



Installing the Power Enclosure, Power Trays, and Exterior Cosmetics

This chapter provides instructions on installing the Cisco NCS 6000 Fabric Card Chassis power enclosure, power trays, and exterior cosmetics.

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- [Installing the Power Trays, page 4](#)
- [Installing the Exterior Cosmetics, page 8](#)

About the Power Enclosure

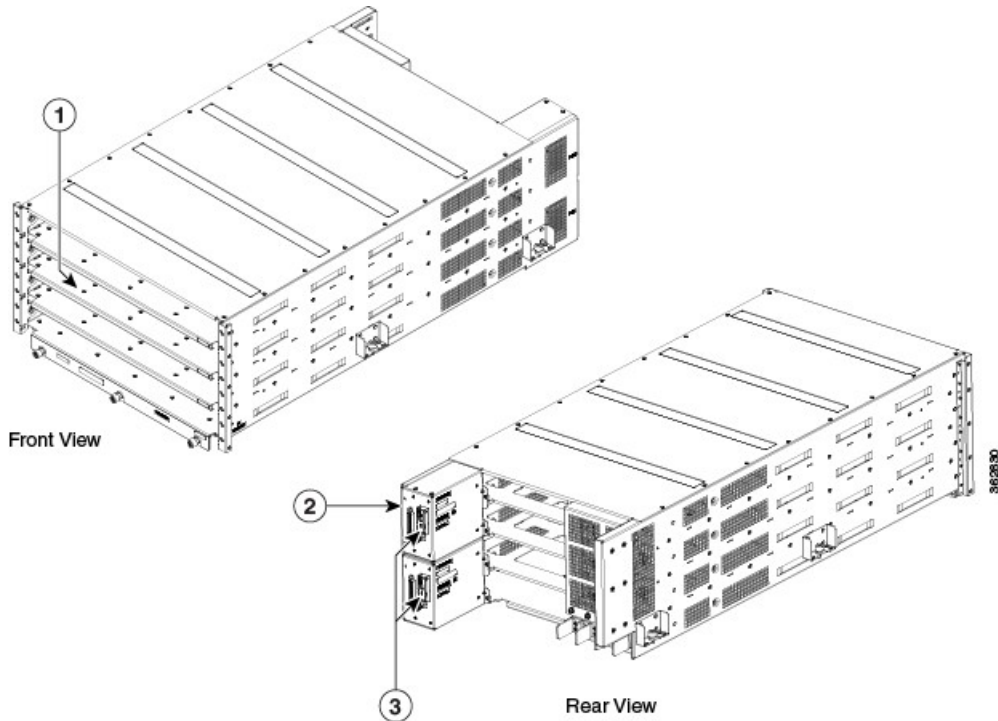
The Cisco NCS 6000 FCC ships with a separate empty power enclosure (Cisco PID NCS-F-PWR-SHELF). The power enclosure consists of one power shelf, four slots for AC or DC power trays, and two power control modules (PCMs).

The upper two power trays (PT0 and PT1) are referred to as power shelf 0 (PS0), and the lower two power trays (PT2 and PT3) are referred to as power shelf 1 (PS1) [Figure 3](#). Each set of power trays has a power control module (PCM) with its own I/O power switch. Three AC power modules or four DC power modules can be installed in each power tray. See the [Installing an AC or DC Power Module](#) section.

**Note**

Usually, it is not necessary to remove the power enclosure although it is field-serviceable. For information about removing the power enclosure components, see the [Replacing an AC or DC Power Tray](#) section.

Figure 1: FCC Power Enclosure—Front and Rear Views



1	Four power tray slots for AC or DC power trays	3	PCM I/O power switches (one per PCM)
2	Two PCMs		

Installing the Power Enclosure

This section describes how to install the power enclosure in the Cisco NCS 6000 FCC.

Required Tools and Equipment

- 6-inch, Number-2 Phillips screwdriver
- Power enclosure (Cisco PID NCS-F-PWR-SHELF)

**Note**

The power enclosure weighs approximately 30 pounds and sits on top of the FCC. To prevent injury, we recommend that you use a ladder and use two people when installing the power shelf.

