



## Replacing Modules

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### Replacing a 1 (RU) Fan Module

The fan module is designed to be removed and replaced while the system is operating without causing an electrical hazard or damage to the system if the replacement is performed within one minute.

If you do not have the appropriate replacement fan module, leave the original fan module in its slot to preserve the designed airflow for the switch until you have the replacement fan module. The module number can be found on the chassis.



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**Warning** **Statement 263**—Fan Warning

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

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**Before you begin**

- Verify that you have an ESD wrist strap or other device to prevent ESD damage for components that you touch.
- Verify that you have an antistatic surface or bag for placing the fan module that you remove from the chassis.
- Verify that the replacement fan module has the correct direction of airflow (it has the same coloring as the other fan and power supply modules in the same chassis).

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**Step 1** Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.

You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

**Step 2** Remove the fan module that you are replacing as follows:

- a) On the fan module that you are removing, press the two sides of the fan module handle next to where it connects to the fan module and pull on the handles enough to unseat the module from its connectors.
- b) Holding the handle, pull the module out of the chassis and set it on an antistatic surface or in a antistatic bag.

**Caution** Do not touch the electrical connectors on the back side of the module and prevent anything else from coming into contact with and damaging the connectors.

**Step 3** Install the replacement fan module as follows:

- a) Holding the fan module by its handle, align the back of the fan module (the side with the electrical connectors) to the open fan slot in the chassis.
- b) Slide the fan module into the slot until it clicks in place.
- c) Verify that the Status (STS) LED turns on and becomes green.

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## Replacing a 4 (RU) Fan Module

The fan module is designed to be removed and replaced while the system is operating without causing an electrical hazard or damage to the system if the replacement is performed within one minute.

If you do not have the appropriate replacement fan module, leave the original fan module in its slot to preserve the designed airflow for the switch until you have the replacement fan module. The module number can be found on the chassis.



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**Warning** **Statement 263**—Fan Warning

The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

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### Before you begin

- Verify that you have an ESD wrist strap or other device to prevent ESD damage for components that you touch.
- Verify that you have an antistatic surface or bag for placing the fan module that you remove from the chassis.
- Verify that the replacement fan module has the correct direction of airflow (it has the same coloring as the other fan and power supply modules in the same chassis).

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**Step 1** Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.

You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

**Step 2** Remove the fan module that you are replacing as follows:

- a) On the fan module that you are removing, unscrew the two captive screws on the front of the fan module until each screw is free of the chassis.
- b) Holding the handle, pull the module out of the chassis and set it on an antistatic surface or in a antistatic bag.

**Caution** Do not touch the electrical connectors on the back side of the module and prevent anything else from coming into contact with and damaging the connectors.

**Step 3** Install the replacement fan module as follows:

- a) Hold the fan module with two hands. One hand holding its handle, and one hand supporting the weight of the fan module. Align the back of the fan module (the side with the electrical connectors) to the open fan slot in the chassis.
- b) Slide the fan module into the slot until it clicks in place.
- c) Tighten the fan module captive screws.
- d) Verify that the Status (STS) LED turns on and becomes green.

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## Replacing an AC Power Supply

You can replace an AC power supply during operations so long as there is another power supply installed and operating during the replacement. The switch requires only one power supply for operations, so you can hot swap the redundant power supply during operations. If there is only one power supply installed in the chassis, you can replace it by installing the new power supply in the open power supply slot before removing the other power supply. The module number can be found on the chassis.

### Before you begin

- Verify that you have an ESD wrist strap or other device to prevent ESD damage to the components that you touch.
- Verify that you have an antistatic surface or bag for placing the power supply module that you remove from the chassis.
- Verify that the replacement power supply module has the correct direction of airflow (it has the same coloring as the other fan and power supply modules in the same chassis). Otherwise the switch can overheat and shut down.

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**Step 1** Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.

You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

**Step 2** Remove the power supply as follows:

- a) Pull the power cord out from the power receptacle on the power supply to be removed and verify that the OK LED turns off.
- b) Remove the power supply from the chassis by pushing and holding its thumb latch to the left and pulling the power supply part way out of the chassis.
- c) Place your other hand under the power supply to support it while you slide it out of the chassis.

Either place the power supply on an antistatic surface or pack it in its packing materials.

- d) If the power supply slot is to remain empty, install a blank power supply filler panel (part number N2200-P-BLNK).

