should be wrapped with standard black electrical tape.
- Step 6** Reattach the terminal block cover.

## Removing AC Power Shelf Wiring

This section describes how to remove input AC cords from the AC power shelf.

### Prerequisites

Before performing this task, power down and remove AC PMs in the shelf you want to disconnect.



#### Note

Before removing wiring from the power shelf, make sure that the input power cables are not energized.

### Required Tools and Equipment

You need the following tools to perform this task:

- 6-in. long number 1 Phillips screwdriver

### Steps

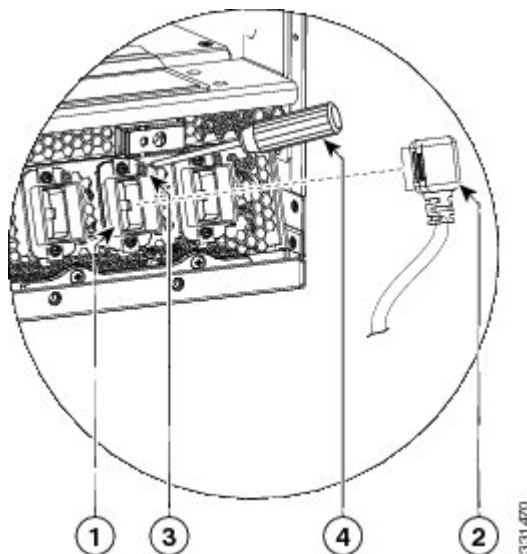
To remove the input AC cords, go to the rear of the chassis and perform the following steps:

#### Procedure

**Step 1** Use the screwdriver to loosen the screw that clamps the cord in place.

**Step 2** Remove the cord from the cord clamp.

*Figure 13: Removing Cord from Cord Clamp*



1	Cord Clamp	3	Screw that secures the cord in clamp
2	Cord removed from clamp	4	Screwdriver that loosens screw

### What to Do Next

After you remove the DC wiring and DC terminal block covers or AC cords, remove the power shelf. See [Removing a Power Shelf](#), on page 29.

## Removing a Power Shelf

This section describes how to remove a power shelf from the Cisco CRS 8-Slot Line Card Chassis Enhanced router

Although there are differences between the AC and DC power shelves, they are removed in the same manner.

### Prerequisites

Before performing this task, remove DC input power wiring or AC input cords from the shelf that you want to disconnect. For more information, see [Removing AC Power Cords or DC Power Shelf Wiring](#), on page 25.

### Required Tools and Equipment

You need the following tools to perform this task:

- ESD-preventive wrist strap
- 6-in. long number 1 Phillips screwdriver
- 5/32 x 6 in. flat-blade screwdriver
- One 10-mm. 6 pt. combination wrenches

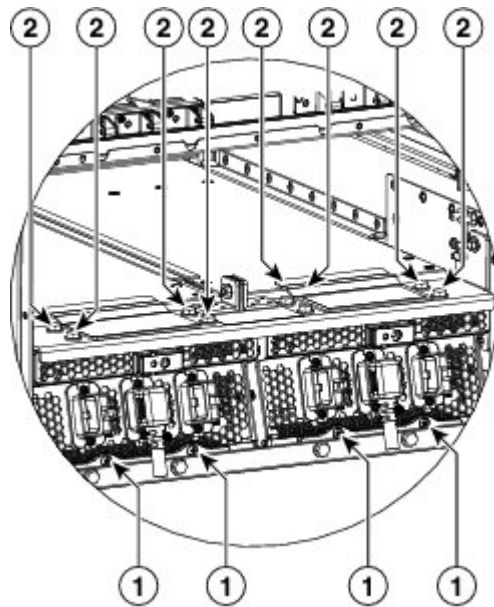
### Steps

To remove the power shelf, perform the following steps:

**Procedure**

- Step 1** Attach the ESD-preventive wrist strap to your wrist and connect its leash to one of the ESD connection sockets on the rear (MSC) side of the chassis or a bare metal surface on the chassis.
- Step 2** Using a 10-mm. wrench, remove the hex head bolts that secure the power shelf to the cross bracket.
- Step 3** Using the flat-blade screwdriver, remove the power shelf mounting screws.