Steps

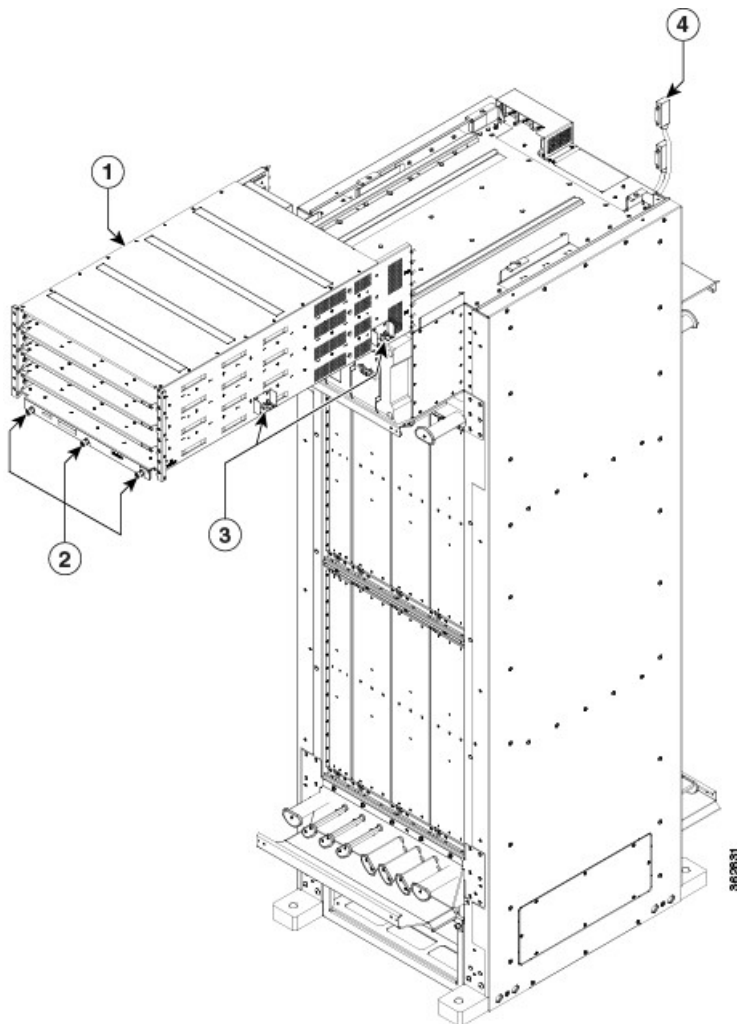
Follow these steps to attach the power enclosure to the FCC:

Step 1

Lift and place the power enclosure (busbar facing back) at the top of the FCC.

Caution Handle the power shelf by lifting it at the sides and along the bottom of the shelf when installing it into the FCC. Avoid lifting the shelf from the center bottom.

Figure 2: Attaching the Power Enclosure to the FCC



1	Power enclosure	3	Side captive screws (two per side)
2	Three front captive screws	4	D-Sub connector cables (one per PCM)

- Step 2** Position and align the two rails on each side of the underside of the power enclosure with the two rails at the top of the FCC. When the shelf is aligned properly, it will easily slide in place.
- Step 3** Slowly push the power enclosure forward until the front flange with the three captive screws engages with the front of the FCC.
- Step 4** Loosely tighten the captive screws (two per side) on the power enclosure, and then loosely tighten the three captive screws on the front flange.
- Step 5** Repeat Step 4, tightening all captive screws to firmly attach the power enclosure to the FCC.
- Step 6** Attach the two D-Sub connector cables to the two PCM connectors on back of the power enclosure and tighten the captive screws on each cable connector. The individual PCMs are labeled PCM0 and PCM1.
- Step 7** Tighten the captive screws on each cable connector.

Installing the Power Trays

This section describes how to install an AC or DC power tray in the power enclosure and includes the following topics:



Note Although there are differences between AC and DC power trays, they are installed by using the same procedures described in this section. Once they are installed into an FCC that is properly grounded, external grounding to the power tray is not needed.

About the AC and DC Power Trays

The Cisco NCS 6000 FCC power enclosure supports either four AC power trays or four DC power trays. An AC power tray houses up to three AC power modules, while a DC power tray houses up to four DC power modules. See the [Installing an AC or DC Power Module](#) section.



Note Only one type of power tray can be installed in the power enclosure. You cannot mix AC and DC power trays.

**Note**

For a DC power tray, the rear input LED starts to light up when the input voltage reaches -20 VDC, gets brighter as the voltage increases, and is fully lit when the input voltage reaches -48 VDC.