**Step 3** Install the replacement power supply as follows:

- a) Holding the replacement power supply with one hand underneath the module and the other hand holding the handle, align the back end of the power supply (the end with the electrical connections) to the open power supply slot and slide the power supply all the way into the slot until it clicks into place.
- b) Test the installation by trying to pull the power supply out of the slot without using the release latch.

If the power supply does not move out of place, it is secured in the slot. If the power supply moves, press it all the way into the slot until it clicks in place.

**Step 4** Connect the new power supply to an AC power source as follows:

- a) Attach the power cable to the electrical outlet on the front of the power supply.
- b) Connect the other end of the power cable to an AC power source.
  - For no power redundancy, connect one power supply to one power source.
  - For n+1 redundancy, connect two power supplies to one or two power sources.
  - For n+n redundancy, connect each of two power supplies to a different power source.

**Note** Depending on the outlet receptacle on your power distribution unit, you might need the optional jumper cable to connect the switch to your outlet receptacle.

- c) Verify that the power supply is operational by checking that the power supply OK LED is green.

## Replacing a DC Power Supply

You can replace a DC power supply during operations so long as there is another power supply installed and operating during the replacement. The switch requires only one power supply for operations, so you can hot swap the redundant power supply during operations. If there is only one power supply installed in the chassis, you can replace it by installing the new power supply in the open power supply slot and making it operational before removing the other power supply. The module number can be found on the chassis.




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### **Warning** Statement 1034—Backplane Voltage

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

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### **Before you begin**

- Verify that you have an ESD wrist strap or other device to prevent ESD damage to the components that you touch.
- Verify that you have an antistatic surface or antistatic bag for placing the power supply module that you remove from the chassis.

- Verify that the replacement power supply module has the same direction of airflow as the other modules in the same chassis. Otherwise the switch can overheat and shut down.
- Verify that the circuit breaker for the DC power source is turned off.

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**Step 1** Attach an ESD wrist strap or other ESD device to your body and an earth ground to prevent ESD damage.

You can attach the ESD device to any earth ground or grounded object, such as a grounded rack or ground connection on a chassis.

**Step 2** Verify that the DC power source is turned off at a circuit breaker.

**Step 3** Remove the DC power supply that needs to be replaced as follows:

- Turn off the circuit breaker for the power source to the power supply that you are replacing.  
Verify that the OK LED turns off.
- Unclip and remove the clear plastic cover that prevents access to the positive and negative terminals on the DC power supply.
- Unfasten the positive power cable from the right terminal.
- Unfasten the negative power cable from the left terminal.
- Replace the clear plastic cover that prevents access to the terminals.
- Press the thumb latch to disengage the power supply from the chassis and use the handle to pull it part way out of the chassis.
- Place your other hand under the power supply to support it while you slide it out of the chassis. Place the power supply on an antistatic surface.
- If the power supply bay is to remain empty, install a blank power supply filler panel (N2200-P-BLNK).

**Step 4** Install the replacement DC power supply as follows:

- Hold the replacement power supply by the handle and position it so that the thumb latch is on the right, and then slide it all the way into the power supply bay (the thumb latch will click), ensuring that the power supply is fully seated in the bay.
- If there is a clear plastic cover that prevents your access to the terminals, unclip it and remove it from the chassis.
- Fasten the negative cable to the left terminal.
- Fasten the positive cable to the right terminal.
- Clip the clear plastic cover over the terminals to prevent accidental touching of the terminals.
- Turn on the power at the circuit breaker.
- Verify the power supply operation by checking that the OK LED is green.

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## Replacing a High Voltage (HVAC/HVDC) Power Supply

You can replace an HVACHVDC power supply during operations so long as the other power supply provides power to the switch.

### Before you begin

- The replacement power supply must have the same wattage and airflow direction as the power supply being replaced.



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**Note** You can determine the airflow direction by looking at the coloring of the latch on each power supply. The high voltage power supplies have either burgundy or red latches for port-side intake airflow or they have blue latches for port-side exhaust airflow.

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- An HVAC/HVDC power source must be within reach of the power cable that will be used with the replacement power supply. If you are using  $n+n$  power redundancy, there must be a separate power source for each power supply installed in the chassis.
- There must be an earth ground connection to the chassis in which you are installing the replacement power supply. HVAC/HVDC power supplies connected to AC power sources are automatically grounded by their power cable when connected to the power supply and AC power source. HVAC/HVDC power supplies connected to DC power sources have Saf-D-Grid power cables with three connectors on the power source end--you connect one of those connectors to the earth ground.