**Figure 14: Removing Power Shelf to Cross Bracket to Rear Mounting Brackets**

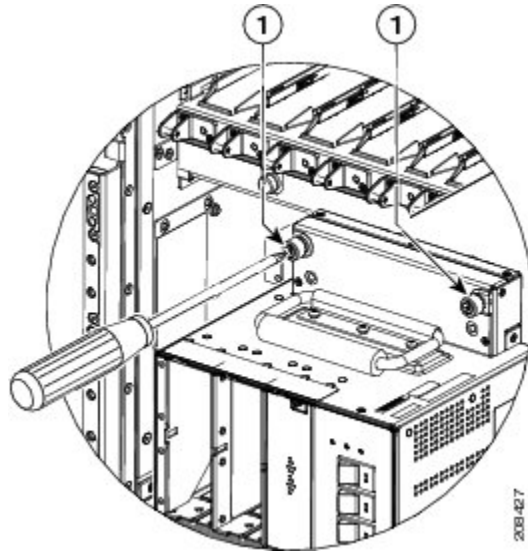


1		Power shelf mounting screws, two slotted screws per shelf
2		M6 Hex head bolts to secure power shelf, four per shelf

1	Nut/bolt to remove	2	10-mm wrench	3	10-mm wrench
---	--------------------	---	--------------	---	--------------

- Step 4** Remove the ESD-preventive wrist strap from the rear (MSC) side of the chassis. Go to the front of the chassis and reattach to one of the ESD connection sockets on the front (PLIM) side of the chassis or a bare metal surface on the chassis.
- Step 5** Remove the screws, two per shelf, that secure the power shelf to the chassis. Carefully remove the power shelf.

**Figure 15: Removing Screws that Secure Shelf to Chassis**



d

1	Screws that secure power shelf to chassis.
---	--

**What to Do Next**

After performing this task, replace the front cover. If you need to install a replacement power shelf, see [Installing an AC or DC Power Shelf, page 3-8](#) for more information.

**Removing the Chassis Ground Cable**

This section describes how to remove the chassis ground cable on the Cisco CRS 8-Slot Line Card Chassis Enhanced router. For complete information on regulatory compliance and safety, see Regulatory Compliance and Safety Information for the Cisco CRS Carrier Routing System.

**Prerequisites**

Before performing this task, remove the AC or DC input power wiring from both power shelves, and remove both power shelves from the chassis.

**Caution**

Do not remove the chassis ground cable unless the chassis is being replaced.

**Required Tools and Equipment**

You need the following tools and equipment to perform this task:

- 3/8 in. drive socket wrench
- 10-mm 6 pt. socket wrench

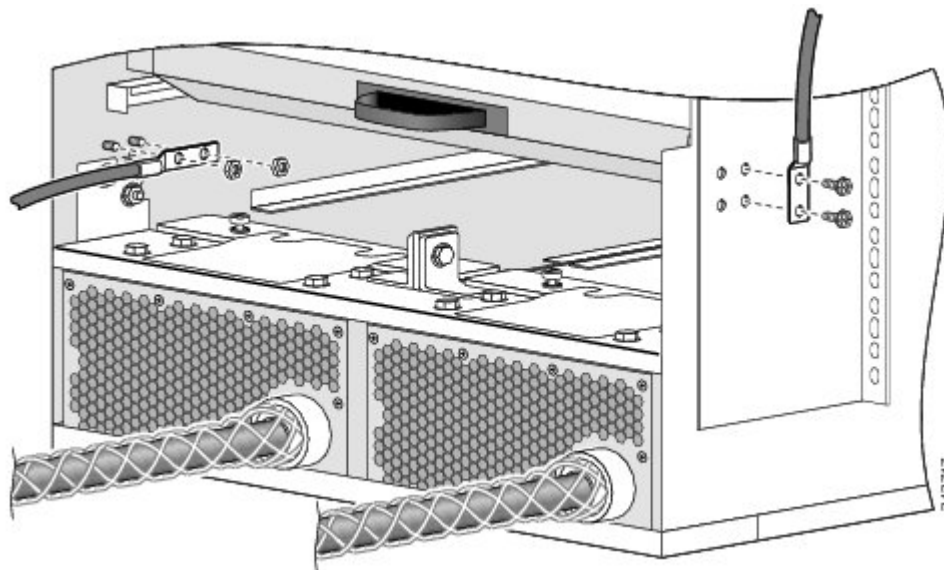
**Steps**

To remove the ground cable from the chassis, perform the following steps:

**Procedure**

Using the 10-mm wrench, remove the two M6 nuts or bolts that attach the ground cable to the grounding point at the rear of the chassis. The following figure shows how the ground cable is attached to the different ground points on the chassis.

*Figure 16: Ground Cables Attached to Chassis Grounding Points*

**What to Do Next**