



Removing and Replacing FRUs

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- [Removing and Installing a Power Supply Module, on page 11](#)

Removing and Installing a Fan Tray

Online Insertion and Removal

While the fan tray is designed to be removed and installed while the system is operating (powered on) and without presenting an electrical hazard or damage to the system, there is a time constraint when you remove and replace the fan tray in a system that is powered on.



Caution If the service mode is *not* enabled, the system can safely run without a fan tray only for two minutes, until critical temperature threshold is exceeded. Watch for any alarms triggered in software. After the critical temperature threshold is exceeded, without sufficient cooling, the system shuts down if the alarm is not cleared.

When the fan tray is removed and replaced in a non operating system, there is no time constraint.

Following the Correct Removal and Replacement Procedure

When you order the fan tray or a spare, the entire fan tray assembly is shipped. The fan tray assembly consists of the fan tray and an adapter that is attached to the fan tray.

You can remove and replace the fan tray from the front or the rear. When removed from the front of the chassis, only the fan tray is removed. When removed from the rear, the entire fan tray assembly (including the adapter) is removed. Accordingly, you must detach the adapter from the spare fan tray assembly when installing or replacing the fan tray from the front; you must install the entire fan tray assembly when installing the spare from the rear.

Removal and replacement from the front is suited to situations where access to the rear of the system is restricted. For instance, where the installation is in a closet.

Removal and replacement from the rear is suited to situations where input and output cables are routed across the front panel, limiting access to the front panel of the fan tray.

Follow the corresponding removal and replacement procedures.

Enabling the Service Mode Before Removing a Fan Tray



Warning Statement 1073—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Enabling the service mode is a precautionary step that we recommend you complete, before you remove a fan tray from the chassis. In the service mode, the system pushes the fans to operate at full speed for 10 minutes, allowing the system to cool down sufficiently and sustain temperatures for the duration of servicing. The system automatically turns off (self-terminates) the service mode after 10 minutes.



Important Proceed with removing and replacing the fan tray immediately after the service mode self-terminates.

- If the service mode is *not* enabled before servicing, only *two* minutes of fan-less operation can be safely assured in a normal environment.
- If the service mode is enabled prior to servicing, *four* minutes of fan-less operation can be assured for all normal operating conditions, at full traffic load, in any configuration.

In a system that is operational, enabling the service mode applies to removal or replacement procedures from the front and the rear.

You do not have to enable this mode if you are removing and replacing the fan tray in a system that is not powered on. The service mode is also not required if the fan tray is being replaced for having two or more bad individual fans, because the fan tray will already be running at full speed.

To enable the service mode, enter the **test platform hardware chassis fantray service-mode on** command in the privileged EXEC mode. For example:

```
Device# test platform hardware chassis fantray service-mode on
fantray service mode on
```

To turn off the service mode before the system-allotted 10-minute duration, enter the **test platform hardware chassis fantray service-mode off** command in the privileged EXEC mode.

Removing a Fan Tray from the Front

When you remove a fan tray from the front, only the fan tray is removed, excluding the adapter. To remove a fan tray from the front, follow the steps described here.



Caution When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray.



Warning Statement 1073—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



Warning Statement 1074—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Before you begin

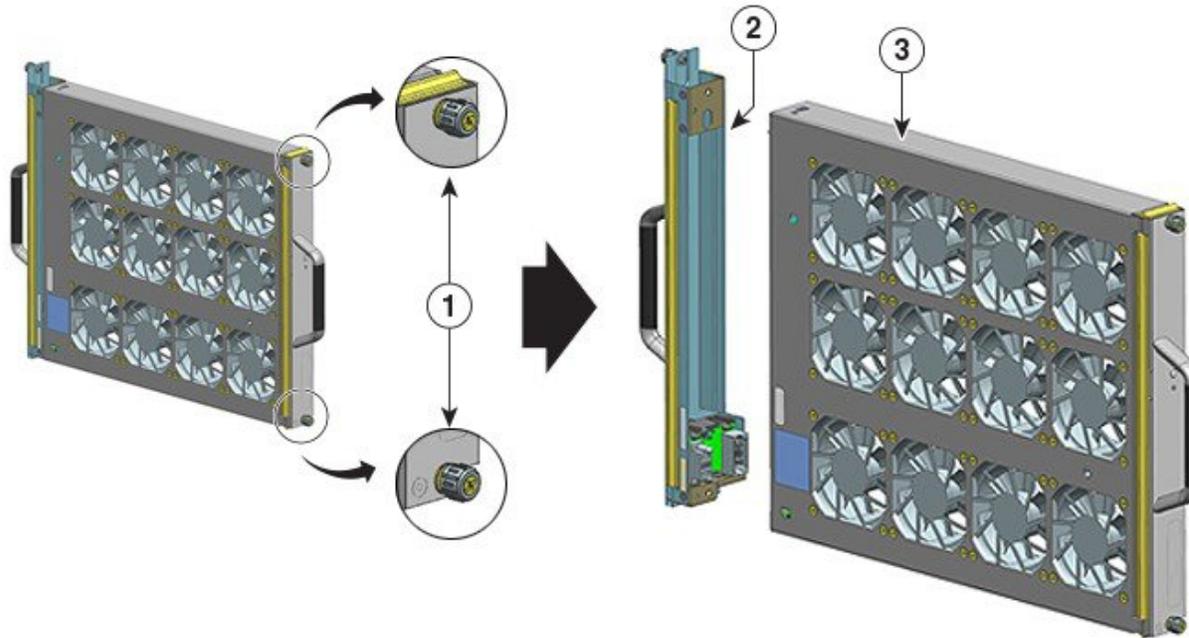
You may need a Phillips-head screwdriver to loosen the captive installation screws.

Procedure

Step 1 Ready the replacement fan tray.

Important When you remove and replace a fan tray in a system that is powered on, there is a time constraint. So it is important to complete this first step before you remove the fan tray from the front of the chassis.

- a) Remove the replacement fan tray from the shipping packaging.
- b) Use a Phillips-head screwdriver and loosen the two captive installation screws on the front panel of the replacement fan tray (the side with the fan STATUS LED), to detach it from the adapter module.



1	Captive installation screws on the front of the fan tray assembly that have to be loosened (the side with the fan STATUS LED)	3	Fan tray ready for installation from the front
2	The adapter, detached from the fan tray	-	-

The adapter module is not used or replaced when installed from the front. It can be scrapped or stored for future use.

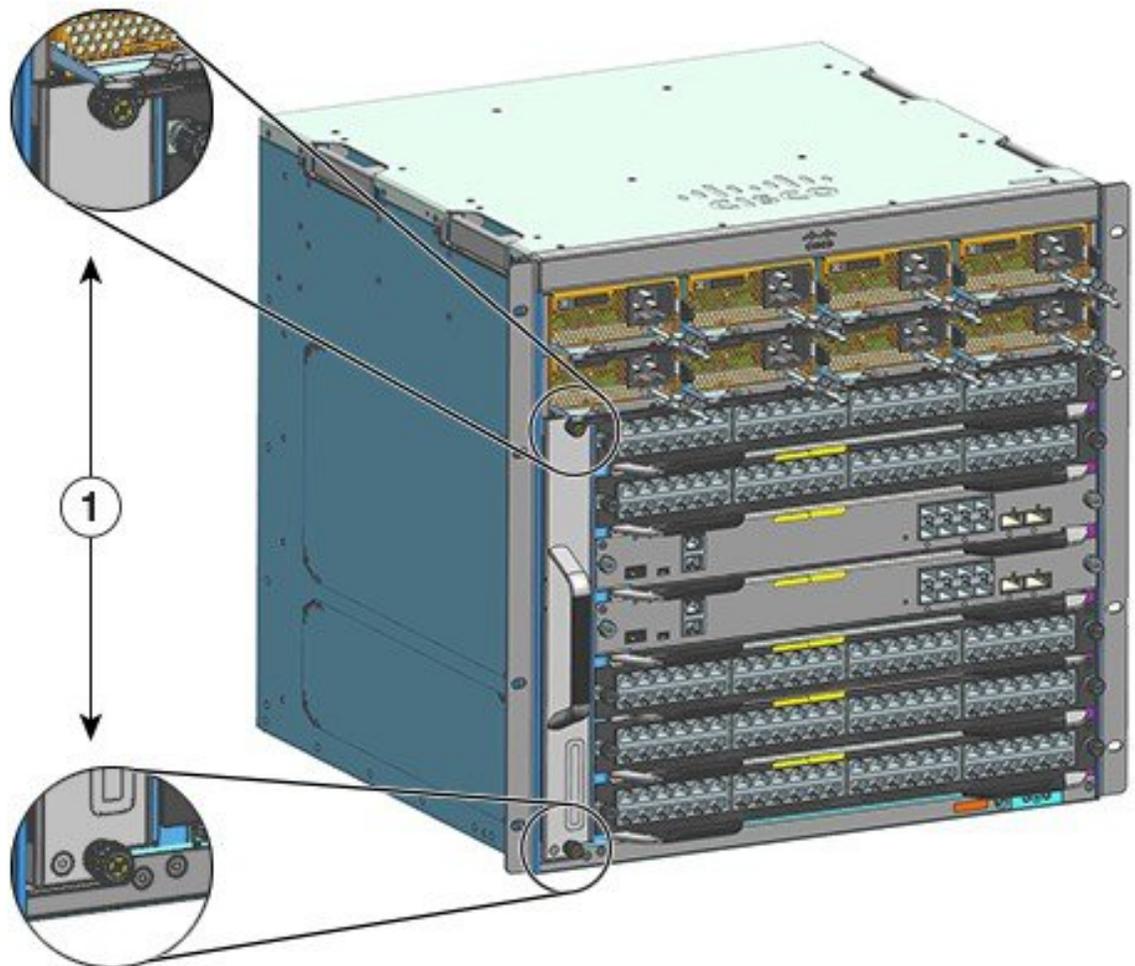
- c) Keep the replacement fan tray on an anti-static mat and within arm's reach.

Step 2 Enable the service mode

In a system that is powered on, enabling the service mode for the system-allotted 10 minutes safely assures fan-less operation for four minutes. See [Enabling the Service Mode Before Removing a Fan Tray, on page 2](#).

Important Proceed with removing and replacing the fan tray immediately after the service mode self-terminates.

Step 3 Remove the fan tray from the chassis - loosen the two captive installation screws on the front panel of the fan tray (the side with the fan STATUS LED).



1	Captive installation screws on the front panel of the fan tray in the chassis	-	-
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- Step 4** Grasp the fan tray handle and pull it out only partially (0.25 inches), to unmate the connector and unseat it from the backplane. After unmatting the connector, allow three seconds to let the fan blades stop spinning completely.
- When unmatting the connector, gently move the fan tray from side to side, if necessary. The fans are equipped with a braking mechanism that fully stop the blades within three seconds of being de-energized (You will not be able to visually inspect the fan to see whether the blades are spinning or not).
- Step 5** Place your other hand underneath to support the bottom of the fan tray and then slide it out of the bay completely.
- Only the fan tray is removed from the chassis (excluding the adapter).

What to do next

Set the removed fan tray aside and immediately proceed with installing the replacement or spare fan tray.

Installing a Fan Tray from the Front

To install a fan tray from the front, follow the steps described here.



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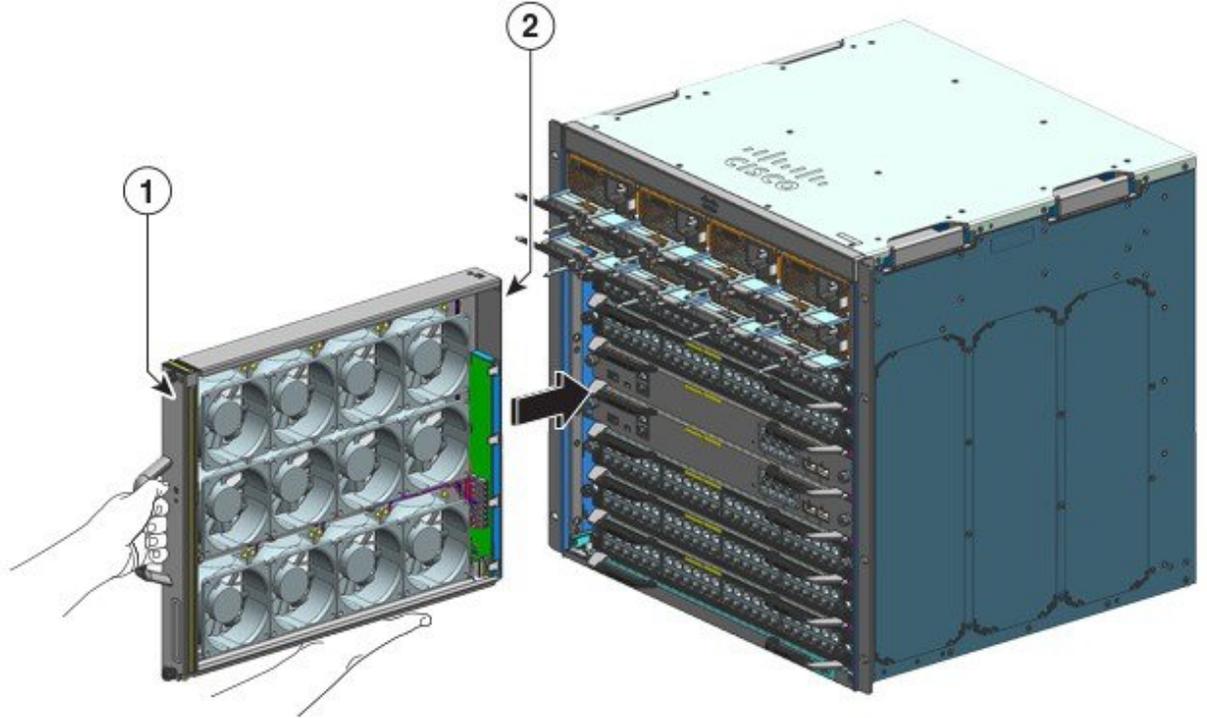
Before you begin

Ensure that a replacement fan tray (with the adapter module detached), is ready for installation. There is a time constraint when you remove and replace a fan tray in a system that is powered on - if you have enabled the service mode prior to servicing, fan-less operation can be safely assured for four minutes only.

You may need a Phillips-head screwdriver to loosen the captive installation screws.

Procedure

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- Step 1** Grasp the front handle with one hand and place your other hand underneath the fan tray to support it. Hold the fan tray with the fans facing to the right.
- Step 2** Place the fan tray in the fan tray bay such that it rests on the chassis, and then lift the fan tray up slightly, aligning the top and bottom guides.