Figure 3: AC Power Tray—Front View

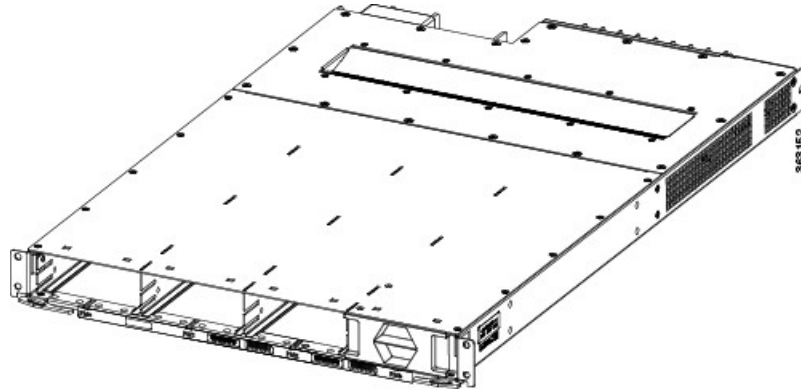


Figure 4: AC Power Tray—Rear View (Clear Plastic Safety Cover Removed)

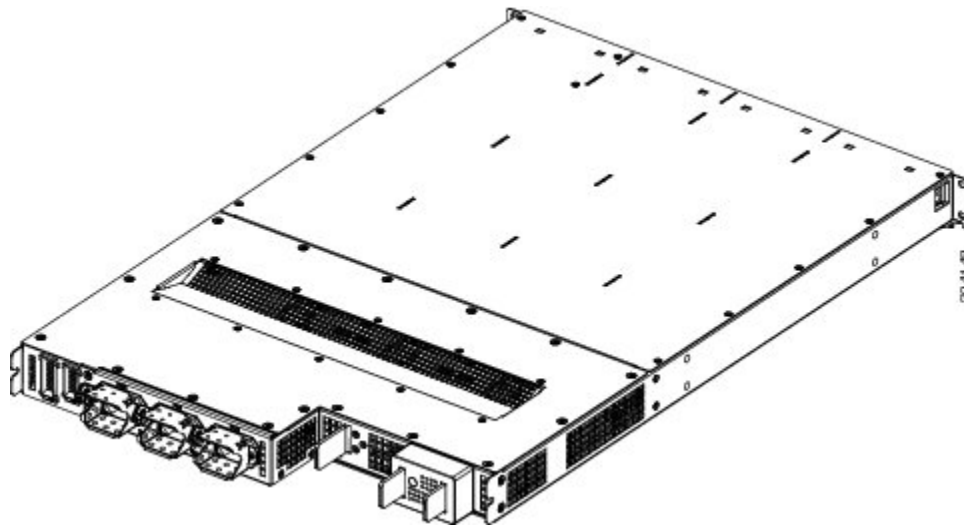


Figure 5: DC Power Tray—Front View

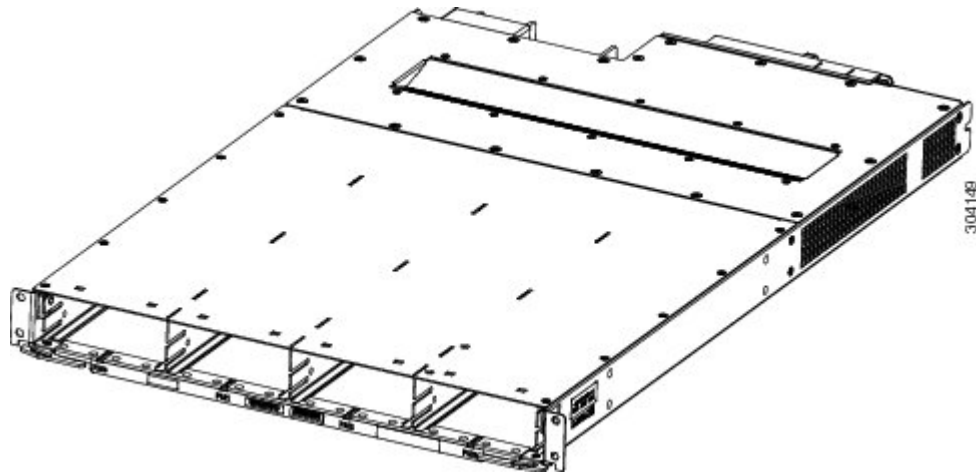
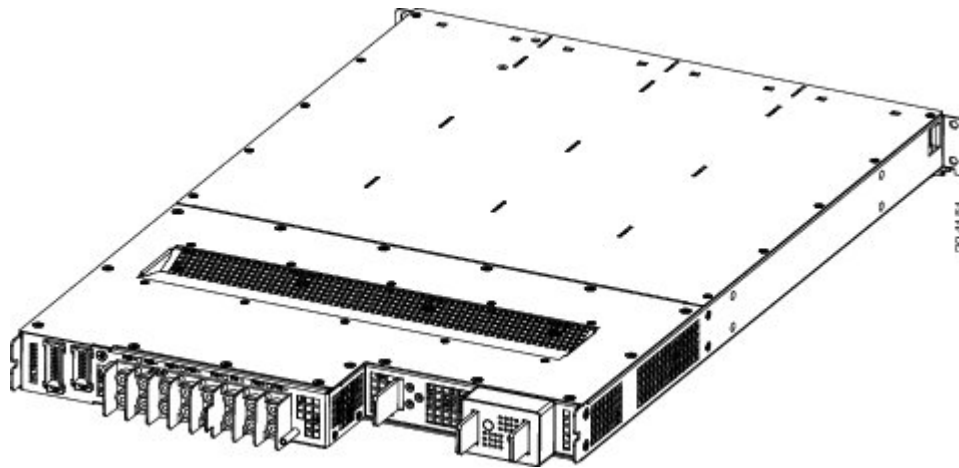


