

Replace Chassis Components

Before you begin this task, ensure that you have read and understood the safety warnings in the Safety with Electricity section of the Safety Warnings handout topic.

- Replace Fan Modules and Fan Trays, on page 1
- Replace Power Supply, on page 5
- Replace a Route Processor Card, on page 11
- Installing and Removing Modular Port Adapters, on page 13

Replace Fan Modules and Fan Trays

Caution (NCS-57B1 and NCS-57C3-MOD) If you cannot replace a fan module or fan tray within three minutes, we recommend that you leave it in the chassis until you are prepared to replace it within that specified time limit.

Caution (NCS-57C1) If you cannot replace a fan module within five minutes, we recommend that you leave it in the chassis until you are prepared to replace it within that specified time limit.

Note If you remove more than one fan module or fan tray at a time during operations, the router allows up to 2 minutes of operations before shutting down, unless you replace extra missing fan modules or fan trays within that time. If the router senses an over temperature condition when multiple fan modules or fan trays are removed, the shutdown can occur in less than 2 minutes.

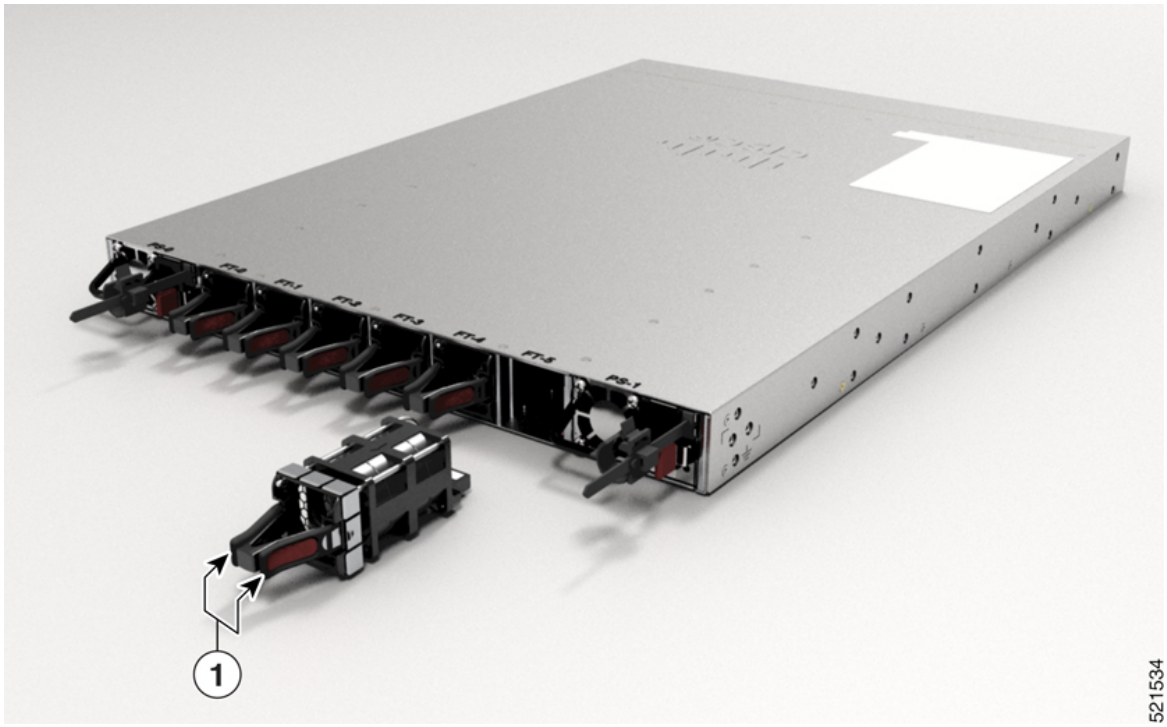
Procedure

Step 1 For NCS-57B1/NCS-57C1/NCS-57D2 routers, do the following:

a) Press both the latches on the fan module to disengage the fan module connection from the chassis.

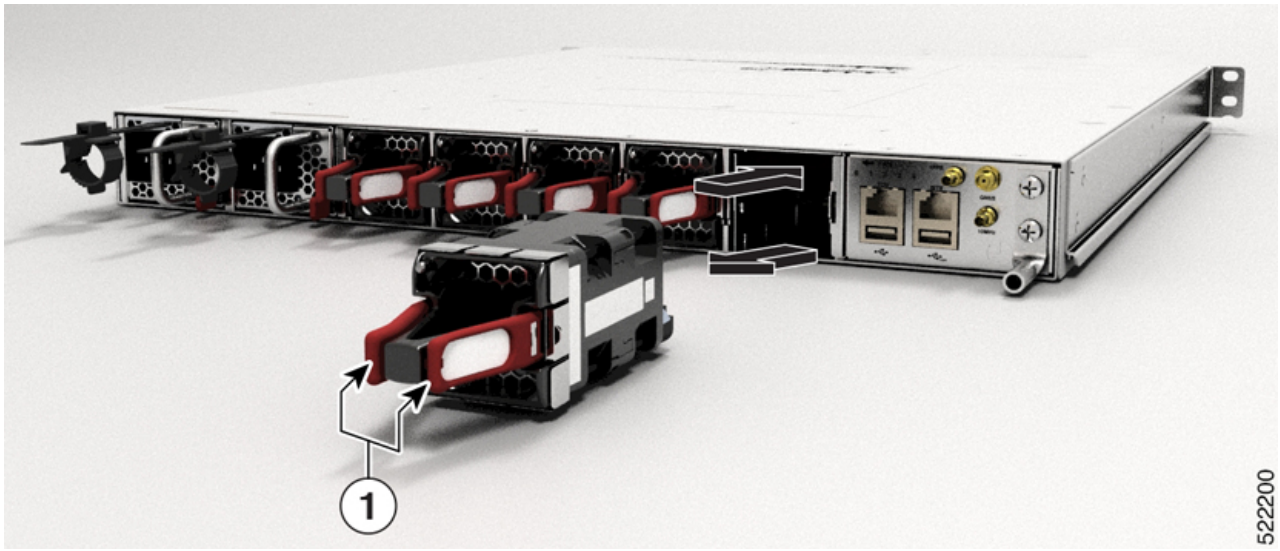
b) Simultaneously press the latches, and pull the fan module fully out of the chassis.