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**Step 1** Remove an HVAC/HVDC power supply as follows:

- a) Turn off the circuit breaker for the power feed to the power supply that you are replacing.  
Be sure that the LEDs turn off on the power supply that you are removing.
- b) Remove the power cable from the power supply by pressing the tab on the top of the Anderson Power SAF-D-Grid connector and pull the cable and connector out of the power supply.
- c) Grasp the power supply handle while pressing the colored release latch towards the power supply handle.
- d) Place your other hand under the power supply to support it while you slide it out of the chassis.

**Caution** Do not touch the electrical connections on the back side of the module and prevent anything else from coming into contact with and damaging the connectors.

**Step 2** Install the replacement power supply as follows:

- a) Holding the replacement power supply with one hand underneath the module and the other hand holding the handle, turn the power supply so that its release latch is on the right side and align the back end of the power supply (the end with the electrical connections) to the open power supply slot before carefully sliding the power supply all the way into the slot until it clicks into place.

**Note** If the power supply does not fit into the open slot, turn the module over before sliding it carefully into the open slot.

- b) Test the installation by trying to pull the power supply out of the slot without using the release latch.

If the power supply does not move out of place, it is secured in the slot. If the power supply moves, carefully press it all the way into the slot until it clicks in place.

- c) Attach the Saf-D-Grid end of the power cable to the electrical outlet on the front of the power supply.
- d) Make sure that the other end of the power cable is attached to the appropriate power source for the power supply.
  - For an HVAC power source, plug the other end of the power cable into the power source.
  - For a HVDC power source, verify that the circuit breaker is turned off and then connect each of the three cable connectors to the appropriate DC and grounding terminals on the power source. If there is a cover plate for the DC terminals, install the plate to prevent accidental contact with the terminals.

- e) If using an HVDC power source, turn on the circuit breaker for the power source.
- f) Verify that the power supply is operational by making sure that the power supply LED is green.

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## Installing or Replacing a Line-Card Expansion Module (LEM)

The switch can operate with one or more Line-card Expansion Modules (LEMs) installed in the chassis. If there is at least one LEM installed and operating in the chassis, you can replace another LEM or install a new LEM in an empty slot.



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**Warning** **Statement 1029--Blank Faceplates and Cover Panels**

Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place.



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**Warning** **Statement 1034--Backplane Voltage**

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.



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**Warning** **Statement 1051--Laser Radiation**

Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

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**Before you begin**

- Wear electrostatic discharge (ESD) wrist strap or other ESD protective device while handling modules.
- Prepare an antistatic surface or packing materials for each module that you remove from the chassis.

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**Step 1** Open the packaging for the new LEM and inspect the module for damage.

For a damaged module, contact the Technical Assistance Center (TAC).

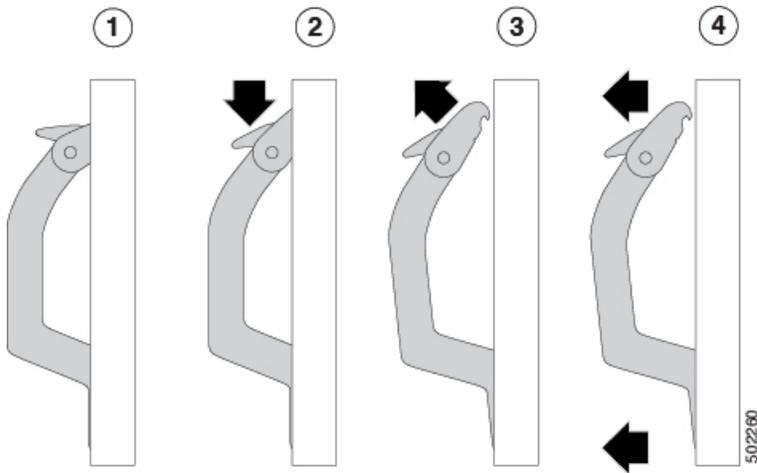
**Step 2** If you are installing the module in a slot with a blank module, remove the blank module (NXM-XBLNK) that is already in that slot.