1	Front side of the fan tray	2	Fan tray without the adapter being installed from the front
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- Step 3** Slide the fan tray into the chassis until the two captive installation screws make contact with the chassis.
- Step 4** Tighten the two captive installation screws on the front, to secure the fan tray assembly in the chassis.
- Step 5** Verify that you have installed the fan tray correctly. See [Verifying Fan Tray Installation, on page 10](#).

Removing a Fan Tray from the Rear

When you remove a fan tray from the rear, the fan tray assembly is removed. This includes the fan tray and the adapter. To remove a fan tray from the rear, follow the steps described here.



Caution When removing the fan tray, keep your hands and fingers away from the spinning fan blades. Let the fan blades completely stop before you remove the fan tray.



Warning **Statement 1073**—No User-Serviceable Parts
There are no serviceable parts inside. To avoid risk of electric shock, do not open.



Warning Statement 1074—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

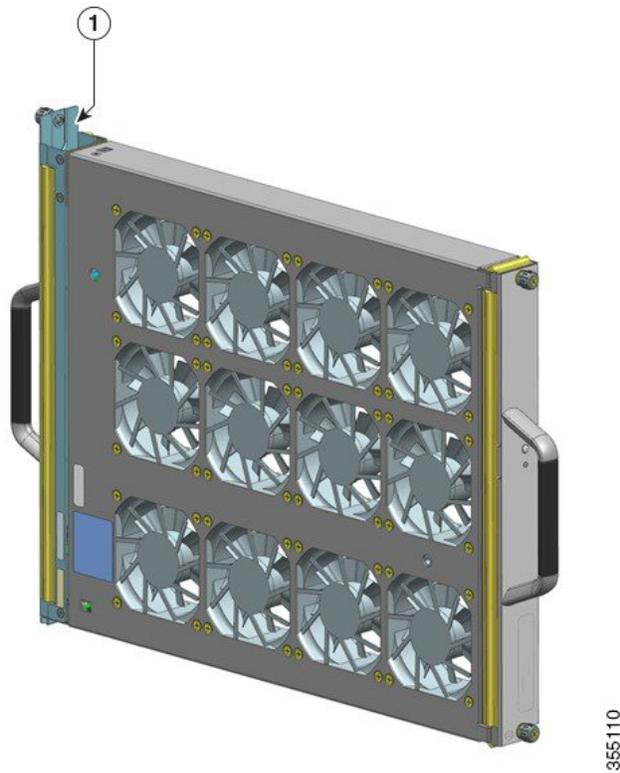
Before you begin

You may need a Phillips-head screwdriver to loosen the captive installation screws.

Procedure

Step 1 Ready the replacement fan tray by removing it from the shipping packaging. Keep it on an anti-static mat and within arm's reach. Do not detach the adapter module.

Important When you remove and replace a fan tray in a system that is powered on, there is a time constraint. So it is important to complete this first step before you remove the fan tray from the rear of the chassis.



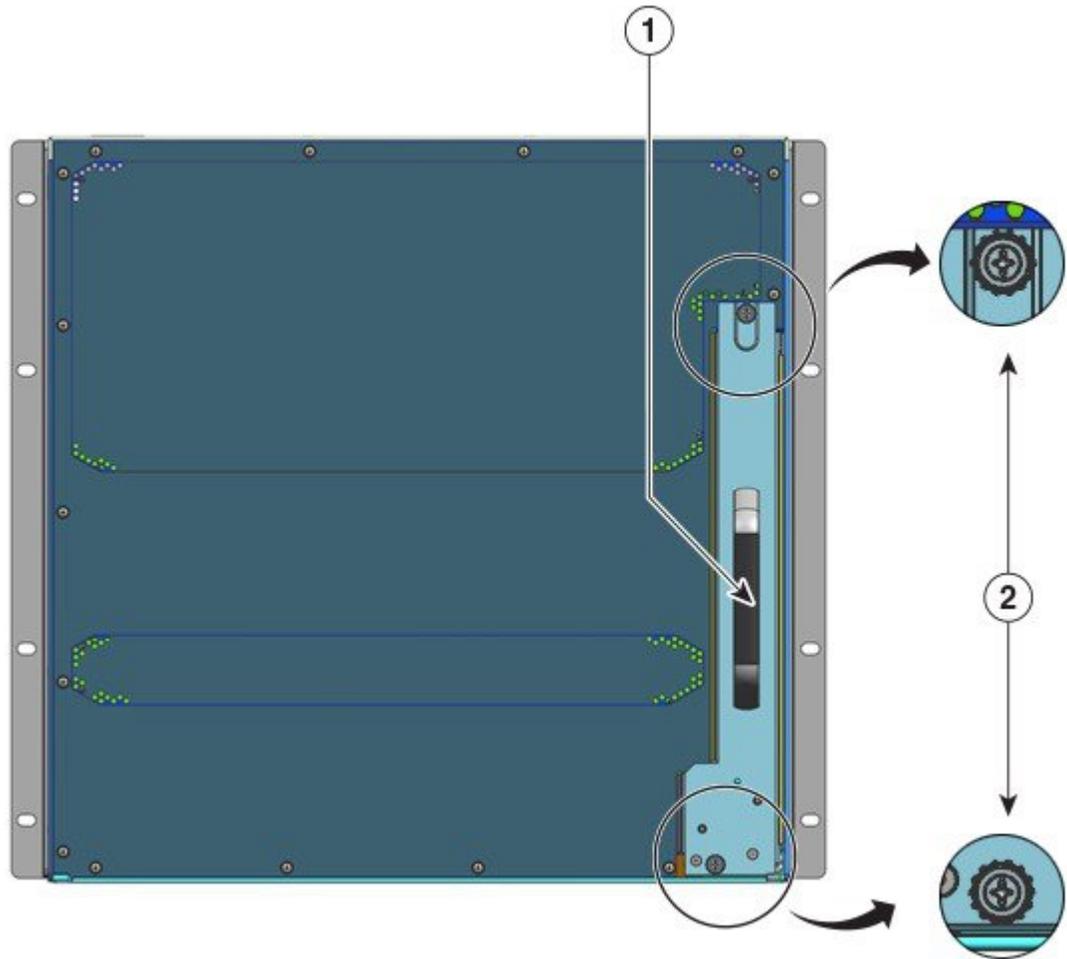
1	Fan tray assembly, with the adapter intact and ready for installation from the rear	-	-
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Step 2 Enable the service mode

In a system that is powered on, enabling the service mode for the system-allotted 10 minutes safely assures fan-less operation for four minutes. See [Enabling the Service Mode Before Removing a Fan Tray](#), on page 2.

Important Proceed with removing and replacing the fan tray immediately after the service mode self-terminates.

Step 3 Remove the fan tray from the chassis - loosen the two captive installation screws on the rear panel of the fan tray.



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1	Rear fan tray handle	2	Captive installation screws on the rear panel that have to be loosened to uninstall the fan tray assembly from the rear.
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Step 4 Grasp the fan tray handle and pull it out only partially (0.25 inches), to unmate the connector and unseat it from the backplane. After unmating the connector, allow three seconds to let the fan blades stop spinning completely.

When unmating the connector, gently move the fan tray from side to side, if necessary. The fans are equipped with a braking mechanism that fully stop the blades within three seconds of being de-energized (You will not be able to visually inspect the fan to see whether the blades are spinning or not).

Step 5 Place your other hand underneath to support the bottom of the fan tray and then slide it out of the bay completely.

The entire fan tray assembly is removed from the chassis (including the adapter).

What to do next

Set the removed fan tray aside and immediately proceed with installing the replacement or spare fan tray.

Installing a Fan Tray from the Rear

To install a fan tray from the rear, follow the steps described here.



Warning **Statement 1073**—No User-Serviceable Parts

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Warning **Statement 1074**—Comply with Local and National Electrical Codes

To reduce risk of electric shock or fire, installation of the equipment must comply with local and national electrical codes.

Before you begin

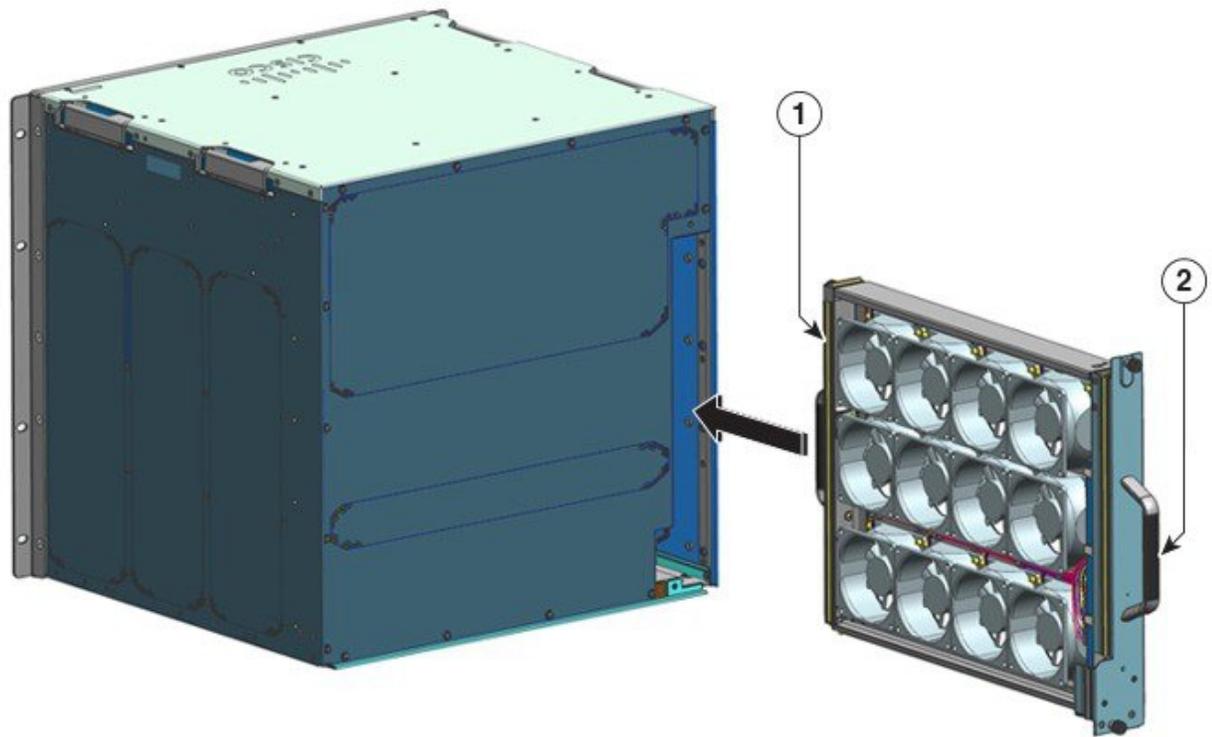
Ensure that a replacement fan tray assembly (with the adapter module intact), is ready for installation. There is a time constraint when you remove and replace the fan tray in a system that is powered on - if you have enabled the service mode prior to servicing, fan-less operation can be safely assured for four minutes only.

You may need a Phillips-head screwdriver to loosen the captive installation screws.

Procedure

Step 1 On the replacement fan tray assembly, ensure that the two screws securing the fantray to the adapter (on the side with the fan STATUS LEDs) are tight. Be careful not to overtighten the screws.

Step 2 Grasp the rear handle with one hand and place your other hand underneath, to support the bottom of the fan tray assembly (such that the side with the STATUS LED is inserted first).



1	Front of the fan tray. Tighten the captive installation screws on this side <i>before</i> sliding the fan tray in.	2	Rear panel of the fan tray. Tighten the captive installation screws on this side, <i>after</i> sliding the fan tray in.
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- Step 3** Place the fan tray assembly into the fan tray bay so it rests on the chassis. Lift the fan tray up slightly, aligning the top and bottom guides.
- Step 4** Slide the fan tray assembly into the chassis until the two captive installation screws make contact with the chassis.
- Step 5** Tighten the two captive installation screws on the rear to secure the fan tray assembly in the chassis.
- Step 6** Verify that you have installed the fan tray correctly. See [Verifying Fan Tray Installation, on page 10](#).

Verifying Fan Tray Installation

To verify that the new fan tray is installed correctly and is operating properly, follow these steps:

Before you begin

To check the operation of the fans, you should have powered up the chassis.

Procedure

Step 1 Listen for the fans; you should immediately hear them operating. If you do not hear them, ensure

- a) That the fan tray is inserted completely in the chassis
- b) That the faceplate is flush with the chassis panel.
- c) That the captive installation screws have been tightened sufficiently.

Important If the fan tray is not installed correctly, the fans may not run at all, or they may run at full speed. When the fan tray operates at full speed, increased noise levels may be expected.

Step 2 Check if the fan tray LED is lit and is green.

If the LEDs indicate a problem, see the [Troubleshooting the Fan Tray Assembly](#) section for help with isolating the problem.

What to do next

If after several attempts the fans do not operate, or if you experience trouble with the installation (for instance, if the captive installation screws do not align with the chassis holes), contact Cisco Technical Assistance Center (see [Cisco Support](#)), for assistance.

Removing and Installing a Power Supply Module

Cisco Catalyst 9400 Series chassis supports field-replaceable AC-input and DC-input power supply modules. This section describes how to remove and install both kinds of modules.

If you install modules of different types (AC input and DC input) and capacities, ensure that you have taken [power supply module installation considerations](#) into account, and that all required conditions are met.

Power supply modules are hot-swappable

- In a redundant mode, you do not have to power down the switch to replace or upgrade the power supplies.
- In the combined mode, the module is still hot-swappable as long as the difference between total output power and the total used power is greater than the capacity of the module being removed.

Total output power – Total used > Capacity of power supply module being removed.



Warning Statement 1005—Circuit Breaker

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than these values for US and EU:

- 20A circuit breakers for AC-input power supply.
 - 50A DC-rated circuit breakers for each input for safety purposes - irrespective of whether the inputs are power from a single or separate DC sources.
-



Warning **Statement 1022**—Disconnect Device

To reduce the risk of electric shock and fire, a readily accessible disconnect device must be incorporated in the fixed wiring.



Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.



Warning **Statement 1086**—Replace Cover on Power Terminals

Hazardous voltage or energy may be present on power terminals. To reduce the risk of electric shock, make sure the power terminal cover is in place when the power terminal is not being serviced. Be sure uninsulated conductors are not accessible when the cover is in place.



Warning **Statement 9001**—Product Disposal

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

Removing and Installing an AC-Input Power Supply Module

This section describes how to remove and install an AC-input power supply module.