Figure 1: Remove Fan Module from the NCS 57B1 Chassis



1	Latched fan module

Figure 2: Remove Fan Module from the NCS-57C1 Chassis

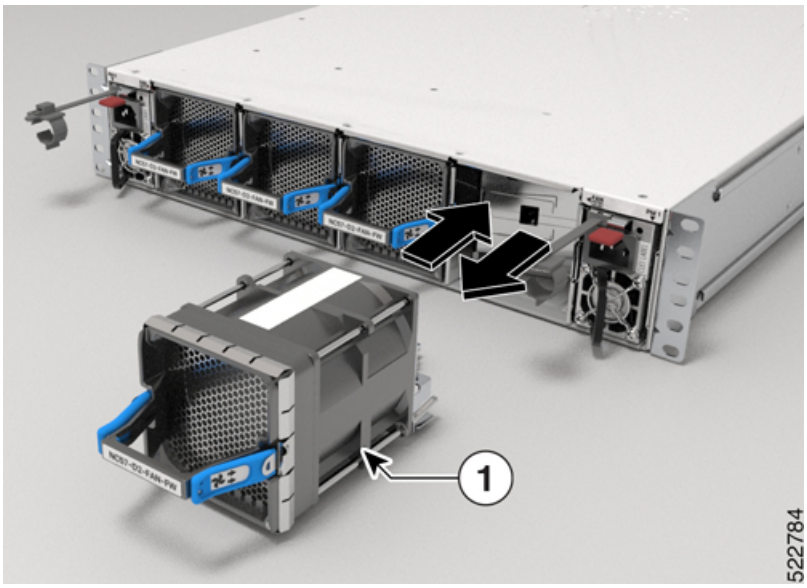


1	Latched fan module

Note

The NCS-57C1 chassis fan modules are FAN-1RU-PI-V2 for front-to-back airflow and FAN-1RU-PE-V2 for back-to-front airflow.

Figure 3: Remove Fan Module from the NCS-57D2 Chassis



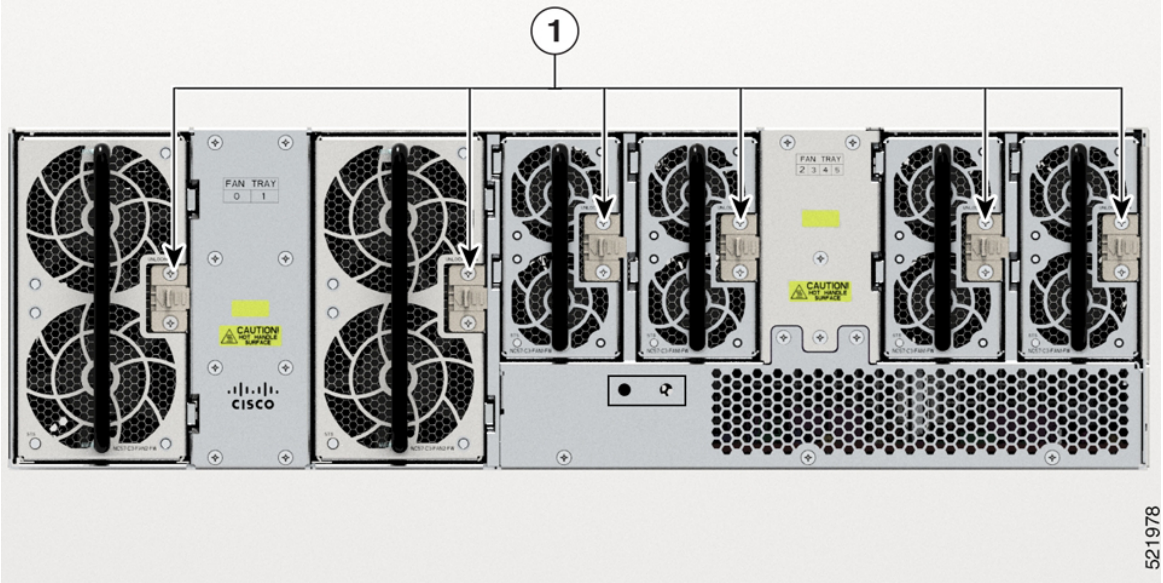
1	Latched fan module

Note
The NCS-57D2 chassis fan modules are NC57-D2-FAN-FW for front-to-back airflow and NC57-D2-FAN-RV for back-to-front airflow.

Step 2 For NCS-57C3-MOD routers, do the following:

a) Press the latch on the right side of the fan tray to disengage the fan tray connection from the chassis.
b) Simultaneously press the latch and pull the fan tray fully out of the chassis.