Figure 6: DC Power Tray—Rear View (Clear Plastic Safety Cover Removed)



Installing an AC or DC Power Tray

This section describes how to install an AC or DC power tray in the Cisco NCS 6000 FCC.



Note

For information about removing a power tray, see the [Replacing an AC or DC Power Tray](#) section.

Prerequisites

Before you install an AC or DC power tray, do the following:

- Remove the top grilles from both the front and rear sides of the FCC, if installed.
- Ensure the power tray you are about to install is empty. Do not install a power tray into the FCC with the PMs installed in the power tray.

Required Tools and Equipment

- Four M4 x 10 mm screws per power tray
- 6-inch, Number-2 Phillips screwdriver
- Number-2 Phillips torque screwdriver with torque rated up to 55 in-lb (6.2 N-m)
- AC or DC power tray
 - AC power tray (Cisco PID NCS-AC-PWRTRAY)
 - DC power tray (Cisco PID NCS-DC-PWRTRAY)

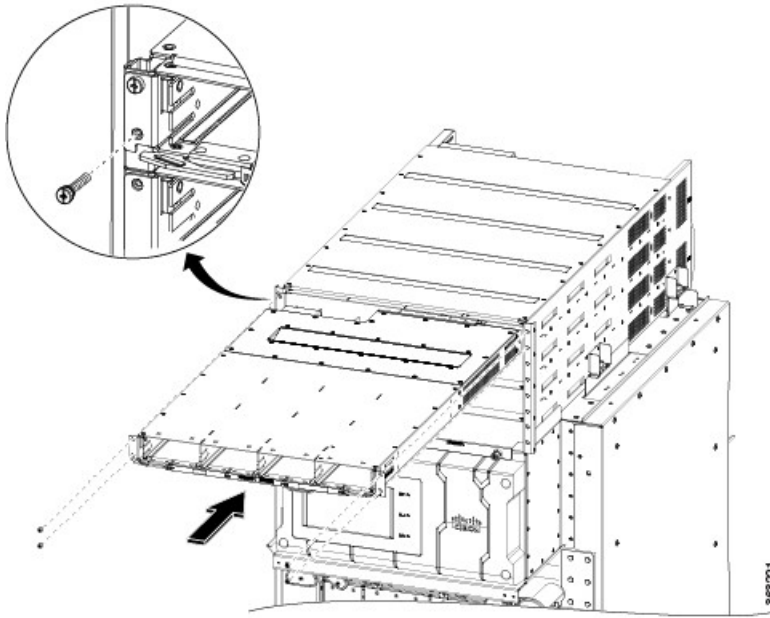
Steps

To install an AC or DC power tray, follow these steps:

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- Step 1** Using two people, one to support the power tray underneath and the other to keep it steady, lift the power tray up and slide it partially into a power tray slot on the power enclosure.
- Caution** Because of the weight of a power tray, 20 lb (9 kg), and the height at which a power tray is installed in the FCC, be especially careful while removing and carrying a power tray. To prevent injury, avoid sudden twists or lateral moves.
- Step 2** Grasping both handles simultaneously, push both the left and right handles in at the same time to push the tray into the power enclosure. Slide the tray all the way into the enclosure until both power tray handles engage the slots.