Before you begin, read [Power Connection Guidelines for AC-Powered Systems](#)

Removing an AC-Input Power Supply Module

To remove an AC-input power supply module, follow the steps described here.

Before you begin

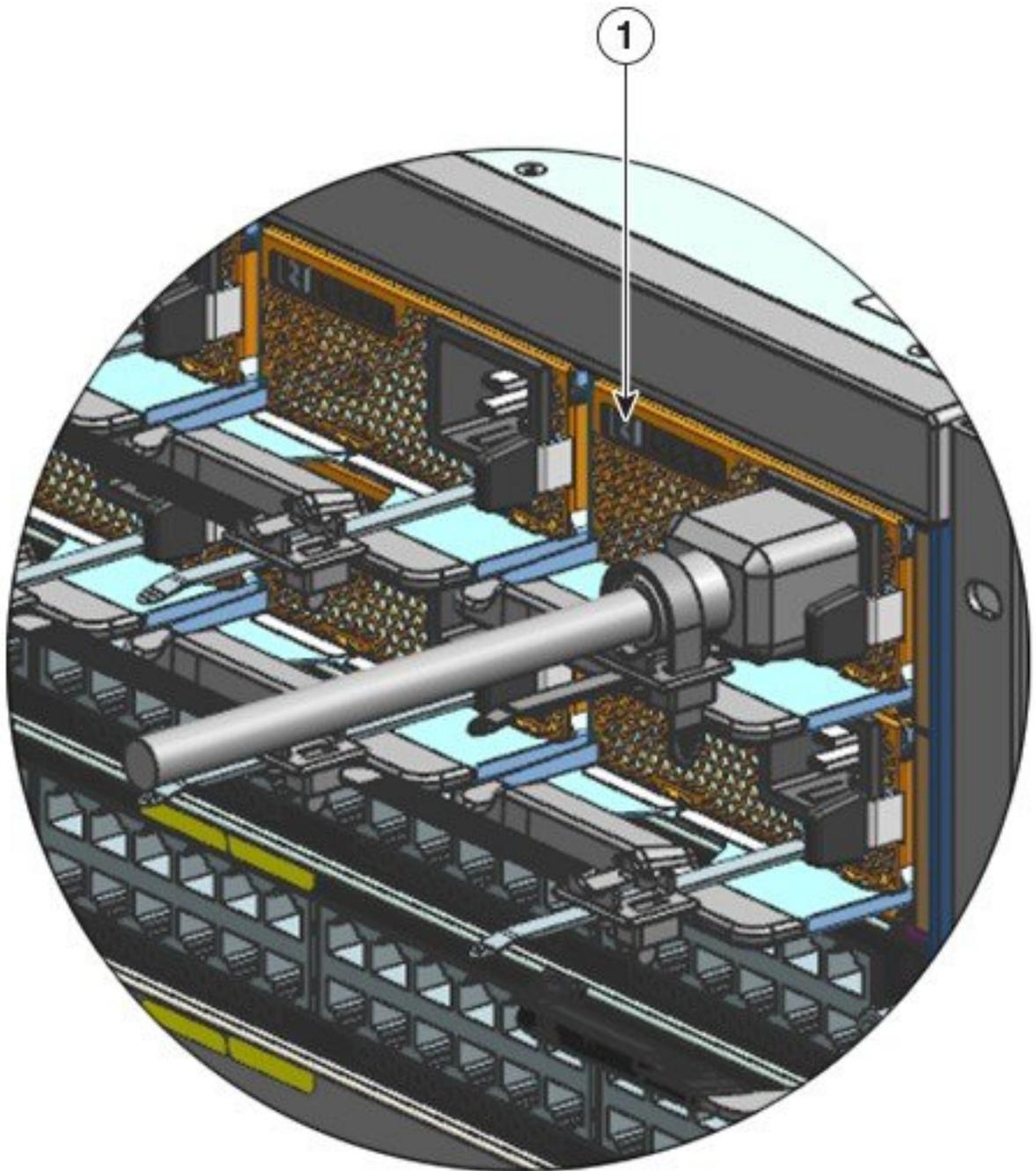


Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Procedure

-
- Step 1** Set the AC-input power supply rocker switch to the OFF (0) position



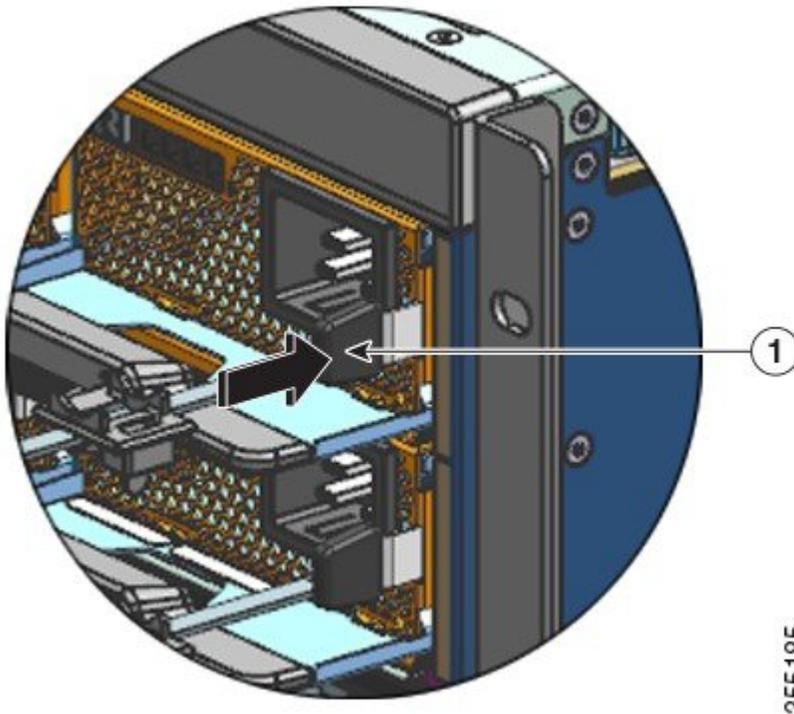
1	Power supply in the OFF (0) position	-	-
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Step 2 Loosen and remove the retainer strip that is around the power cord.

See [Power Cord Retainer Mechanism](#), on page 20.

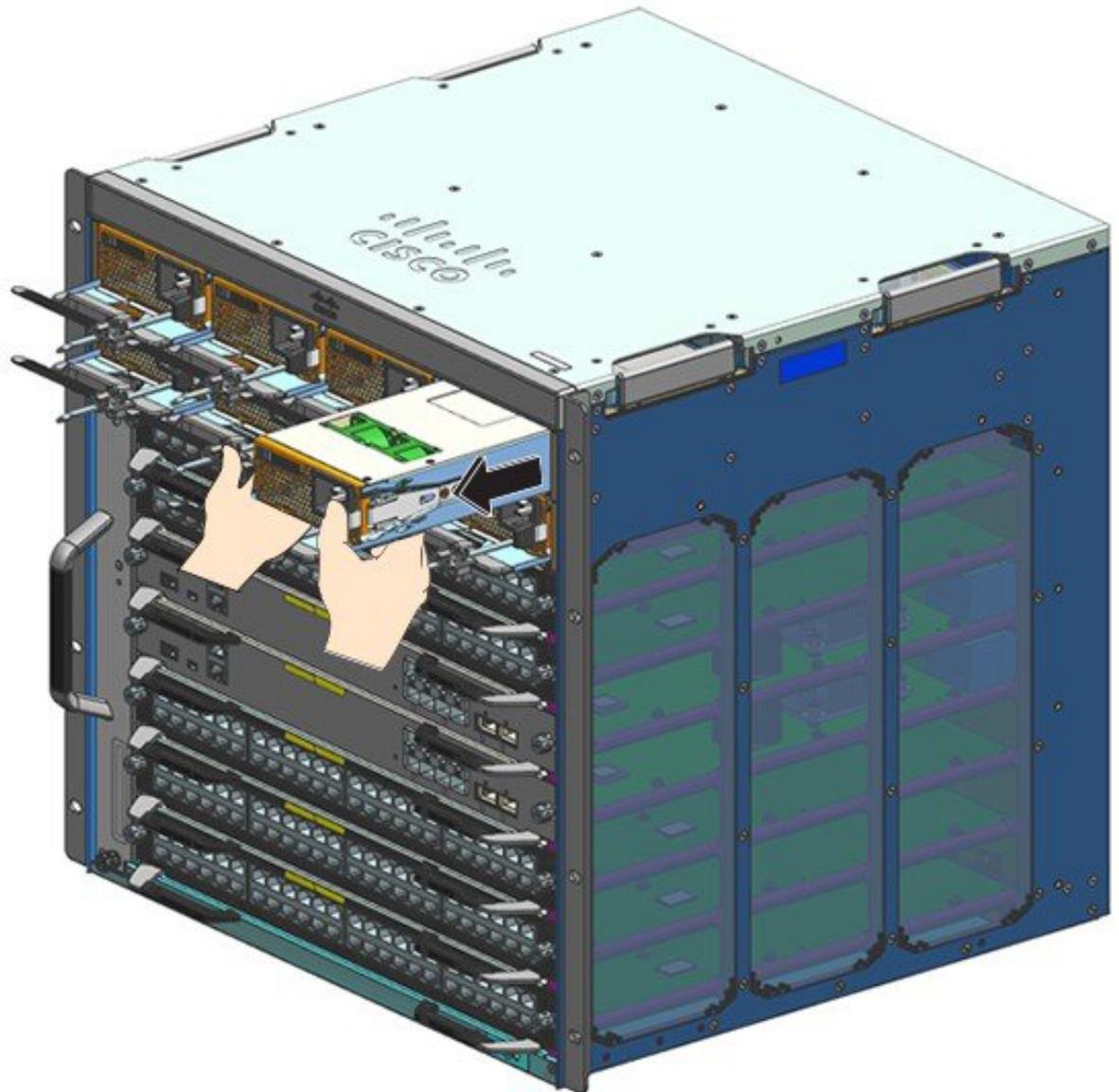
Step 3 Remove the power cord from AC-in receptacle.

Step 4 Press the release latch of the power supply module inward.



1	Release latch, which should be pressed inwards	-	-
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Step 5 Grasp the power supply module with one hand; place your other hand underneath to support the bottom of the power supply. Slide it out of the bay completely.



Caution Do not leave any power supply slot open for any amount of time while the system is powered up. Prior to inserting a new power supply unit, for instance, when replacing the unit, ensure there are no foreign, conductive or other objects, or debris in the slot.

Warning Statement 1028—More Than One Power Supply

This unit might have more than one power supply connection. To reduce risk of electric shock, remove all connections to de-energize the unit.



In the course of its operation the system may require more than one power supply installed and supplying power. Should it become necessary to remove an active power supply unit from the system, consult the user manual for proper system administration of available power. In order to safely de-energize the power supply unit, the input power should first be turned off by activating the rocker input power switch into the OFF state and the power cable physically disconnected from the unit. The unit must then be removed from the slot and stowed safely away in a proper antistatic bag. Care must be taken not to touch any of the exposed pins from the backplane connector. When a replacement power supply unit is to be installed, its rocker switch must always be in the OFF state and no input power cable be installed prior to inserting it into the slot. After the unit is seated, the input power cable may then be installed and fastened securely before activating the input power into the ON state with the rocker input power switch prior to energizing the unit.

What to do next

Set the power supply aside and proceed with installing the new or replacement power supply module. Install blank covers in all power supply bays that are to remain empty (C9400-PWR-BLANK). For information about installing blank covers, see [Removing and Installing a Power Supply Blank, on page 40](#).

[Removing and Installing a Power Supply Blank, on page 40](#)

[Verifying the Power Supply Module Installation, on page 40](#)

Installing an AC-Input Power Supply Module

To install an AC-input power supply module, follow the steps described here.

Before you begin**Warning Statement 1073—No User-Serviceable Parts**

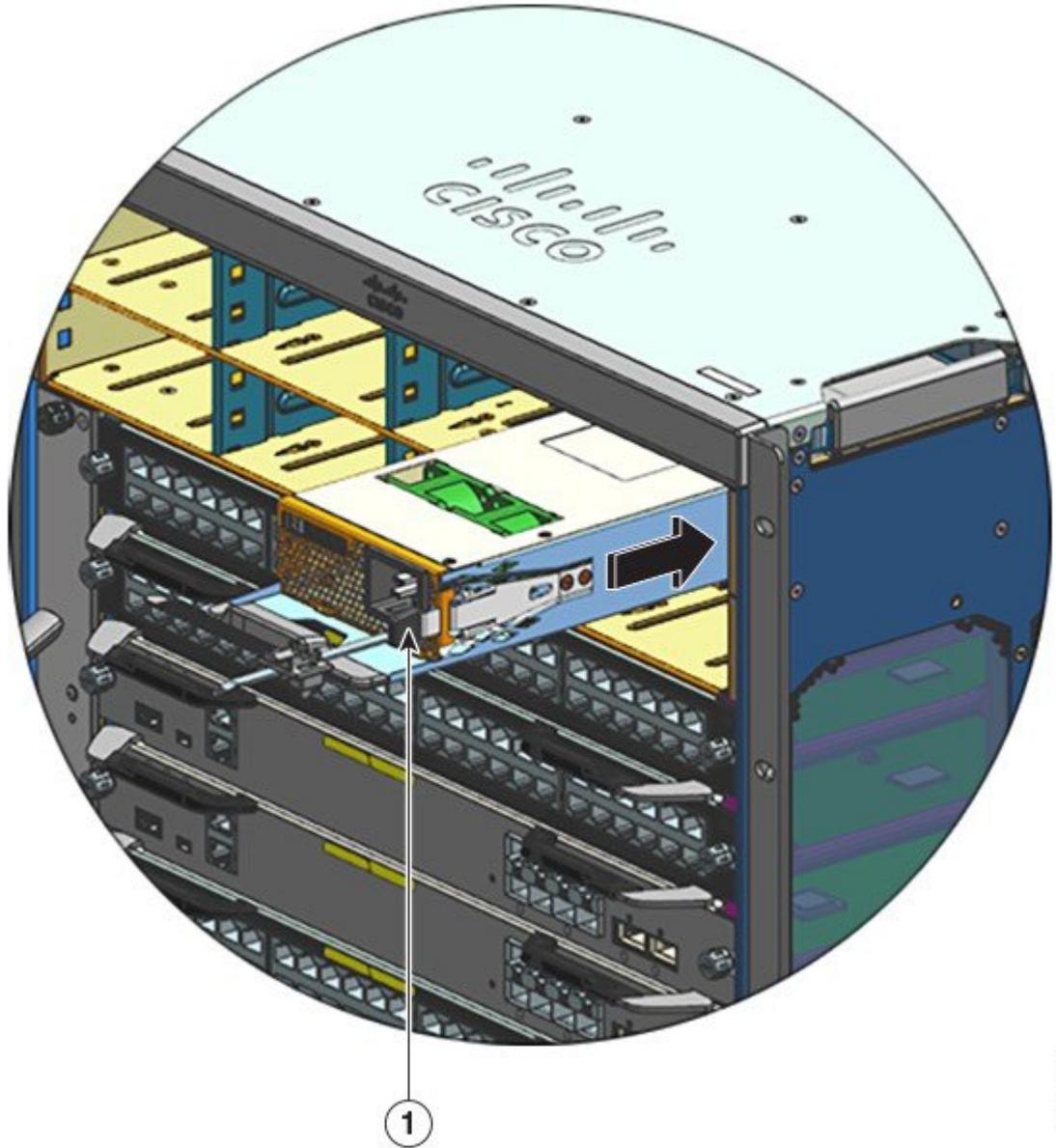
There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Ensure that you have installed the cable guide before you begin the procedure. This is to properly guide and arrange the power cords that you will attach as part of the installation. Since there are two rows of power supply bays, the cable guide ensures that the power cords from one row of power supplies do not interfere with the removal or replacement of modules in another row.