Figure 4: Remove Fan Tray from the NCS-57C3-MOD Chassis



1	Fan tray latch

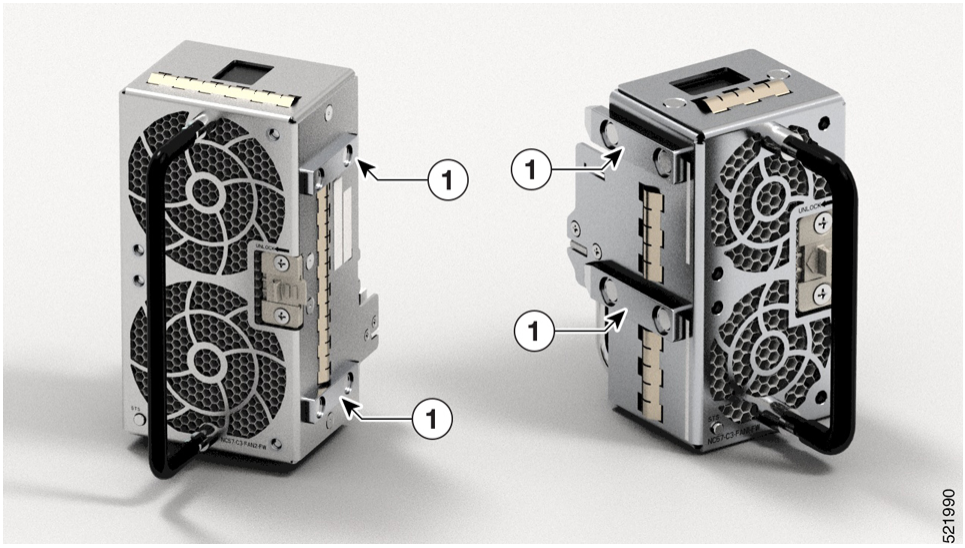
Step 3 For NCS-57B1 and NCS-57C1 fan modules, hold the fan module with the LED and PID label at the top.

Step 4 For NCS-57C3-MOD fan trays, hold the fan tray with the latch on the right.

Step 5 Align the fan module or fan tray to the open fan slot in the chassis and press the module all the way into the slot until the latches click and lock on the chassis.

Note
On the NCS-57C3-MOD, the 2x60mm fan trays (NC57-C3-FAN2-FW/NC57-C3-FAN2-HX) have alignments guides along the right side of the tray; the 2x40mm fan trays (NC57-C3-FAN1-FW/NC57-C3-FAN1-HX) have alignments guides along the left side of the tray.

Figure 5: Alignment Guides



1	Fan tray alignment guides

Step 6 If the chassis is powered on, listen for the fans. You should immediately hear them in operation. If you do not hear them, ensure that the fan module is inserted completely in the chassis.

Step 7 Verify that the fan module LED is green. If the LED is not green, one or more fans are faulty.

Note
After installation, we recommend that you move the fan handles to the right side so that the fan module LED is visible.

Replace Power Supply

The router provides the choice of two different power supplies:

- DC power—The DC power supply uses 2-position terminal block-style connector with positive latching/securing and labeled connections for +24/48V, GRD, -24/48V. The terminal block connector is of suitable size to carry the appropriate AWG wire size to handle the input current of the power supply. No ON/OFF switch is provided.
- AC power—The AC power supply has an IEC 320-type power receptacle and a 15 Amp service connector. You can use standard right angle power cords with the AC power supply. The power supply includes a power cord retainer. No ON/OFF switch is provided.

You can install dual power supplies for redundancy.

Caution In low-line applications (90-140V AC), redundancy is not guaranteed. Therefore, we recommend to use both AC and DC power supplies.

Note Products that have an AC power connection are required to have an external SPD provided as part of the building installation to comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety.

Caution Do not use interface module and power supply ejector handles to lift the chassis; using the handles to lift the chassis can deform or damage the handles.

Note In case of port-side exhaust configuration, to replace the power supply unit (PSU) in the router with air filters, you must first remove the air filter and then the PSU.

Note In NCS-57D2 routers, while installing or removing the PSU, exercise caution so that the PSU does not touch the grounding lug.

Remove the DC Power Supply Module

This section provides information about removing and replacing the DC power supply.

Warning **Statement 1003—**DC Power Disconnection

To reduce risk of electric shock or personal injury, disconnect DC power before removing or replacing components or performing upgrades.

Follow these steps to remove and replace the DC power supply:

Procedure

Step 1 Before servicing the power supply, switch off the circuit breaker in your equipment area. As an additional precaution, tape the circuit-breaker switch in the Off position.

Step 2 Slip on the ESD-preventive wrist strap that was included in the accessory kit.

Step 3 Switch the power supply circuit-breaker switch to the Off (O) position.

Step 4 Pull the terminal block plug connector out of the terminal block head in the power supply. See the following figure.

Step 5 Grasp the power supply handle. Simultaneously press the power supply locking tab towards the left and pull the power supply out from the chassis while supporting it with the other hand.

Install the DC Power Supply Module

This equipment is suitable for installation in Network Telecommunications Facilities and locations where the NEC applies.

This equipment is suitable for installations utilizing the Common Bonding Network (CBN).

The grounding architecture of this product is DC-Isolated (DC-I) for DC-powered products. DC-powered products have a nominal operating DC voltage of 48 VDC.

Perform the following procedure to install the power supply module:

Procedure

Step 1 Ensure that the system (earth) ground connection has been made.

Step 2 If necessary, remove the blank power supply filler plate from the chassis power supply slot. .