Caution Use care not to bend the handles.

Figure 7: Installing a Power Tray into the Power Enclosure—DC Power Tray Shown



Step 3 Use the screwdriver to loosely tighten the four M4 x 10 mm screws that attach the power tray to the power enclosure.

Step 4 Use the torque screwdriver to tighten the four screws to a torque value of 15 in-lb (1.69 N-m) to 20 in-lb (2.26 N-m).

Note The screws that attach a power tray to the power shelf are relied upon for power tray bonding and grounding.

Installing the Exterior Cosmetics

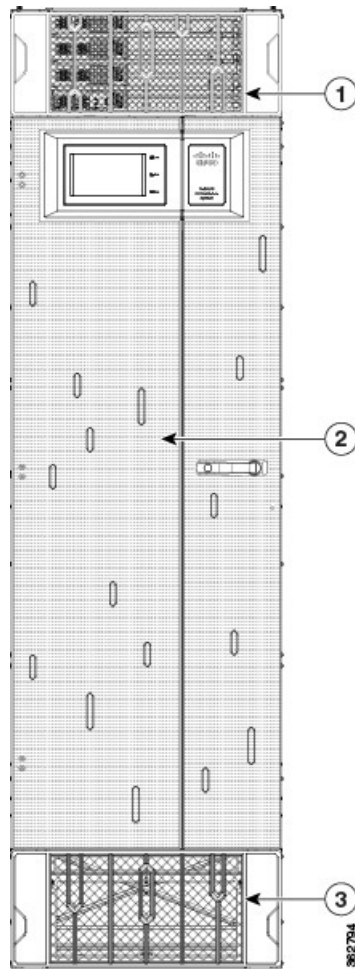
This section describes how to install the exterior cosmetics on the Cisco NCS 6000 FCC and includes the following topics:

For information about removing the external cosmetics, see the [Removing the Exterior Cosmetics](#) section.

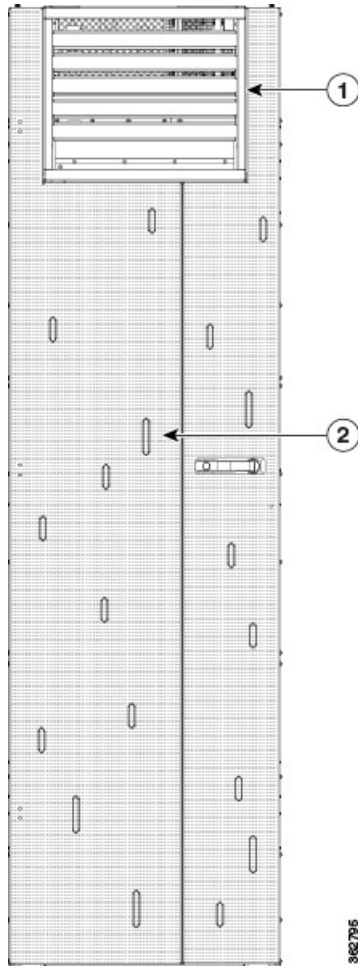
Overview of the Exterior Cosmetics

The Cisco NCS 6000 FCC is shipped with exterior cosmetics for the front side and rear side of the FCC.

Figure 8: Exterior Cosmetics—Front Side of the FCC



1	Top grille	3	Bottom grille
2	Front door		

Figure 9: Exterior Cosmetics—Rear Side of the FCC

1	Rear exhaust air deflector
2	Rear door

Installing the Front Exterior Cosmetics

This section describes how to install the front side exterior cosmetics on the Cisco NCS 6000 FCC. We recommend that you install the exterior cosmetics in the order outlined in this section.



Note

Before performing these tasks, you must first unpack and secure the chassis. See the [Cisco Network Convergence System 6000 Series Routers Unpacking, Moving, and Securing Guide](#).

Prerequisites

[Installing the Power Enclosure](#) , on page 2

Required Tools and Equipment

- 8-inch, Number-1 Phillips screwdriver (magnetic head preferable)
- Two vertical cable troughs (left and right troughs are interchangeable)
- Three door hinges
- Three door latches
- Four trough retention brackets
- Front door
- Door grounding cable
- Craft panel cover
- Front top grille
- Front bottom grille

For information on the cosmetic PID numbers, see [Cosmetic Product IDs](#).