Procedure

- Step 1** Remove the replacement power supply from its shipping packaging.
- Step 2** Verify that the replacement power supply power switch is in the off (0) position.
- Step 3** If installed, remove the blank power supply cover from the empty power supply bay. For information about removing blank covers, see [Removing and Installing a Power Supply Blank, on page 40](#). Save the blank cover for future use.
- Step 4** Grasp the power supply handle with one hand and place your other hand underneath to support the bottom of the power supply. Slide the power supply all the way into the power supply bay. Make sure that the power supply is fully seated in the bay.

When correctly installed, the latch on the power supply locks-in the module, to avoid accidental removal of the module.

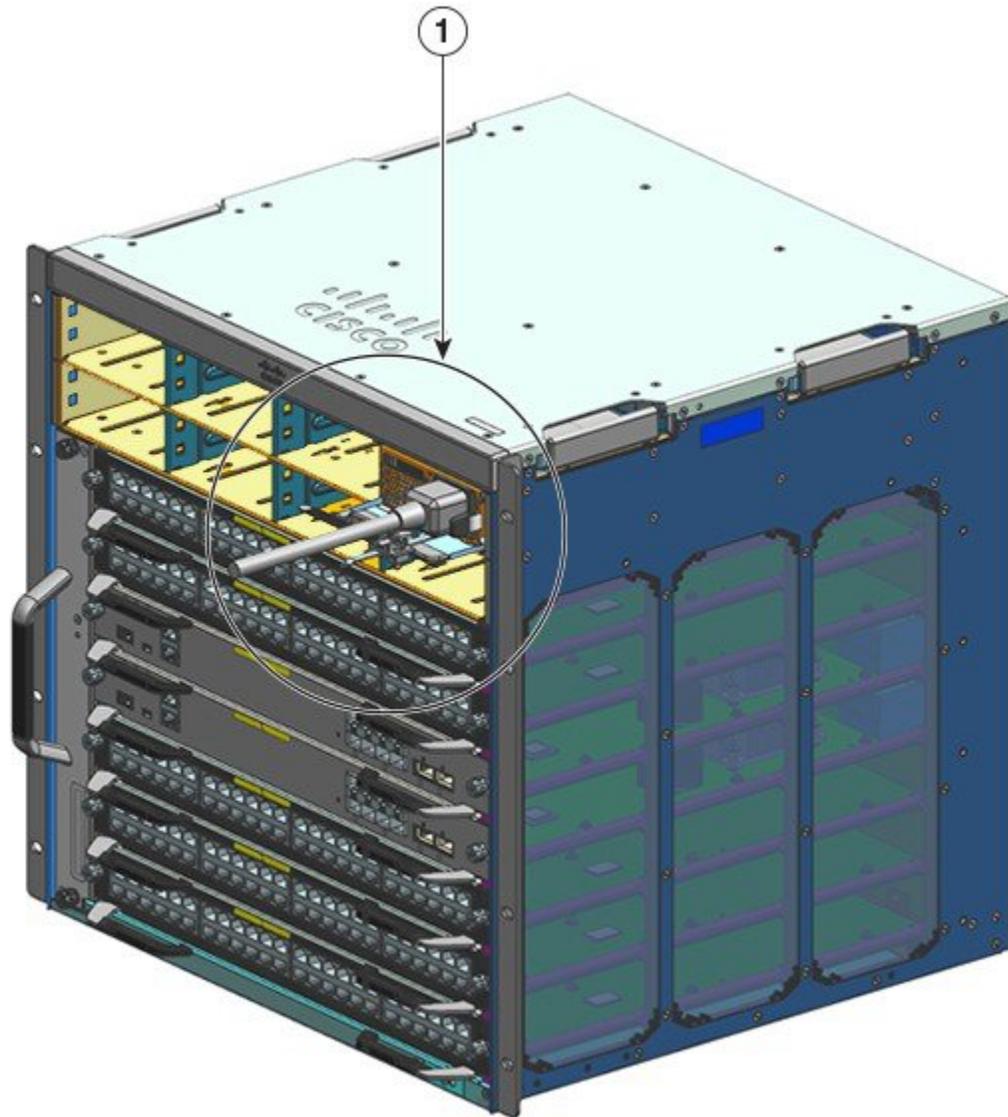


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1	Power supply latch, which clicks into place.	-	-
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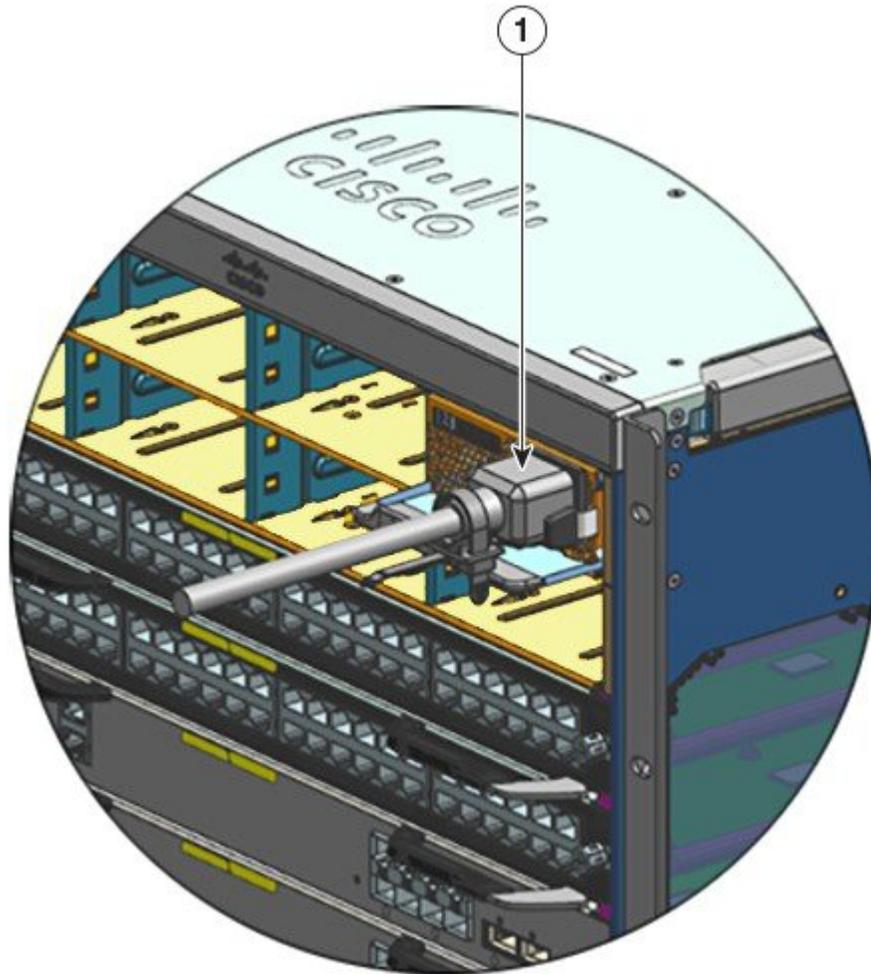
Step 5 Verify that all site power and grounding requirements have been met.

Step 6 Verify that you have the correct AC power cord for your location and power supply rating and only then plug the power cord connector into the power supply AC-in receptacle.



1	Power cord, plugged into the AC-in receptacle.	-	-
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Step 7 Strap in the power cord retainer, to hold the module in place and avoid accidental removal.
 See [Power Cord Retainer Mechanism](#), on page 20.



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1	Power supply fully inserted into the chassis; power cord and retainer strapped into place.	-	-
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Step 8 Set the power switch to the on (I) position.

Step 9 Verify the module's operation by performing the steps described here: [Verifying the Power Supply Module Installation, on page 40](#).

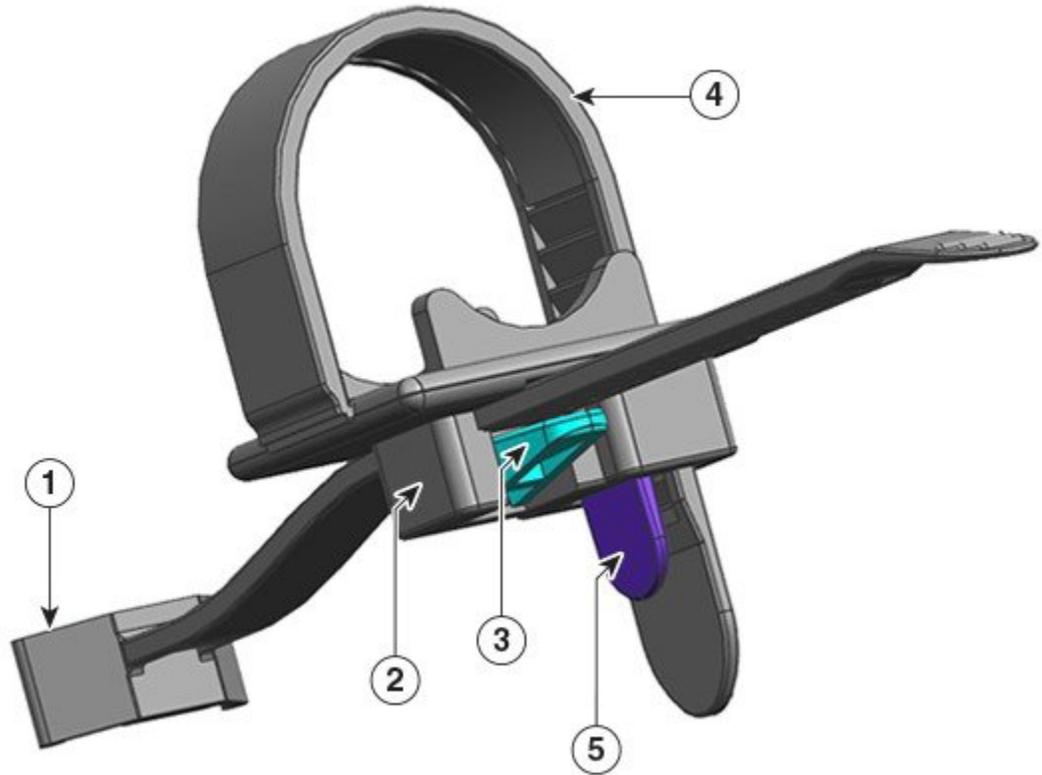
Power Cord Retainer Mechanism

This section shows how to correctly operate the power cord retainer, to tighten or loosen it while installing or removing the power supply module.



Note Some of the illustrations do not include the power supply module, for the sake of clarity. The retainer is otherwise permanently fixed to the power supply module.

Figure 1: Parts of the Power Cord Retainer



355187

1	The end that is fixed to the power supply module	4	Flexible retainer strip
2	Clamp which can move towards the power supply or away from it	5	Retainer strip latch
3	Clamp latch	-	-

Installation and Removal Sequence

Installation—After you have inserted the power supply module into the bay, first position the clamp closest to the power supply, near the plug round cylinder stress relief and then insert the flexible retainer strip into the clamp hole and tighten. The clamp cannot be moved after the flexible retainer strip is inserted into the clamp hole.

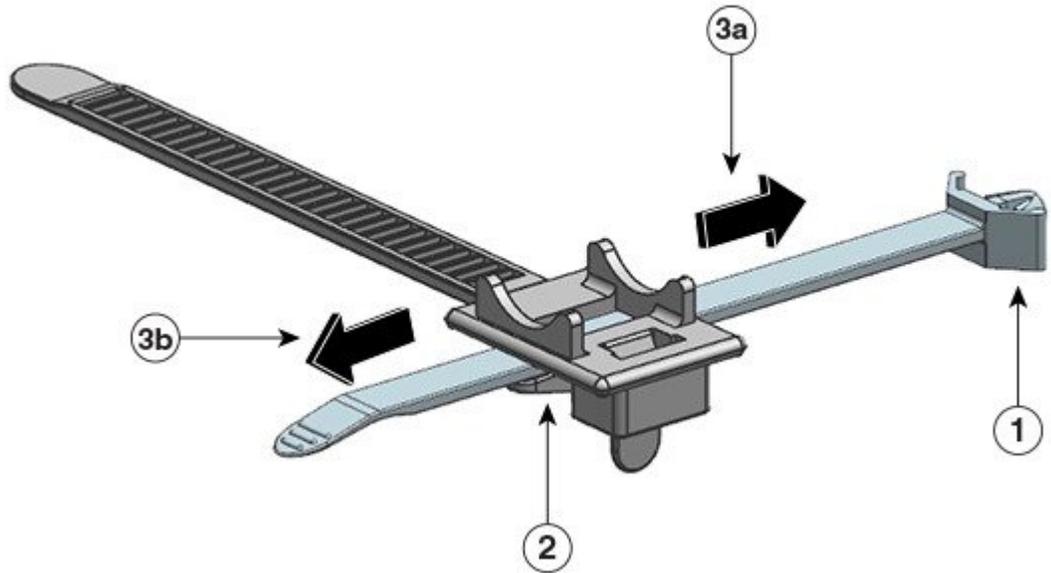
Removal—After you have turned off the power supply module's rocker switch, first remove the flexible retainer strip from the clamp hole and then adjust the position of the clamp to remove the power cord.