Step 3 Verify that power to the DC circuit connected to the power supply you are installing is off. To ensure that power has been removed from the DC circuits, locate the circuit breakers for the DC circuits, switch the circuit breakers to the OFF position, and tape the circuit-breaker switches in the OFF position.

Step 4 Grasp the power supply handle with one hand. Place your other hand underneath the power supply.

Step 5 Slide the power supply into the power supply slot. Make sure that the power supply is fully seated in the slot and that the locking tab locks with the chassis.

Figure 6: Install DC Power Supply Module

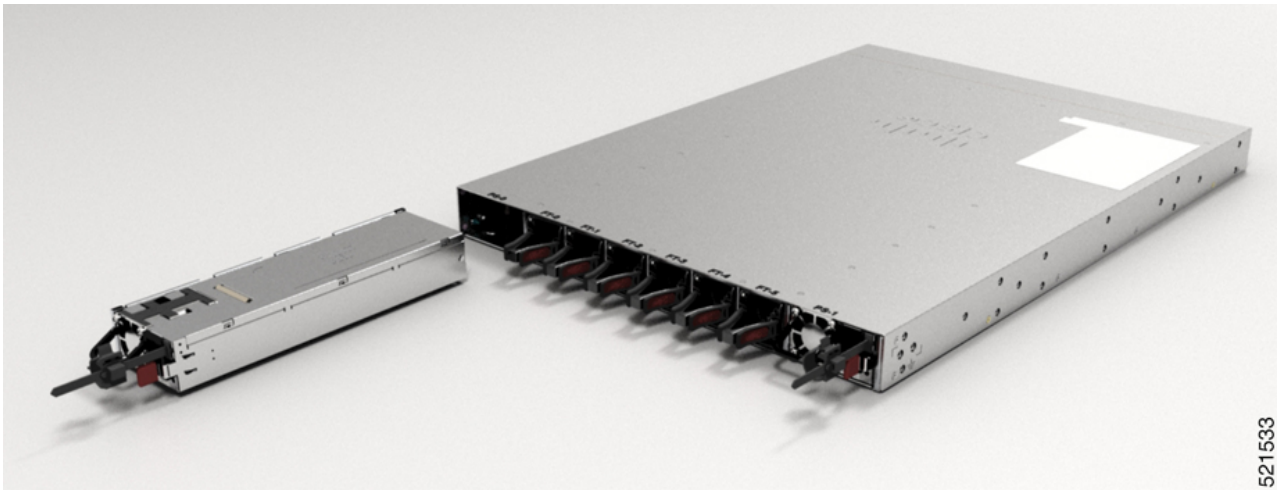


Figure 7: NCS-57C1 - Install DC Power Supply Module

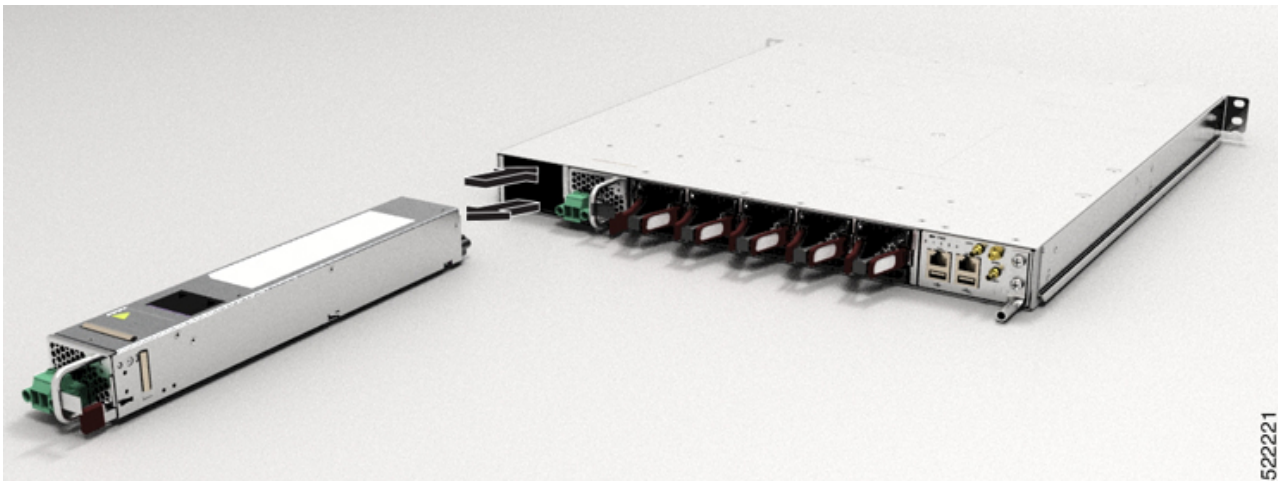
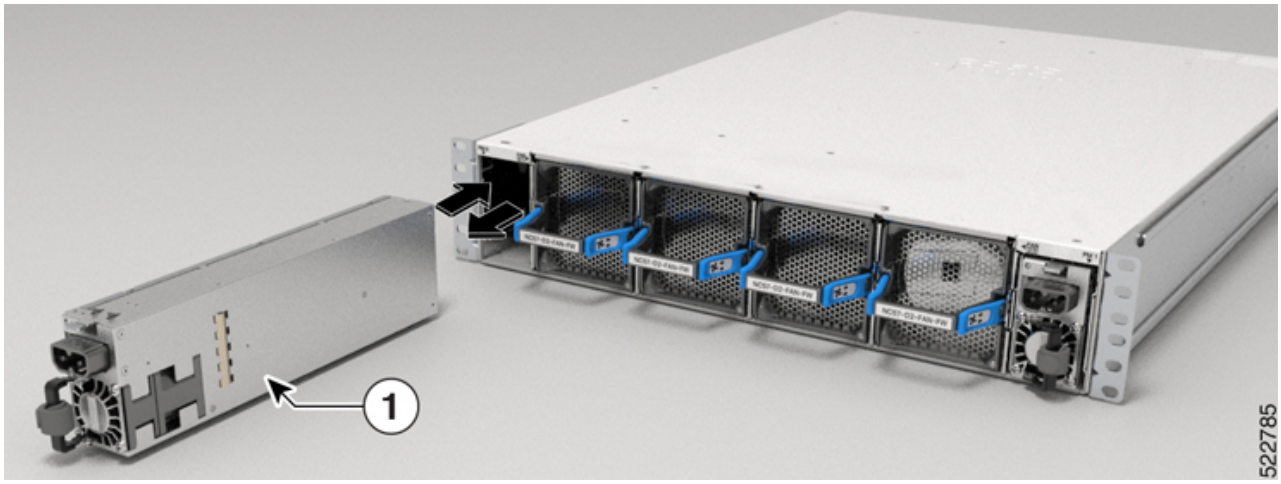