**Step 3** If you are replacing a module that is currently in the chassis, remove the existing module from the chassis by following these steps:

**Note** Disconnect and label each of the interface cables from the module.

- a) Press the latch down, to release the latch from the chassis as shown in the following figure.
- b) Rotate the latch away from the module to disengage from the chassis as shown in the following figure.
- c) Holding the latch release lever handle, pull the module out of the chassis as shown in the following figure.

**Figure 1: Line-Card Expansion Module Latch Release Lever**



1	The module with a fully engaged release lever.	2	Press the latch down to release the latch from the chassis.
3	Rotate the latch away from the module to disengage from the chassis.	4	Pull the module out of the chassis.

**Step 4** To install the module, follow these steps:

- a) Hold the module with one hand and place your other hand under the module to support its weight
- b) Align the module with the open slot and gently slide the module into the slot until it clicks into place.

**Note** Attach each interface cable to the appropriate port on the module. Use the label on each cable to determine to which port each cable attaches.

## Replacing a CPU Module

Power down the switch and unplug it before replacing the CPU module.



**Warning** **Statement 1034--Backplane Voltage**

Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

**Before you begin**

- Wear electrostatic discharge (ESD) wrist strap or other ESD protective device while handling the module.
- Prepare an antistatic surface or packing materials for the module that you remove from the chassis.

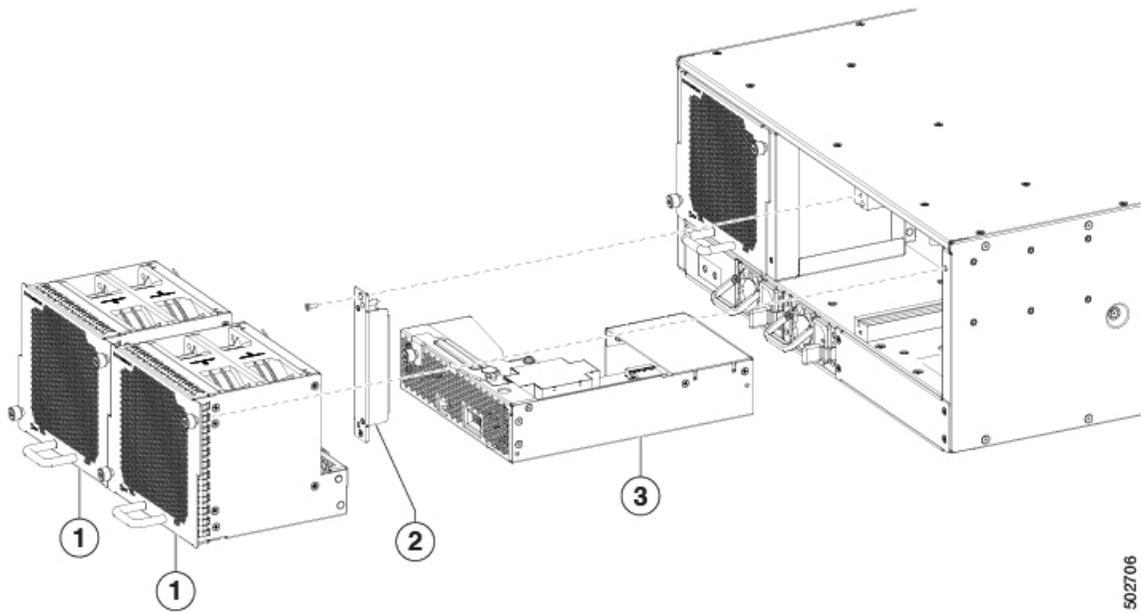
**Step 1** Open the packaging for the new CPU module and inspect the module for damage.

For a damaged module, contact the Technical Assistance Center (TAC).

**Step 2** To remove the module follow these steps:

- Loosen the thumb screws that attach the fans to the chassis and remove two of the fan modules as shown in the following figure.
- Remove the screws (2) that attach the fan divider to the chassis and remove the fan divider as shown in the following figure.
- Carefully remove the CPU module as shown in the following figure.

**Figure 2: CPU Module Replacement**



1	Fan modules.	2	Fan divider.
3	CPU modules.		

**Step 3** To install the module, follow these steps:

- Hold the module with one hand and place your other hand under the module to support its weight.
- Align the module with the open slot and gently slide the module into the slot until it clicks into place.
- Install the fan divider and secure it with the screws (2).

d) Install the fan modules and tightening the thumb screws.

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