Positioning the Clamp

In figure [Figure 2: Positioning the Clamp, on page 22](#), the clamp can always move freely in direction 3a.

To move the clamp in direction 3b, use a flathead screwdriver or similar device and push the clamp latch down. Figure [Figure 3: Clamp Latch - Detail, on page 23](#), provides a clearer view of the clamp latch and the direction in which you have to push the latch to move it in direction 3b.

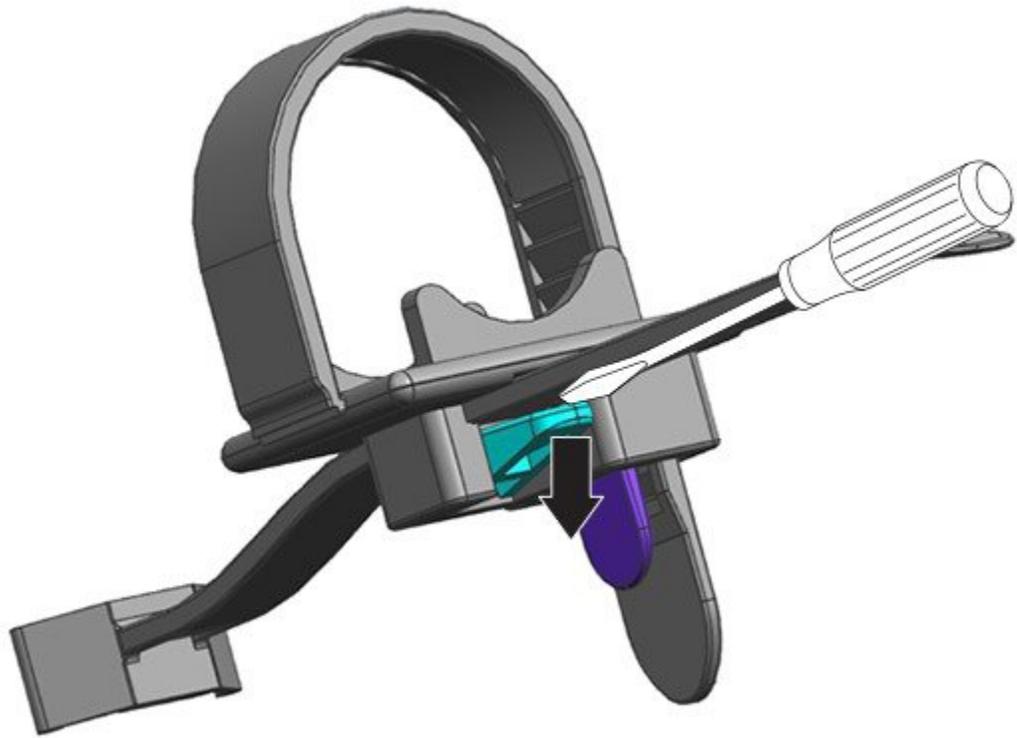
Figure 2: Positioning the Clamp



355312

1	The end that is fixed to the power supply module	3a and 3b	Directions in which the clamp can be moved, towards the power supply and away from it.
2	Clamp Latch	-	-

Figure 3: Clamp Latch - Detail



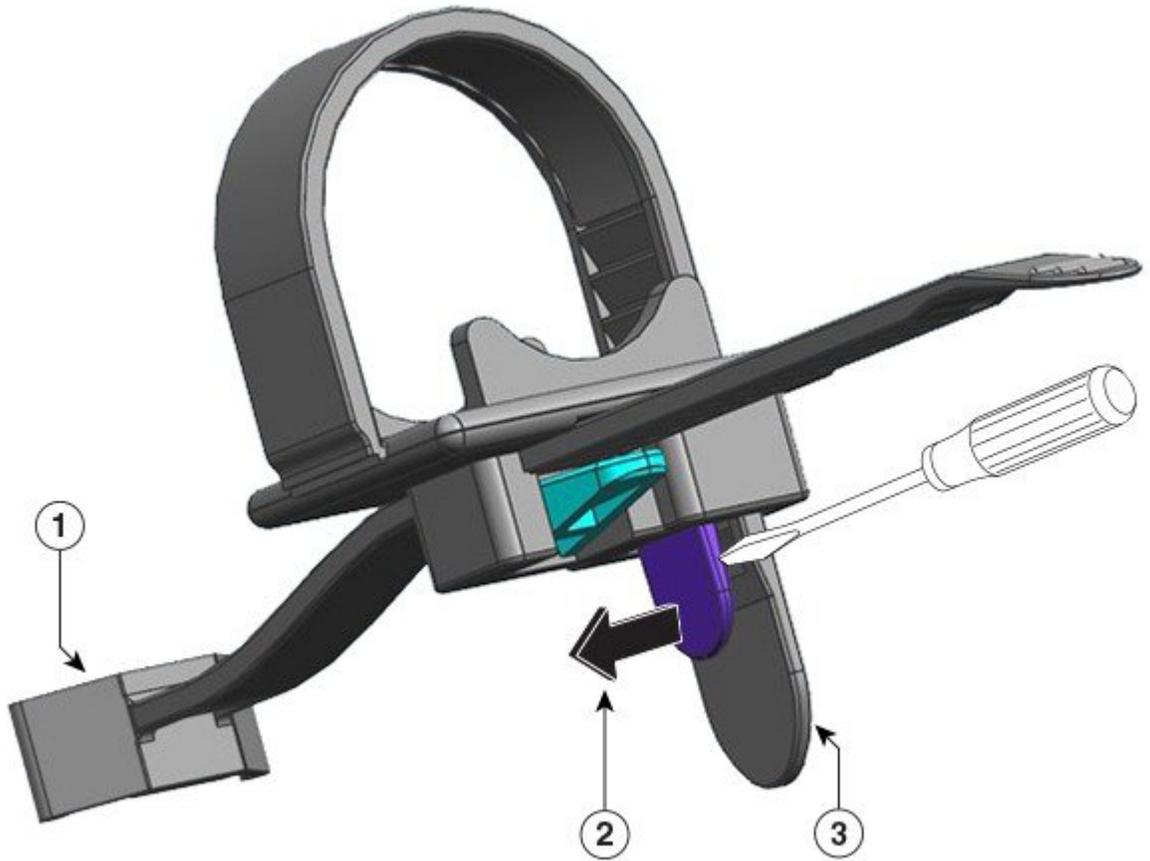
355189

Inserting and Tightening the Retainer Strip

The flexible retainer strip inserts into the clamp hole and should be tightened around the power cord.

To loosen or remove the flexible retainer strip, position a flathead screwdriver or similar device between the flexible retainer strip and the retainer strip latch and push the latch away from the flexible retainer strip .

Figure 4: Flexible Retainer Strip



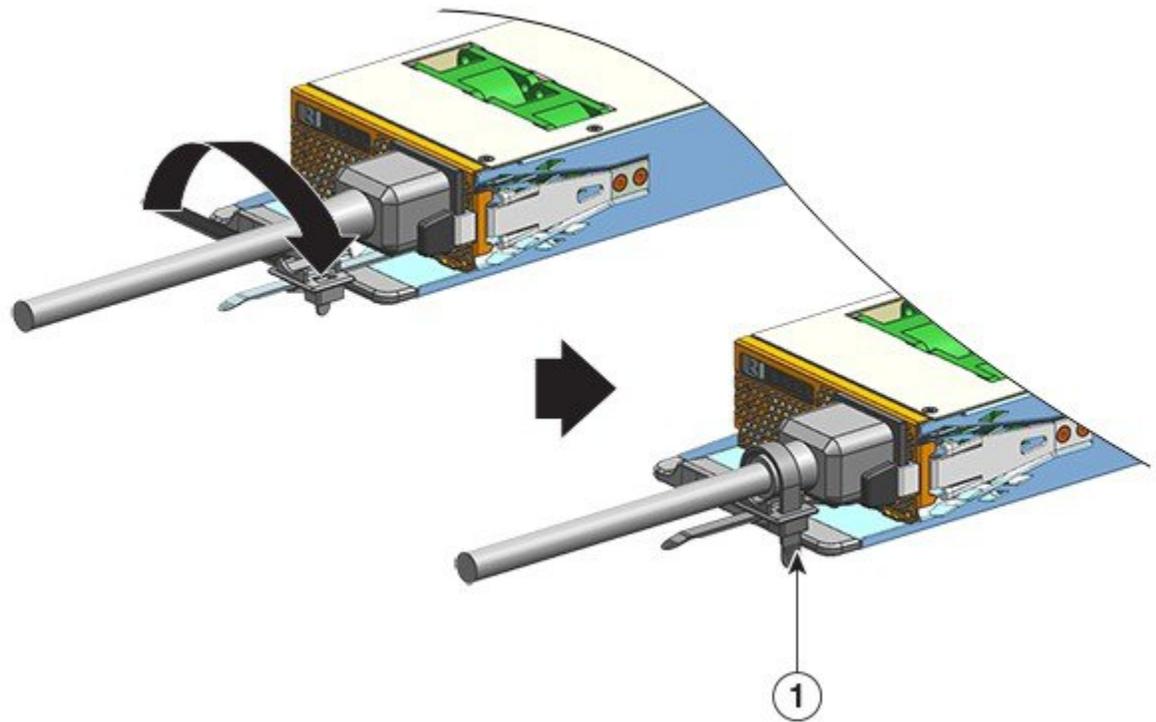
355188

1	The end that is fixed to the power supply module	3	Flexible retainer strip
2	Direction in which to push the retainer strip latch, to loosen or remove the strip from the power cord (away from the retainer strip that is behind it)	-	-

The following figure shows how the flexible retainer strip inserts into the clamp hole.



Note The illustration does not include the chassis, for the sake of clarity.



355182

1	Retainer strip strapped into place	-	-
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Removing and Installing a DC-Input Power Supply Module

This section describes how to remove and install a DC-input power supply module.

Before you begin, read [Power Connection Guidelines for DC-Powered Systems](#).

Required Tools and Equipment

Obtain these tools:

- Number one Phillips screwdriver.
- 10 mm torque driver, with a three-inch shaft, at a minimum.
A torque driver helps tighten nuts in a precise manner and prevents overtightening.
- Nut driver, with a three-inch shaft, at a minimum, to loosen nuts.
- Wire-stripping tool.
- Wire-crimping tool.

Obtain the following parts for each DC-input power supply module you are going to install - they are not shipped with the power supply module:

- Five standard, dual-hole crimp lugs that meet these specifications:

- 1/4-inch bolt or stud size.
- 5/8-inch hole spacing.
- A landing size of 0.5 inches (1.2 cms) width and 1.125 inch (2.9 cms) depth.
- Compatible with the wire size you will use (Lugs are wire size specific).
- Four DC-input power source cables. The wire gauge is determined by local electrical codes and restrictions.
- One grounding wire.
- Five heat-shrink sleeves.

Removing a DC-Input Power Supply Module

When removing a DC-input power supply module, you will need access to the terminal block of the module to disconnect the DC-input wires. If the front panel of the chassis has limited access because of other interfering cables, consider removing the module from the chassis before disconnecting the DC-input wires. If you do have clear access to the terminal block, you can disconnect the DC-input wires and then remove the module from the chassis. In either case (whether you have access to the front panel or not), you must begin by completing all the steps described in [Powering Down the DC-Input Power Supply](#). Proceed with the next task depending on your setup.

The procedures to disconnect DC-input wires and to remove the module from the chassis have been described in [Disconnecting the DC-Input Wires, on page 27](#) and [Removing a DC-Input Power Supply Module from the Chassis, on page 30](#).

Powering Down a DC-Input Power Supply Module

To power down a DC-input power supply module, follow the steps described here.

Before you begin

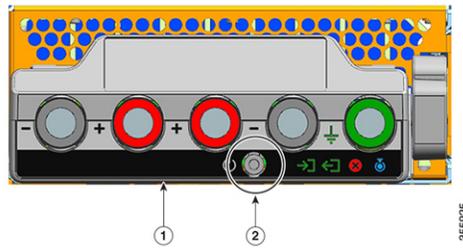


Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Procedure

- Step 1** Press the power button on the power supply module for two seconds to turn it off. Check that the OUTPUT LED is off.



1	Front panel of the C9400-PWR-3200DC	2	Power button
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- Step 2** Locate the circuit breaker on the panel board that services the DC circuit, and switch the circuit breaker to the OFF position.
- Step 3** Check that the INPUT LED on the power supply module is off.
The FAIL LED is illuminated for two to three seconds after DC input is disconnected through a circuit breaker.

Disconnecting the DC-Input Wires

To disconnect the DC-input wires, follow the steps described here.

Before you begin

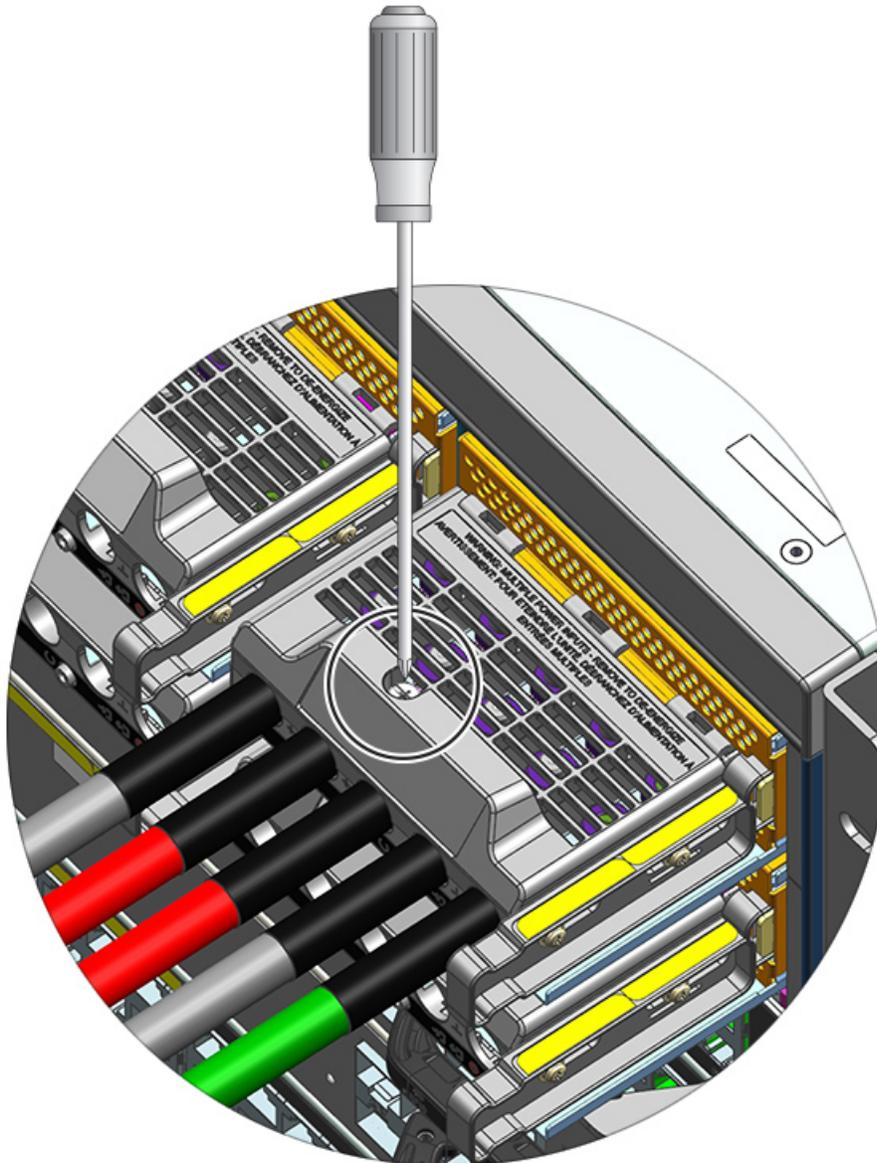


Warning Statement 1073—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Procedure

- Step 1** Using a number one Phillips screwdriver, loosen the captive installation screw on the terminal block cover and lift to open.