Figure 8: NCS-57D2 - Install DC Power Supply Module



1	DC power supply unit

Remove the AC Power Supply Module

This section describes how to remove and replace the AC power supply.

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.

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.

Follow these steps to remove and replace the AC power supply:

Procedure

Step 1 Disconnect the power cord from the power source. Do not touch any metal on the power cord when it is still connected to the power supply.

Step 2 Loosen the tie and remove the power cord from the tie-and holder.

Step 3 Remove the power cord from the power connection on the power supply. Do not touch the metal prongs embedded in the power supply.

Step 4 Grasp the power supply handle. Simultaneously press the power supply lock towards the left and pull the power supply out from the chassis while supporting it with the other hand.

Install the AC Power Supply Module

Follow these steps to install the AC power supply module:

Procedure

Step 1 Ensure that the system (earth) ground connection has been made.

Step 2 If necessary, remove the blank power supply filler plate from the chassis power supply slot opening by loosening the captive installation screws.

Step 3 Grasp the power supply handle with one hand. Place your other hand underneath the power supply. Slide the power supply into the power supply slot. Make sure that the power supply is fully seated in the slot. See the following figure.

Figure 9: NCS-57B1 - Install AC Power Supply Module

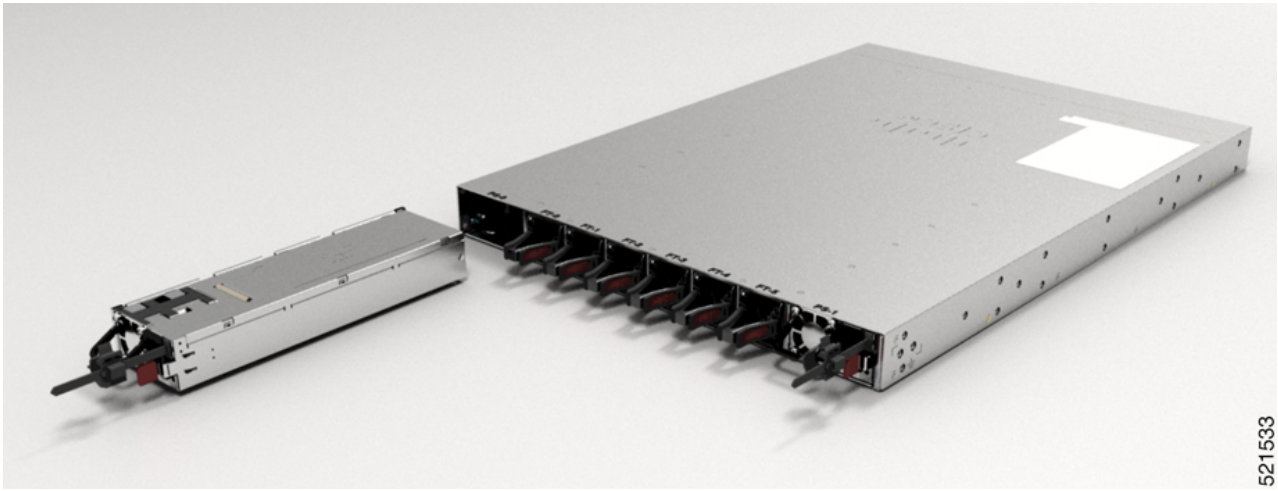


Figure 10: NCS-57C1 - Install AC Power Supply Module

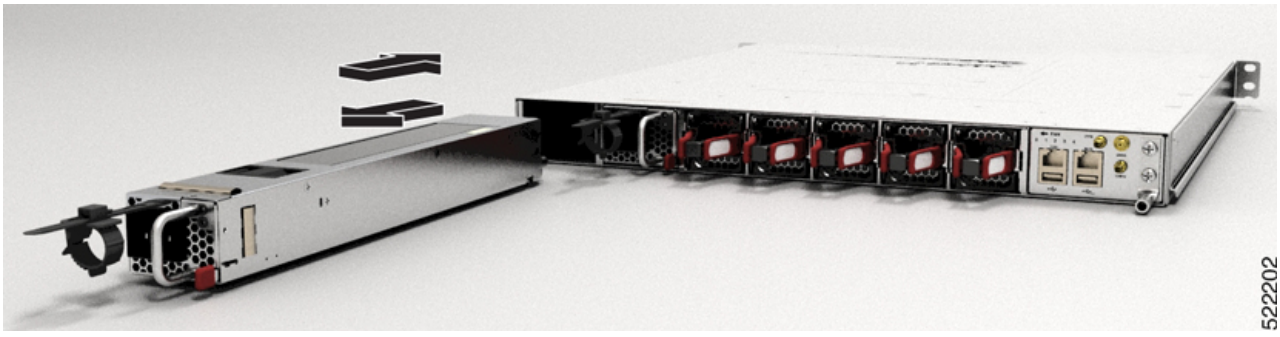


Figure 11: NCS-57C3-MOD - Install AC Power Supply Module

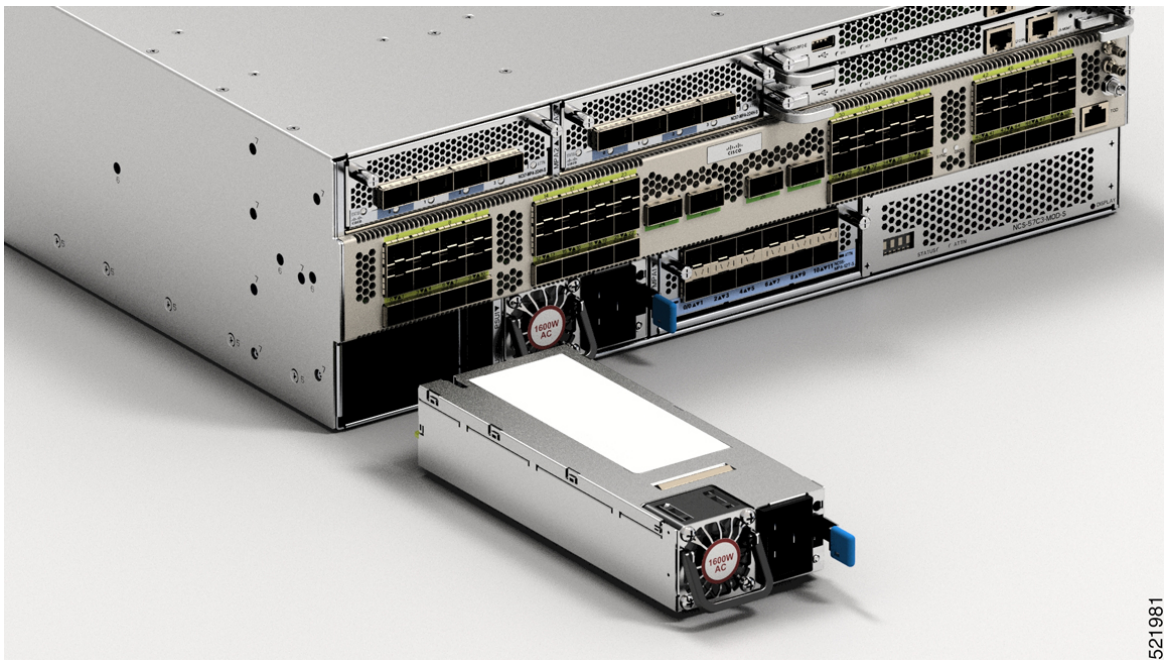
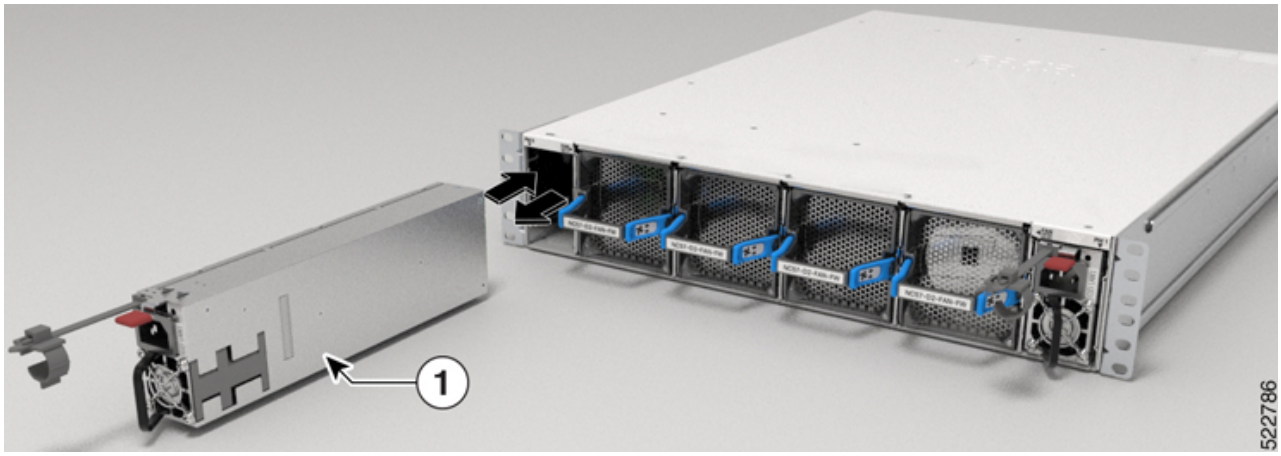


Figure 12: NCS-57D2 - Install AC Power Supply Module



1	AC power supply unit

Step 4 Slide the AC power supply cord inside the tie of the tie-and-holder and tighten the tie around the power supply cord.