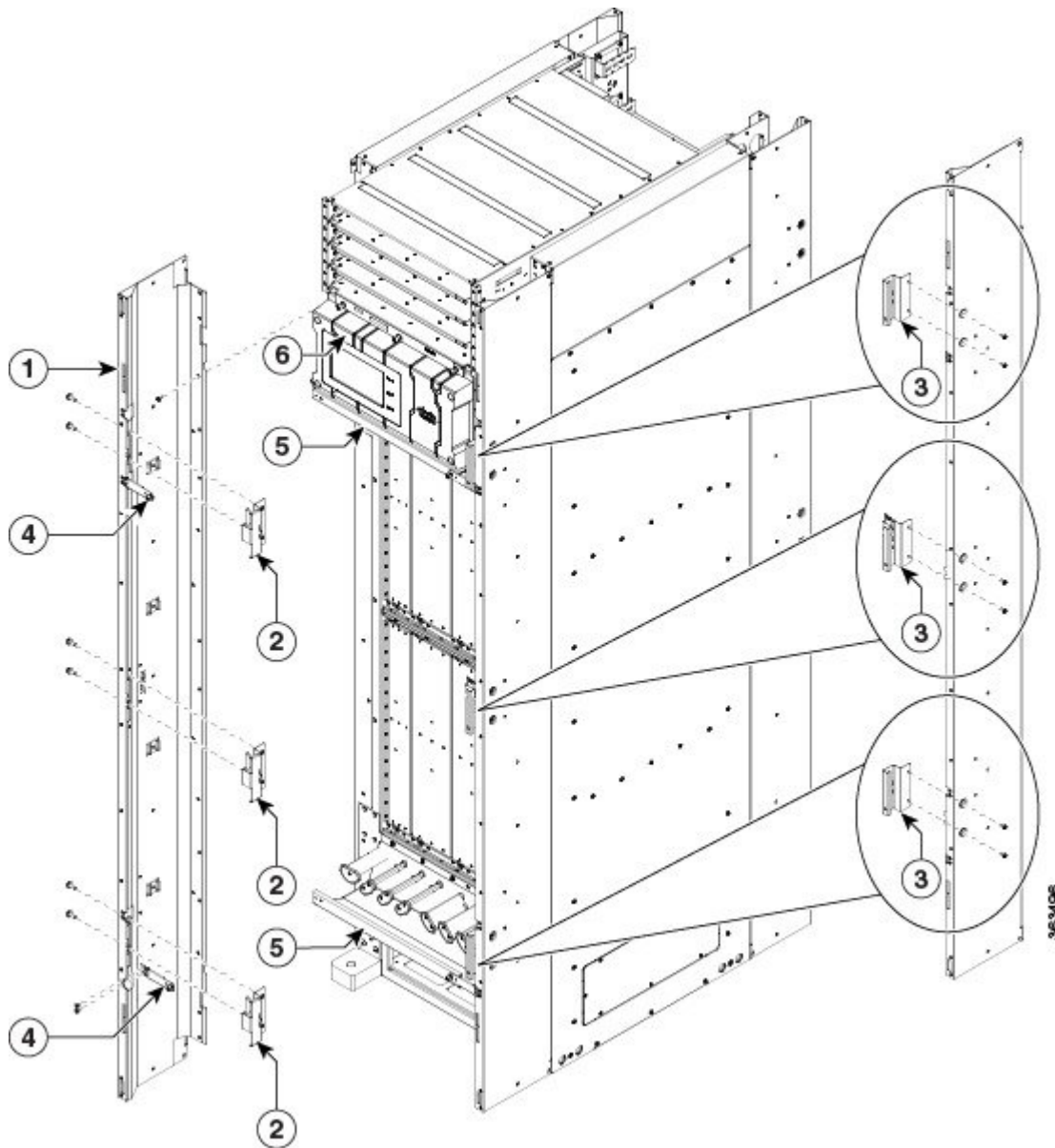
Steps

To install the front exterior cosmetics, follow these steps:

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- Step 1** Remove the upper and lower horizontal cable management brackets (preinstalled on the FCC) by loosening and removing the eight pan-head screws (four per bracket). One bracket is located above the upper card cage and the other bracket is below the lower card cage.
- Step 2** Attach the left and right vertical cable troughs to the front of the FCC. The two vertical cable troughs are installed inverted from each other. Each trough is marked FRONT to ensure that you install the trough on the correct side of the FCC.