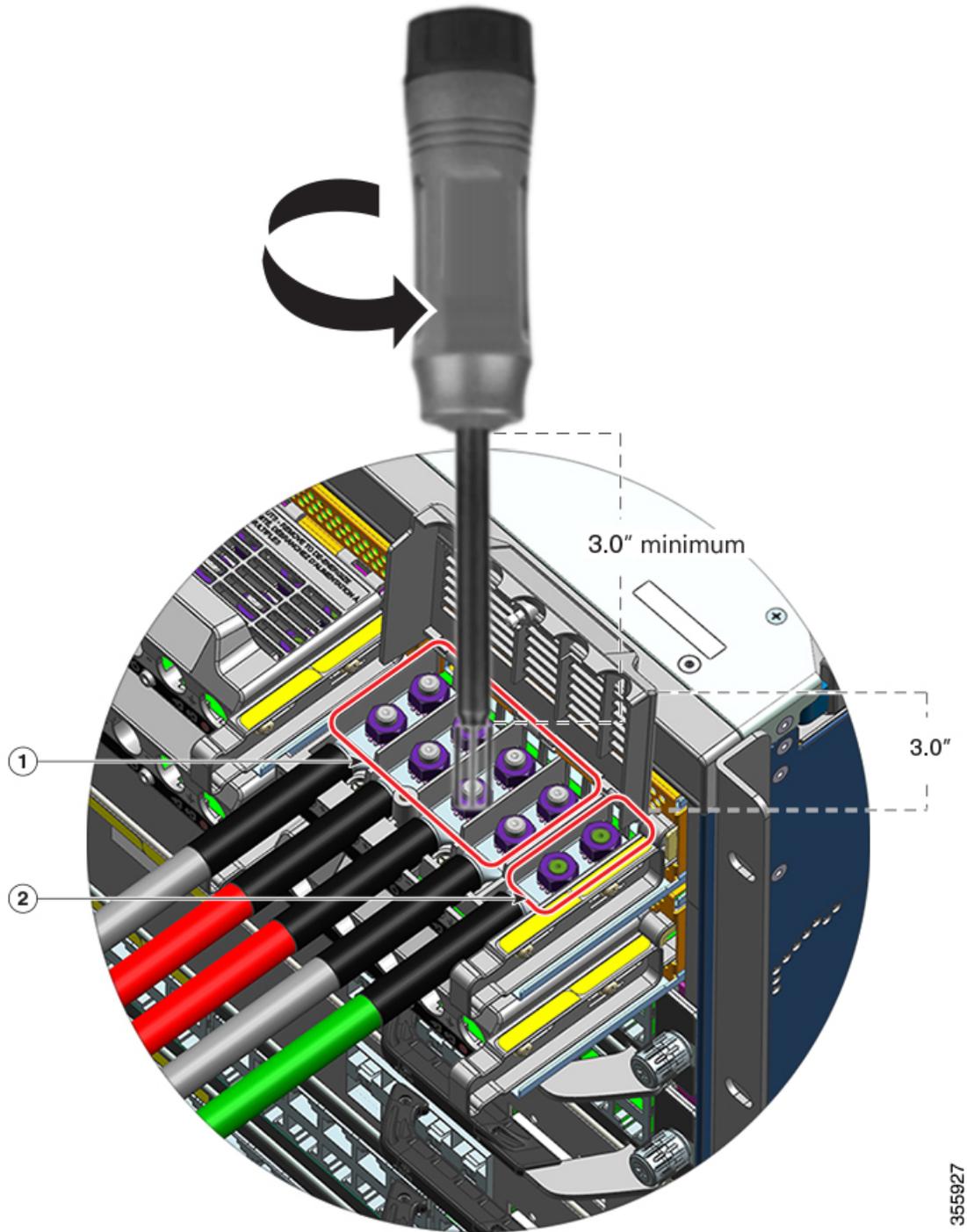


355926

Step 2 Using a nut driver, loosen the two nuts of one terminal slot at a time. After the lugs are removed, place the nuts back on the terminal posts and tighten.

The nut driver you are using must have at least a three-inch shaft, to clear the height of the terminal block cover and enable you to loosen or tighten the nuts in the terminal slots.

Disconnect the DC-input wires from the terminal block first, and disconnect the ground wire last.



355927

<p>1 Terminal slots of the DC-input wires, which should be removed first</p>	<p>2 Terminal slots of the ground wire, which should be removed last</p>
--	--

Step 3 Close the terminal block cover and finger-tighten the captive installation screw (approximately 0.25 Nm).

Removing a DC-Input Power Supply Module from the Chassis

To remove a DC-input power supply module from the chassis, follow the steps described here.

Before you begin

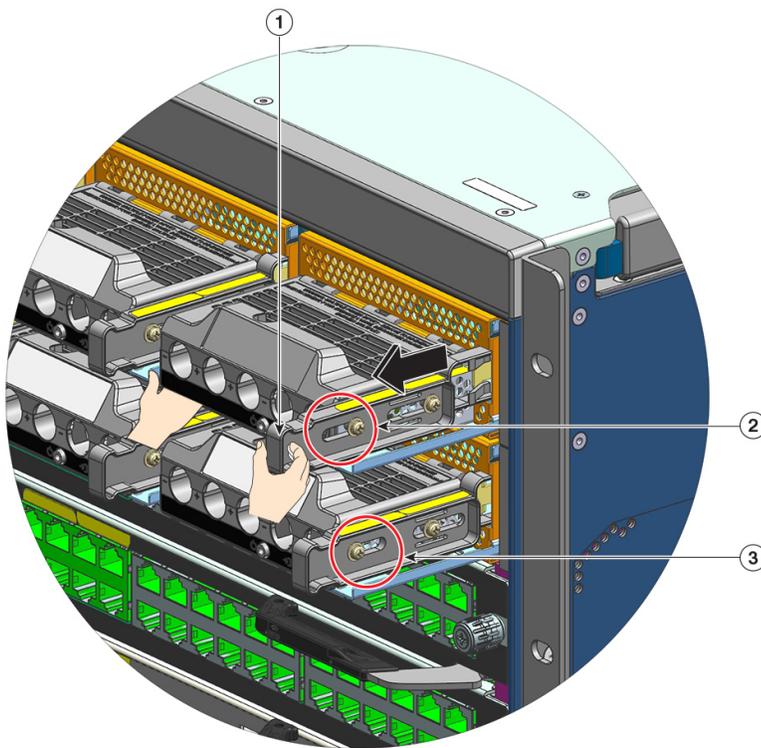


Warning **Statement 1073—No User-Serviceable Parts**

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

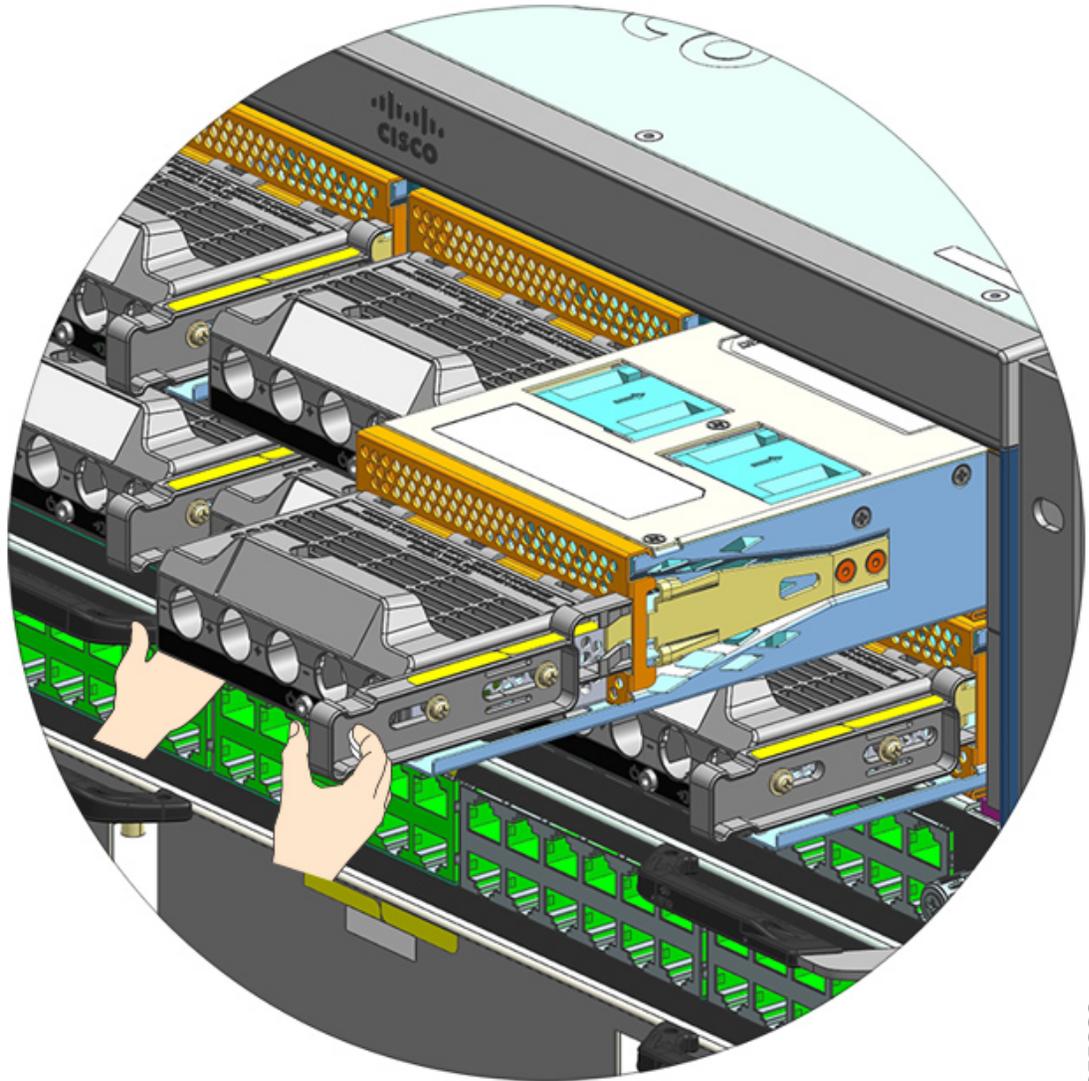
Procedure

Step 1 Pull out the latch on the module, to unlock it.



1	Release latch to be pulled out (towards yourself)	3	Comparative location of the nut on a module where the release latch has not been pulled.
2	Location of the nut on the side when the release latch has been pulled	-	-

- Step 2** Grasp the terminal block with one hand and place your other hand underneath as you slide the power supply module out of the bay.



355929

- Step 3** Install another power supply module. If you are not going to install another module, you must install a blank cover (C9400-PWR-BLANK) to maintain proper airflow through the chassis.

Caution Do not leave any power supply slot open for any amount of time while the system is powered up. Prior to inserting a new power supply unit, for instance, when you are replacing a unit, ensure there are no foreign, conductive, or other objects, or debris in the slot.

Installing a DC-Input Power Supply Module

When installing a DC-input power supply module, you will need access to the terminal block of the power supply module in order to connect the DC-input wires. If the front panel of the chassis has limited access because of other interfering cables, consider connecting the DC-input wires to the terminal block, before you install the power supply module in the chassis. If you do have clear access to the terminal block, you can install the power supply module in the chassis first and then connect the DC-input wires.

The procedure to install the module in the chassis and the procedure to connect the DC-input wires have been described in [Installing a DC-Input Power Supply Module in the Chassis, on page 32](#) and [Connecting the DC-Input Wires, on page 34](#). You can complete either task first and then move on to the next, and finally power up the power supply module.

Installing a DC-Input Power Supply Module in the Chassis

To install a DC-input power supply module in the chassis, follow the steps described here.

Before you begin

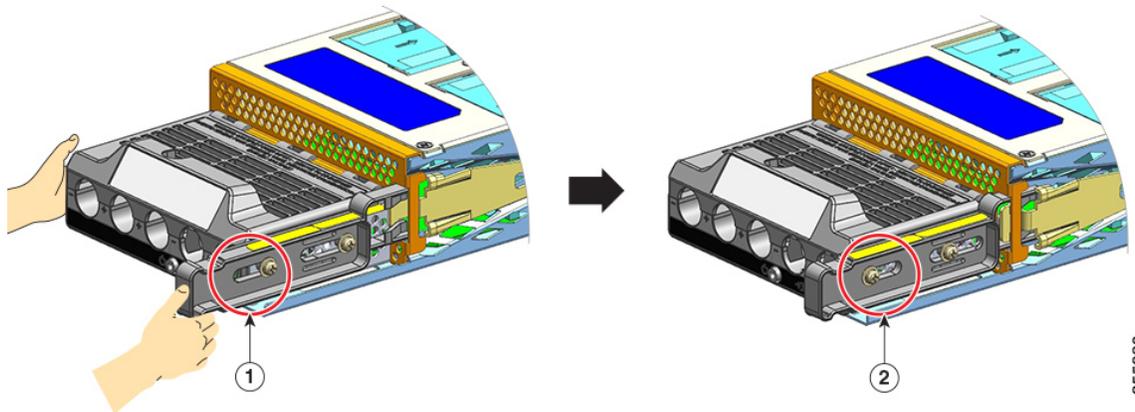


Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Procedure

- Step 1** Remove the power supply blank cover from the chassis, if one is installed.
- Step 2** Remove the new or replacement module from its packaging.
- Step 3** Grasp the module with one hand. With your other hand, push in the latch on the module.