Step 5 Plug the power supply cord into the AC power supply.

Replace a Route Processor Card

The NCS-57C3-MOD router supports up to two redundant route processor (RP) cards. When two RP cards are installed in the router, one acts as an active card and the other as the standby card. When the active RP card is removed, the router automatically makes the standby RP card active and the card that you are removing, the standby RP. If the router has only one RP card installed, a new RP can be installed in the empty RP slot during operation.

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

Blank faceplates and cover panels serve three important functions: they reduce the risk of electric shock and fire, 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.

Note Before replacing the card, you must perform a graceful shutdown of the card to avoid disk corruption.

Procedure

Step 1 Open the packaging for the new RP card, inspect the card for damage, and verify that the card is the same type as the other RP card installed in the chassis.

If the card is damaged, alert the Technical Assistance Center (TAC).

Step 2 If you are installing the card in an empty slot, remove the blank card that is already in that slot by unscrewing its captive screw and pulling it out of the slot. Go to Step 4.

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

a) Disconnect the following cables from the card:

- Console cable
- Ethernet Management cable

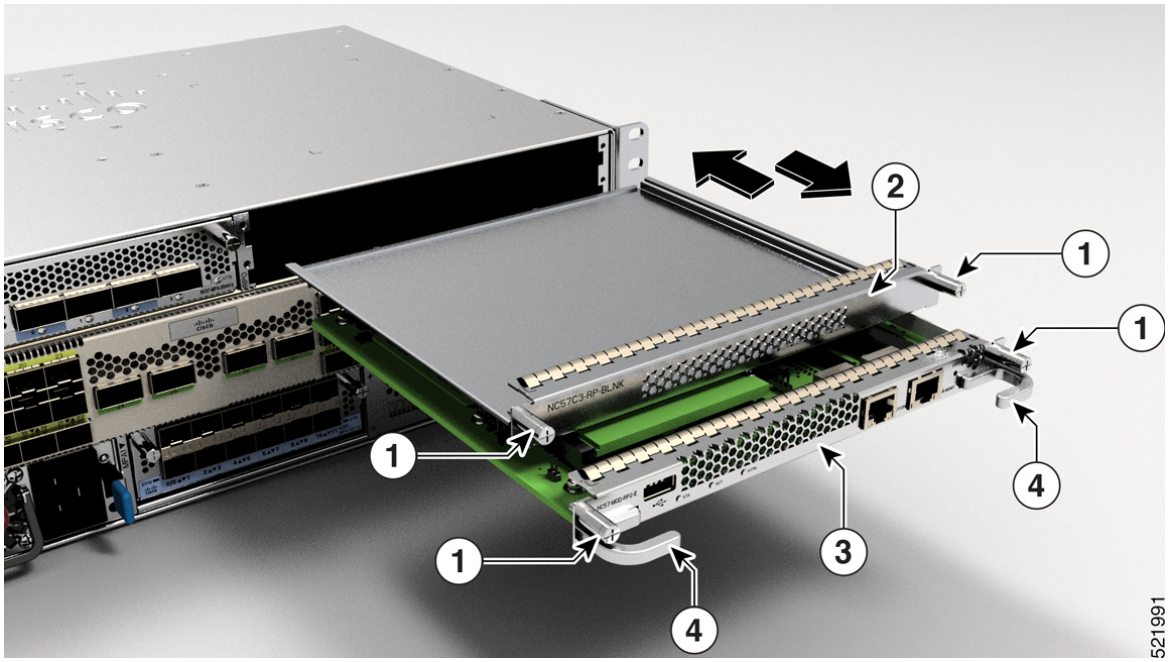
b) If there are any external drives attached to the card through its USB ports, detach those drives.

c) Run the **hw-module location** <*loc*> **shutdown** command in admin EXEC mode, which gracefully shuts down RP module to prevent any of the file systems from being corrupted.

d) Verify that the RP LED for the slot that you specified turns off. Also, you can verify that the card is in powered off state running the **show platform** command to verify the status of the card to be POWERED_OFF.

e) Use a number 2 Phillips screwdriver to loosen the captive screws on either side of the RP.

Figure 13: Remove RP and Blank from Chassis



1	Captive screws	2	Blank card
3	Route Processor	4	RP handles

f) Use one hand to hold the front of the card, place your other hand under the card to support its weight, pull the card out of the chassis, and set it on an antistatic surface or inside an antistatic bag.

Step 4 To install a new card, follow these steps:

a) Hold the front of the card with one hand and place your other hand under the card to support its weight.

b) Align the back of the card to the guides in the open route processor slot and slide the card all the way into the slot.

c) Screw in the two captive screws to secure the card to the chassis. Tighten the screws to 8 in-lb (0.9 N·m) of torque.

d) Attach the following cables to the card:

- Console cable—Attach to the Console port.
- Management cable—Attach to the Management Ethernet port.

e) Verify that the route processor card LEDs turn on and appear as follows:

- The STATUS LED blinks in amber color, then turns to solid amber color, and later turns to green color.
- The Active (ACT) LED is amber or green.

Installing and Removing Modular Port Adapters

The following sections describe how to install or remove an MPA on the NCS-57C3 routers.