Note We recommend that you use two people to attach the vertical cable troughs; one person to hold the vertical cable troughs in place while the other person inserts and tightens the screws.

Figure 10: Front Door Trough Hinges, Latches, and Retention Brackets



1	Vertical cable troughs (one per side), each attached to the FCC with eight pan-head screws	4	Trough retention brackets (two per trough)
2	Three door hinges	5	Two horizontal cable management brackets (preinstalled)

3	Three door latches: Door stop latch, top and bottom (700-39150-01) Door latch, middle (700-46854-01)	6	Craft panel display cover
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For each vertical cable trough

- 1 Align the guide pins on the rear of the vertical cable trough with the positioning holes on the front of the FCC.
- 2 Loosely insert eight pan-head screws, and then use the screwdriver to tighten them clockwise to attach the vertical cable troughs firmly to the front of the FCC. You might need to use a ladder to reach the upper screws.
- 3 Attach two trough retention brackets to each vertical trough with two 8-32 flat-head screws (two per trough).
- 4 Using the captive screw, insert the trough retention brackets into each upper and lower horizontal cable troughs (two screws per side).

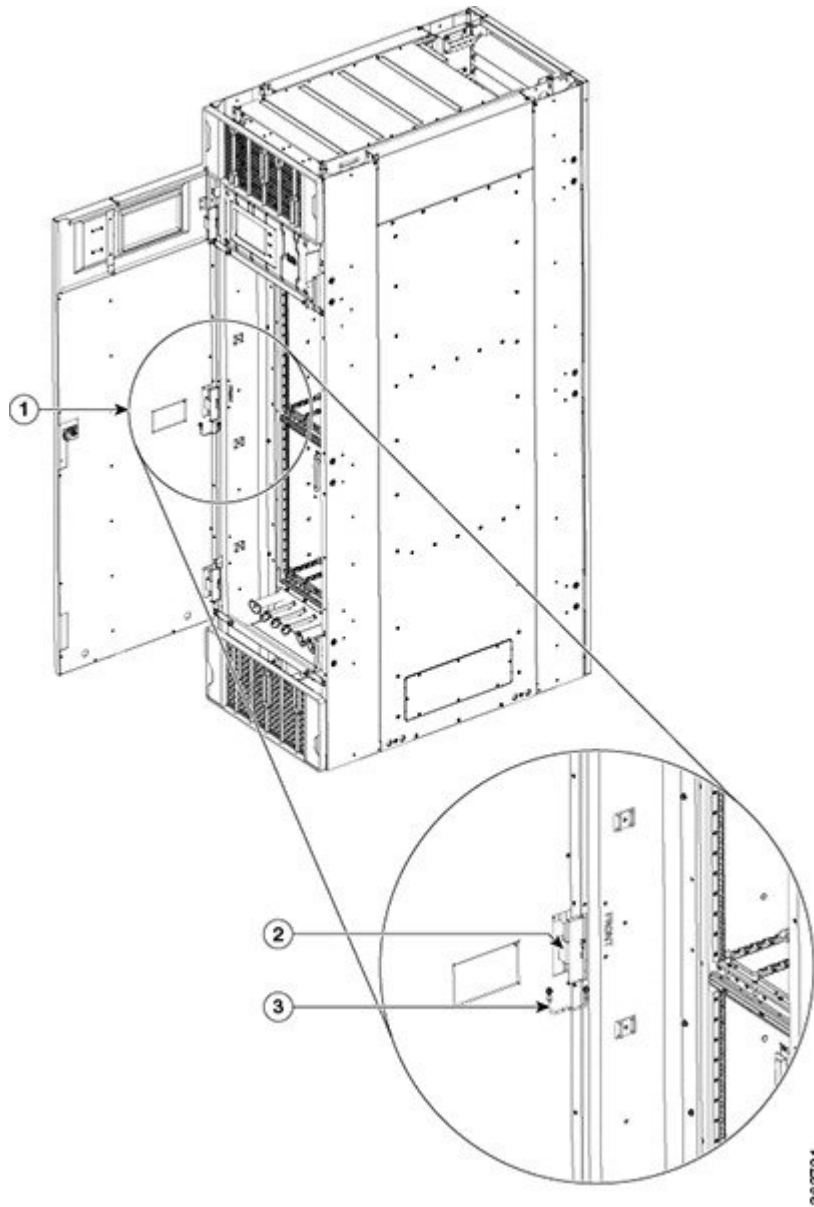
Step 3 Reattach the upper and lower horizontal cable management brackets by inserting and tightening the eight pan-head screws (four per bracket).