1	Position of the nut on the side of the release latch <i>before</i> the latch is pushed in	2	Position of the nut on the side of the release latch <i>after</i> the latch is pushed in.
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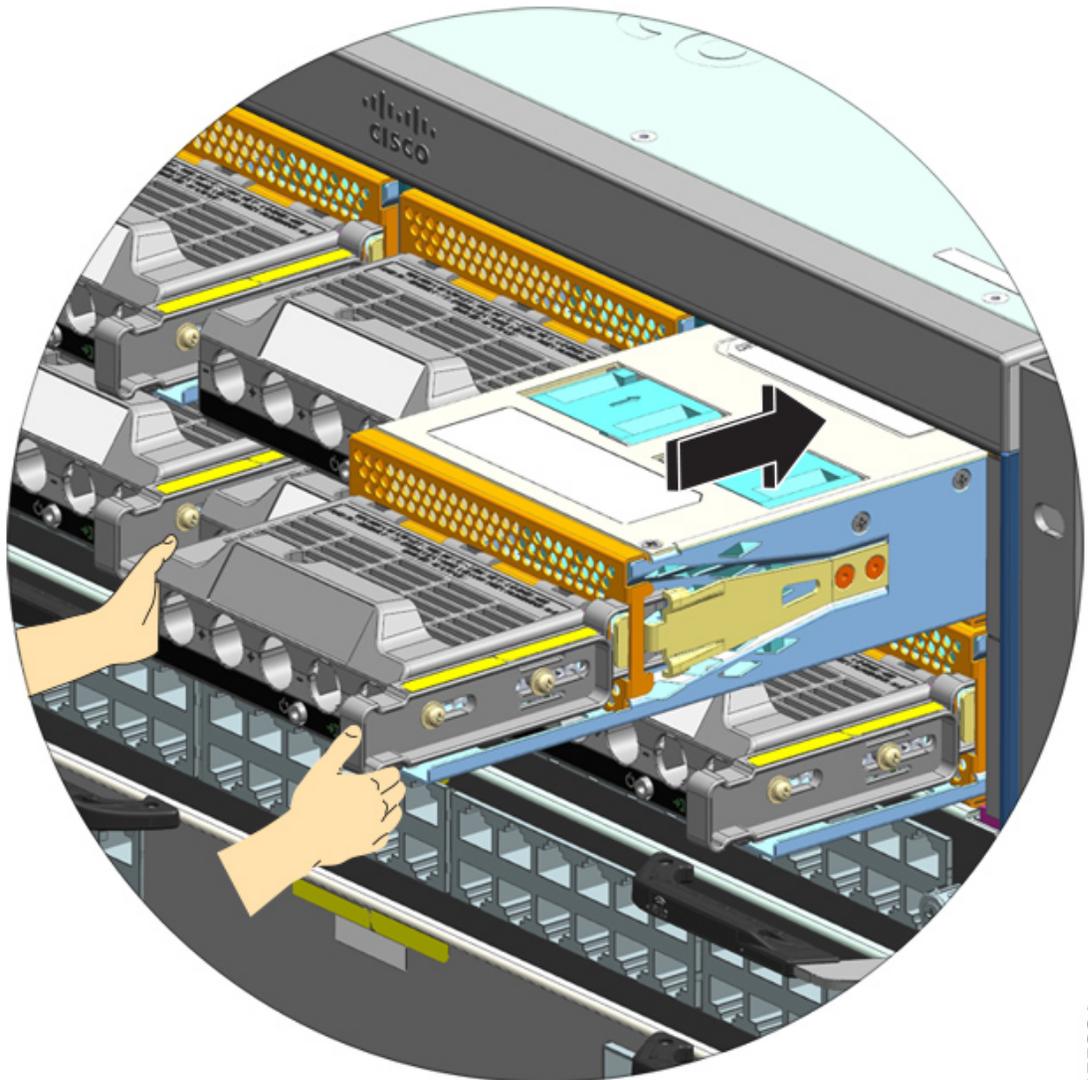
- Step 4** Grasp the terminal block with one hand. Place your other hand underneath as you slide the power supply module into the bay.

You will hear an audible *click* sound, which indicates that the module is locked into place, and connected with the backplane. Only the terminal block housing is not flush with the chassis.

If you do not push the release latch in before you slide the module into the bay, you will not hear the click sound, but this is an acceptable way of installing the module.

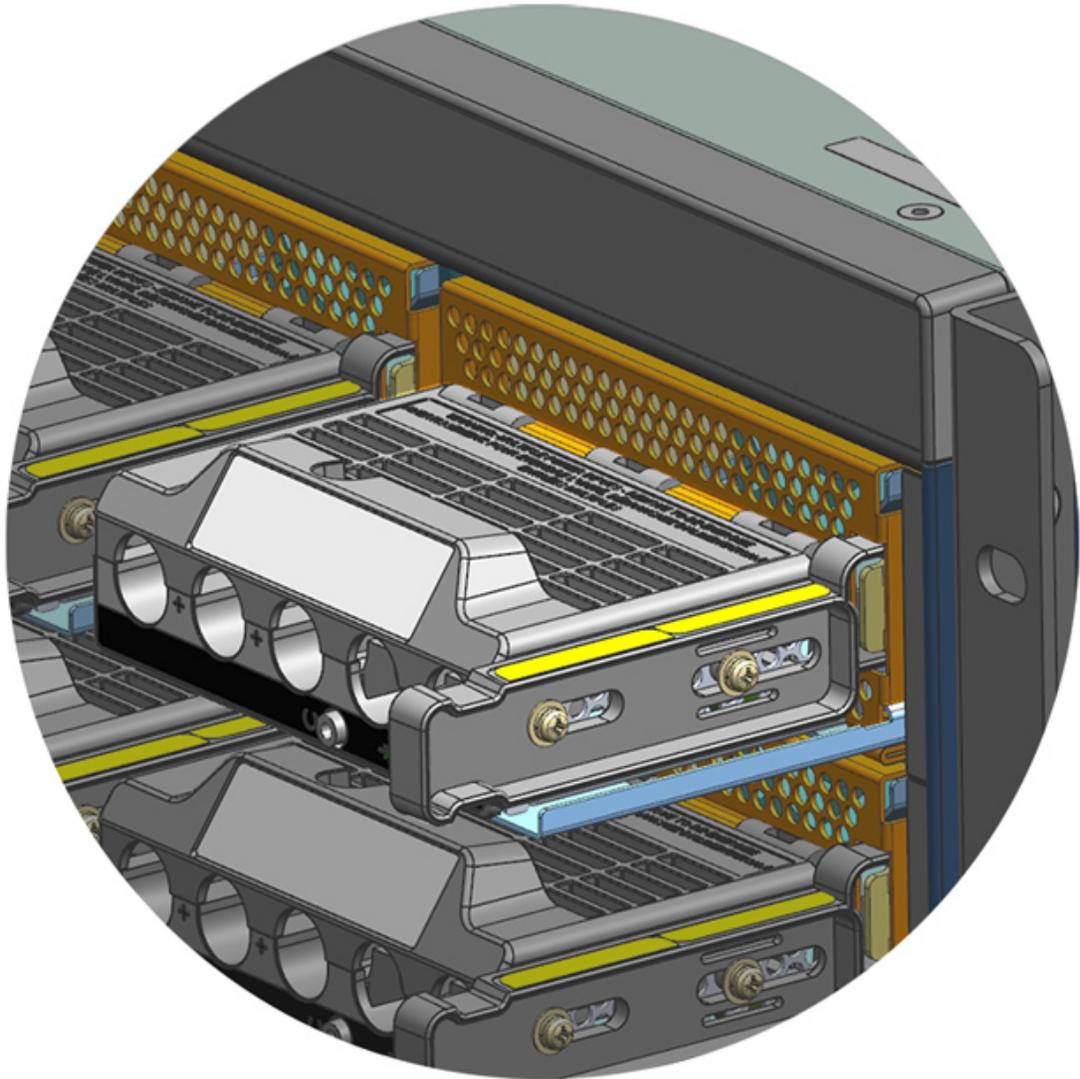
If the module is properly locked in place, you should not be able to remove the module without releasing the latch.

The following figure shows how a power supply module slides into the bay:



355931

The following figure shows a power supply module that is fully installed in the bay:



355932

Connecting the DC-Input Wires

To connect to the DC-input power source, follow the steps described here.

Before you begin



Warning **Statement 1073**—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Procedure

Step 1 Locate the circuit breaker on the panel board that services the DC circuit, and switch the circuit breaker to the OFF position.

Step 2 Prepare the DC-input wires and the grounding wire. Crimp the lugs to the cable ends according to the lug manufacturer's direction and your local electrical codes for installation.

Use a heat-shrink sleeve to ensure that there is no exposed wiring extending from the terminal block, when installed.

If you are using cables of different colors for your DC-input wires, we recommend one color for all the positive circuits, a second color for all the negative circuits, and a third color, which is normally solid green or green with yellow stripes, for the safety ground connection.

Step 3 Using a number one Phillips screwdriver, loosen the captive installation screw on the terminal block cover.

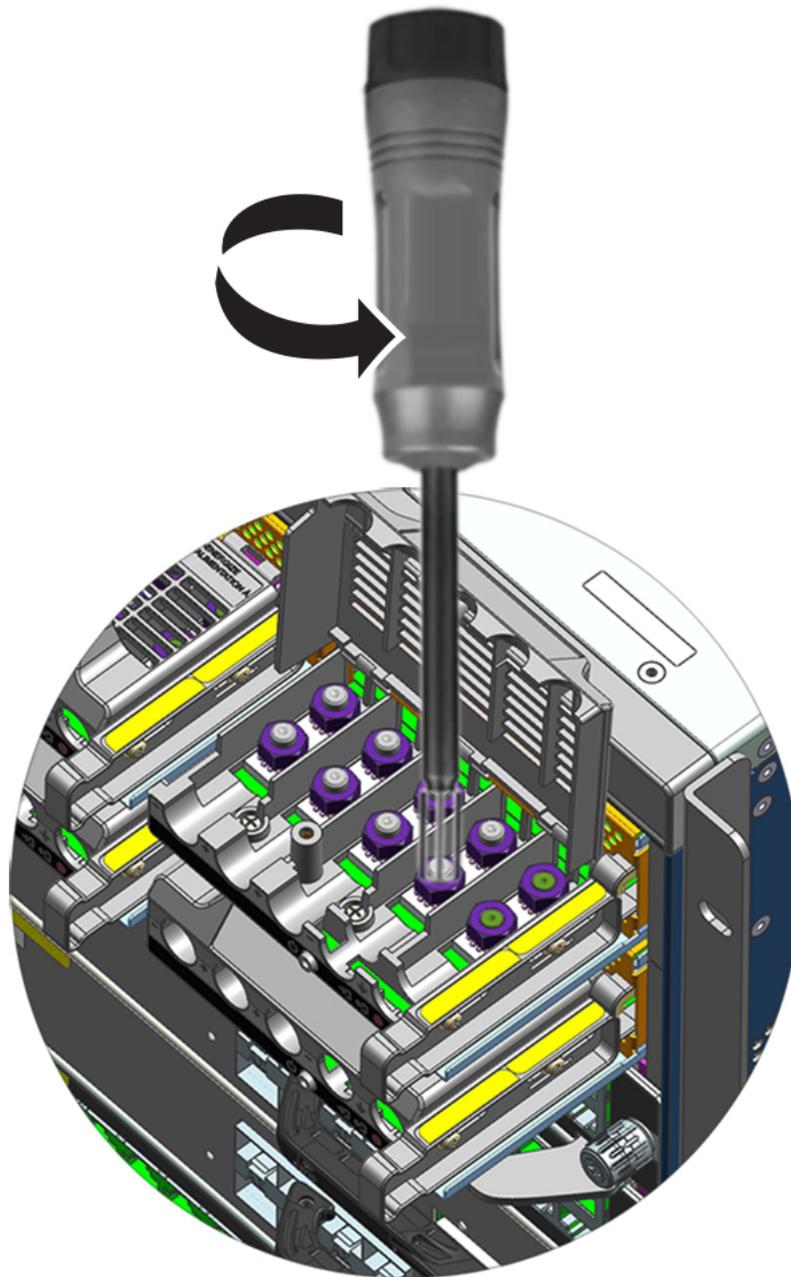
Step 4 Using a nut driver, loosen and remove the two nuts in the terminal slot meant for grounding, and set them aside.

The nut driver you are using must have at least a three-inch shaft, to clear the height of the terminal block cover and enable you to loosen or tighten the nuts in the terminal slots.

Warning **Statement 1046**—Installing or Replacing the Unit

To reduce risk of electric shock, when installing or replacing the unit, the ground connection must always be made first and disconnected last.

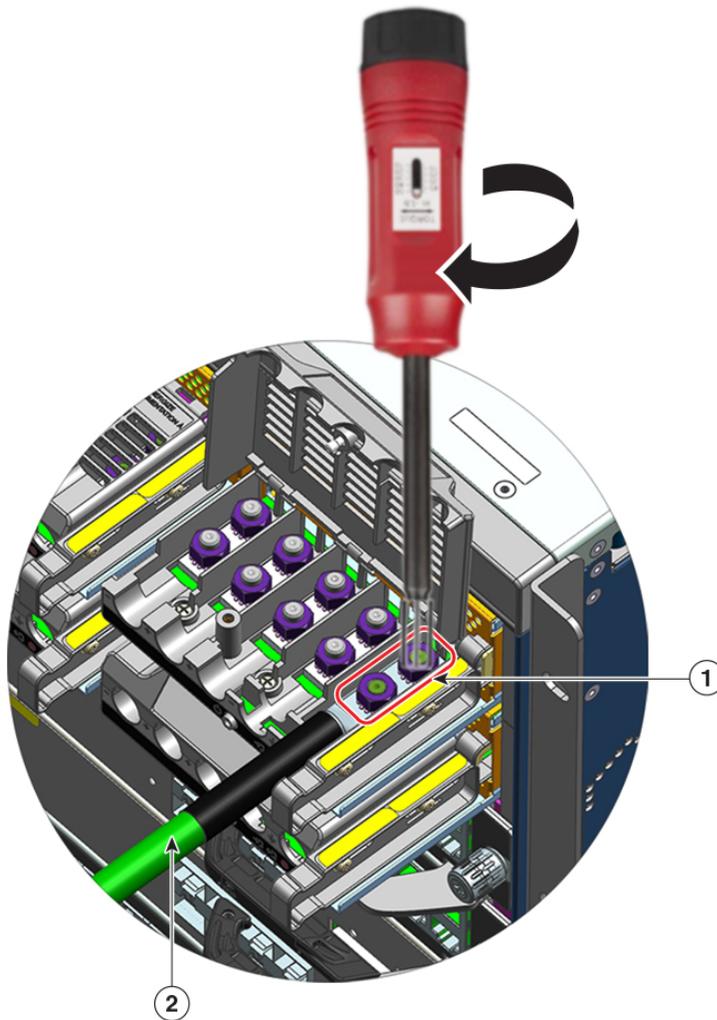
If your unit has modules, secure them with the provided screws.