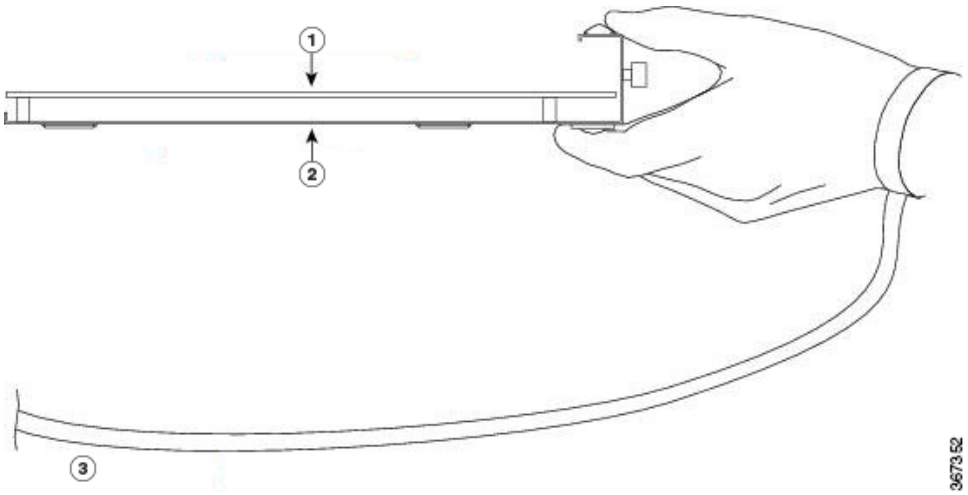
Handling Modular Port Adapters

Each modular port adapter (MPA) circuit board is mounted to a metal carrier and is sensitive to electrostatic discharge (ESD) damage.

Caution Always handle the MPA by the carrier edges; never touch the MPA components or connector pins (See the figure below).

When a MPA slot is not in use, a blank MPA Slot Filler must fill the empty slot to allow the router to conform to electromagnetic interference (EMI) emissions requirements and to allow proper airflow across the installed modules. If you plan to install a MPA in a slot that is not in use, you must first remove the blank.

Figure 14: Handling a Modular Port Adapter



1	Printed Circuit Board	2	Metal Carrier
3	ESD Strap		

Online Insertion and Removal

Cisco NCS 5700 series modular port adapters (MPAs) support online insertion and removal (OIR).

Modular port adapters (MPAs) support the following types of OIR:

- Soft OIR

Soft OIR uses the IOS XR **hw-module subslot** *rack/slot/subslot* **reload**, **hw-module subslot** *rack/slot/subslot* **shutdown**, and **no hw-module subslot** *rack/slot/subslot* **shutdown** commands to complete online insertion and removal.

- Managed OIR

  A managed online insertion and removal of Modular port adapters (MPAs) is comprised of the following steps:

  - Shut down the MPA with the **hw-module subslot** *rack/slot/subslot* **shutdown** command.
  - Confirm that the LEDs have gone from green to off.
  - Execute the **do show platform** command to verify that the MPA to be removed is in the disabled state.
  - Physically remove the MPA to be replaced.
  - Physically insert the replacement MPA. After inserting the MPA in the slot, tighten the MPA screw located on the right side within 10 seconds. Ensure that you first tighten the right screw and then the left.

Note Tighten the captive screws on the MPA within 10 seconds. Otherwise, the MPA shuts down and moves to **Disabled** state. To recover the MPA, tighten both the captive screws and then execute the **hw-module subslot** *rack/slot/subslot* **reload** command.

  - Return the MPA to the up state with the **no hw-module subslot** *rack/slot/subslot* **shutdown** command.

- Hard OIR

  You can perform the OIR in a running system by performing the following steps, without executing any commands:

  - Loosen the right ejector screw.
  - Loosen the left ejector screw.
  - Remove and replace the MPA.

Modular Port Adapter Installation and Removal

This section provides step-by-step instructions for removing and installing a modular port adapter (MPA) in a Cisco NCS-57C3 routers.

Note After you unscrew both ejector screws, wait for 15 seconds before removing MPA from the slot.

Note After you remove the MPA from the slot, wait for 60 seconds before you reinsert the MPA. From Cisco IOS XR Software Release 26.3.1 onward, the MPA can be replaced immediately without any delay.

To remove and install a MPA, do the following:

1. To insert the MPA, locate the guide rails inside the chassis that hold the MPA in place. They are at the bottom left and bottom right of the MPA slot and are recessed about an inch.
2. Carefully slide the MPA all the way in the chassis until the MPA is firmly seated in the MPA interface connector. When fully seated, the MPA might be slightly behind the faceplate.

Note The MPA will slide easily into the slot if it is properly aligned on the tracks. If the MPA does not slide easily, do NOT force it. Remove the MPA and reposition it, paying close attention to engaging it on the tracks. Push the MPA inside the slot until you hear a click. Continue to push the MPA further until you hear a second click. The MPA is fully seated only after the second click is heard.

3. After the MPA is properly seated, use a number 2 Phillips screwdriver to tighten the captive screws on the MPA. Ensure that you first tighten the right screw and then the left.

Note Tighten the captive screws on the MPA within 10 seconds. Otherwise, the MPA shuts down and moves to **Disabled** state. To recover the MPA, tighten both the captive screws and then execute the **hw-module subslot** *rack/slot/subslot* **reload** command.

Note Avoid over torquing the MPA captive screws when installing the MPA. Tighten the captive screws on the MPA to a torque of 5 inch-pound.

4. To remove the MPA from the chassis, use a number 2 Phillips screwdriver to loosen the captive screws on the MPA. Ensure that you first loosen the right screw and then the left.
5. Grasp the MPA and pull the MPA from the chassis. (You have already disconnected the cables from the MPA.)