355933

Step 5 Attach the lug to the two posts, secure with the two nuts, and tighten with the torque driver. The fastening torque is between 2.0 and 2.8 Nm. Do not overtorque.

Note Always use a torque driver when you have to tighten nuts; it prevents you from overtightening them.



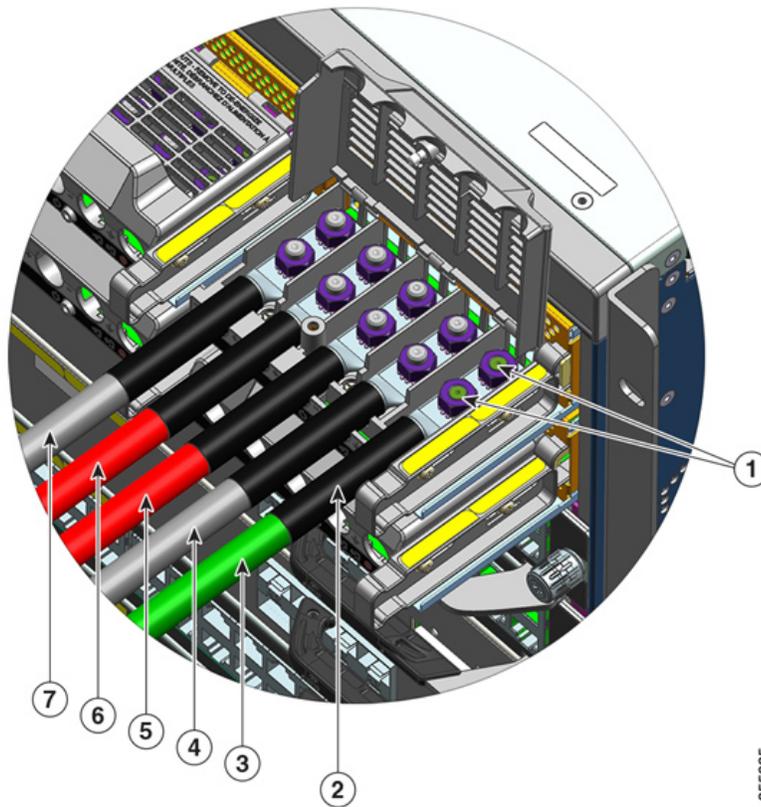
355934

1 Lug secured with the two nuts	2 Grounding wire with heat-shrink sleeve
---------------------------------	--

Step 6 Attach the four DC-input power source cables similarly.

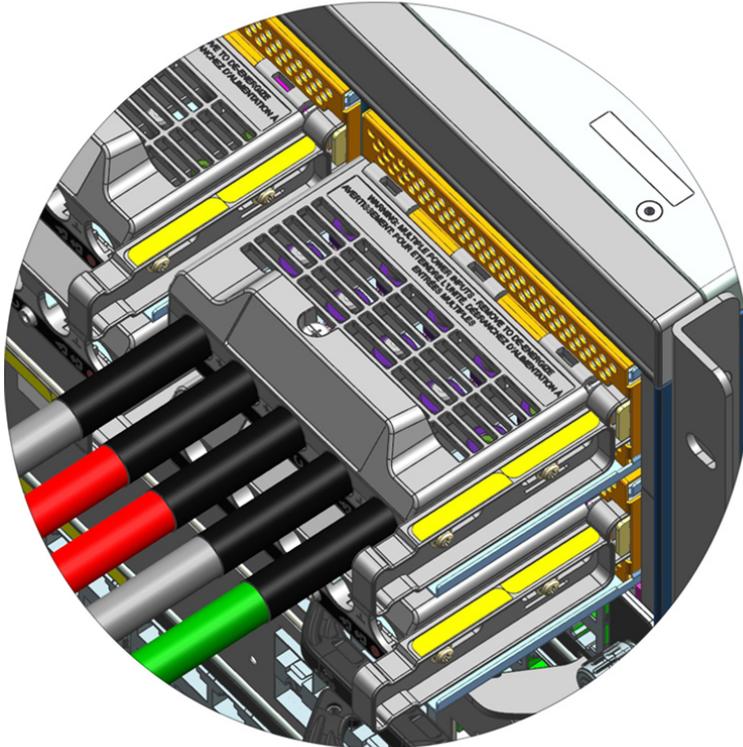
When facing the terminal block, the circuits are in the following order from left to right: negative (- A), positive (+A), positive (+ B), and negative (-B).

-A and +A form one DC input, and + B and -B form another. Each DC input can be powered either from separate sources, or a suitable single source.



1	Lug secured with two nuts	5	DC-input wire for positive circuit (+ B)
2	Heat-shrink sleeve on all the wires	6	DC-input wire for positive circuit (+A)
3	Grounding wire	7	DC-input wire for negative circuit (- A)
4	DC-input wire for negative circuit (-B)	-	-

Step 7 Close the terminal block cover and finger-tighten the captive installation screw (approximately 0.25 Nm).



355936

Powering Up a DC-Input Power Supply Module

After you have installed the power supply module in the chassis and connected the DC-input wires, follow the steps described here to power up the module and verify that the module is installed correctly.

Before you begin



Warning Statement 1073—No User-Serviceable Parts

There are no serviceable parts inside. To avoid risk of electric shock, do not open.

Procedure

-
- Step 1** For the powered down circuits connected to the power supply modules, turn on the power at the circuit breaker. The FAIL LED is illuminated for two to three seconds after DC input is applied through a circuit breaker.
- Step 2** Check that the INPUT and OUTPUT LEDs on the power supply module are green.

Note DC-input power supply modules are shipped with the power button in the default auto-on mode, which means that the module automatically starts on application of DC-input power. When you install a new or replacement module straight out of the box, you do not have to press the power button.

- Step 3** Verify the polarity by measuring the voltage between the DC cable leads.
- When measuring, check that the positive (+) lead and the negative (–) lead match the + and – labels on the DC-input power supply module's terminal block.
- If the DC inputs are powered from separate sources, also check that you have wired the cables straight across to their respective A source and B source, and respective negative and positive terminals. Crossed positive or negative cables constitute a severe safety hazard.
- Step 4** Verify the module's operation by performing the steps described here: [Verifying the Power Supply Module Installation, on page 40](#).
-

Verifying the Power Supply Module Installation

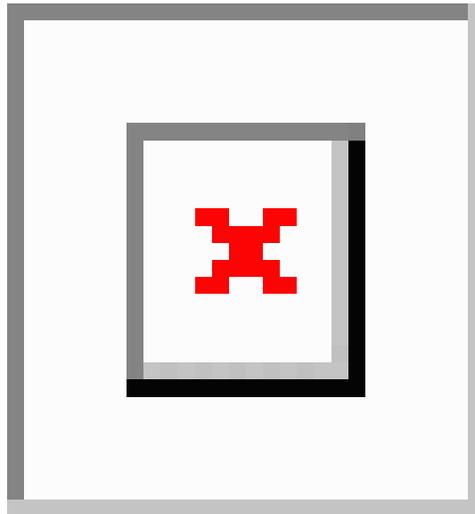
Procedure

- Step 1** Verify the power supply operation by checking the power supply's front-panel LEDs. You should see the following:
- The INPUT LED is green.
 - The OUTPUT LED is green if it is an active module and blinking green if it is a redundant module.
 - The FAIL LED is off.
- Step 2** Check the power supply and system status from the system console by entering **show power** command in privileged EXEC mode.
- ```
Switch# show power
```
- Step 3** If the LEDs or **show power** privileged EXEC command output indicate a power problem or other system problem, see the [Troubleshooting a Power Supply Module](#) section for more information.
- 

## Removing and Installing a Power Supply Blank

If a power supply bay in a chassis is unused, you must cover it with a power supply blank cover to maintain proper airflow through the chassis. (Part number C9400-PWR-BLANK=).

**Figure 5: Front View of a Power Supply Blank Cover**

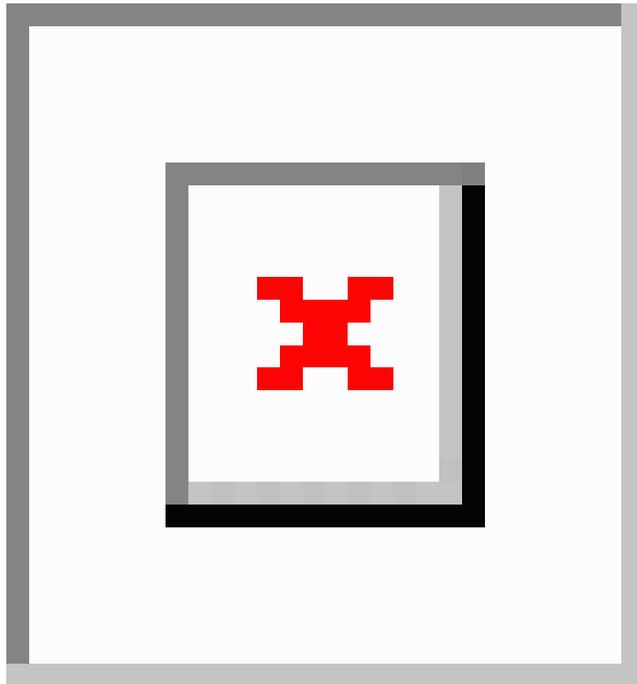


|   |                                                                                                                                                                                                                                                                                                                                                                                                                         |   |   |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|
| 1 | <p>Two finger holes with rings on the blank cover.</p> <p>To remove the blank cover, use the finger holes to hold the blank cover and squeeze both rings towards each other.</p> <p>To install the blank cover, hold the blank cover by the outside edges and push straight into the bay; alternatively, use the finger holes to hold the blank cover and push straight into the bay, but do not squeeze the rings.</p> | - | - |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|

**Removing a Power Supply Blank Cover**

To remove the blank cover from a bay, use the finger holes to hold the blank cover (with your thumb and index fingers), squeeze both rings towards each other and slide the cover out of the bay.

*Figure 6: Removing a Power Supply Blank Cover*



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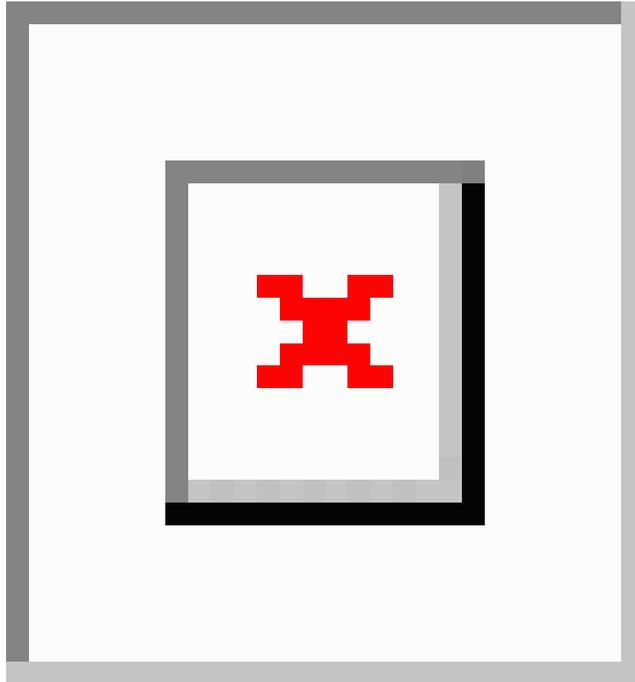
**Caution** Do not leave any power supply slot open for any amount of time while the system is powered up. Prior to inserting a new power supply unit, for instance, when replacing the unit, ensure there are no foreign, conductive or other objects, or debris in the slot.

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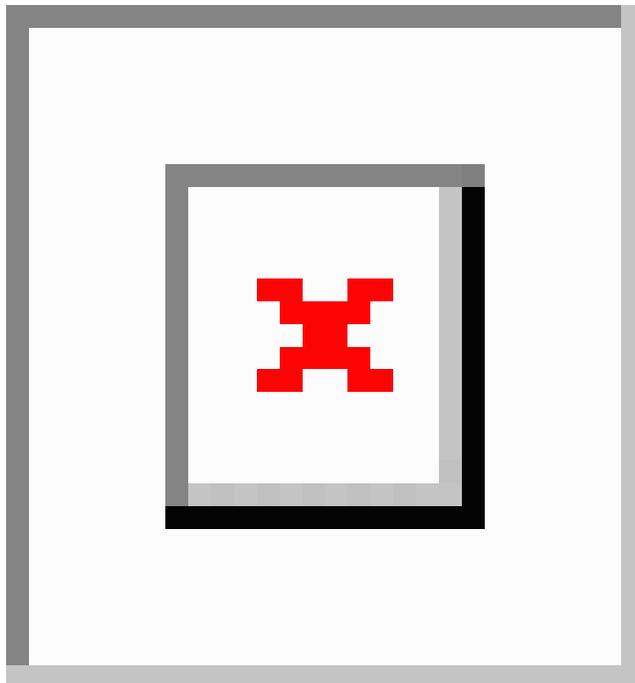
### **Installing a Power Supply Blank Cover**

To install a power supply blank cover, push the blank cover straight and into the bay. You will hear it snap into place when installed correctly. You can hold the blank cover by the outside edges when you perform this task; alternatively, use the finger holes to hold the blank cover, but do not squeeze the rings.

*Figure 7: Installing a Power Supply Blank Cover*



*Figure 8: Power Supply Blank Cover Installed*





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**Note** Power supply blank covers can be placed in any slot when fewer than eight power supplies are installed in a chassis.

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