Step 4 Attach the three door hinges and the three door latches by using two pan-head screws each.

Step 5 Align the front door (see the following figure) with the three door hinges on the FCC. The door will then drop into position onto the hinge attachment pins.

Note We recommend that you use two people to lift the door onto the FCC.

Figure 11: Attaching the Front Door



1	Front door	3	Grounding cable
2	Door hinges		

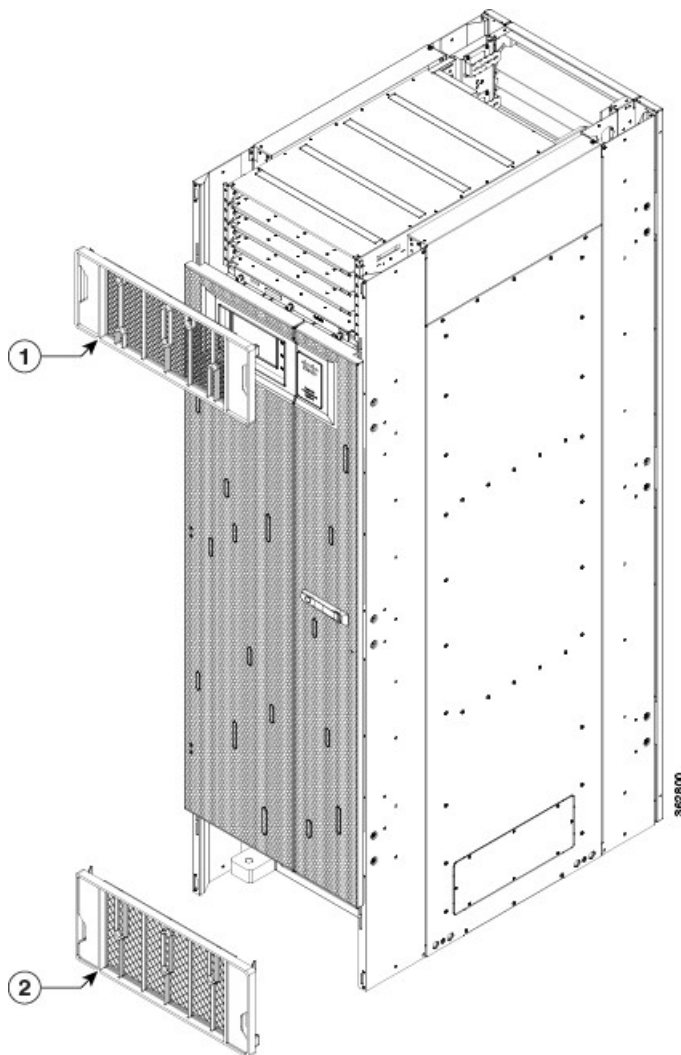
Step 6 Attach the grounding cable to the front door.

- a) Insert and tighten one pan-head screw to attach one end of the ground cable to the inside of the door.
- b) Insert and tighten one pan-head screw to attach the other end of the ground cable to the vertical cable trough.

Step 7 Attach the grilles to the troughs (see the following figure).

- a) Attach the top grille by carefully inserting the bottom tabs into the slots on the bottom of the grille. Press the grille firmly against the troughs until the snap joiners on the top of the grill snap into place.
- b) Attach the bottom grille by carefully inserting the top tabs into the slots on the top of the grille. Press the grille firmly against the troughs until the snap joiners on the bottom of the grille snaps into place.

Figure 12: Front Grilles



1	Front top grille	2	Front bottom grille
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Installing the Rear Exterior Cosmetics

This section describes how to install the rear side exterior cosmetics on the Cisco NCS 6000 FCC. We recommend that you install the exterior cosmetic components in the order outlined in this section.

Prerequisites

[Installing the Power Enclosure](#) , on page 2

[Installing the Front Exterior Cosmetics](#), on page 10

Required Tools and Equipment

- 8-inch, Number-1 Phillips screwdriver (magnetic head preferable)
- Two vertical cable troughs (left and right are interchangeable)
- Three door hinges
- Three door latches
- Four trough retention brackets
- Exhaust plenum bracket
- Rear door
- Door grounding cable
- Rear exhaust air deflector

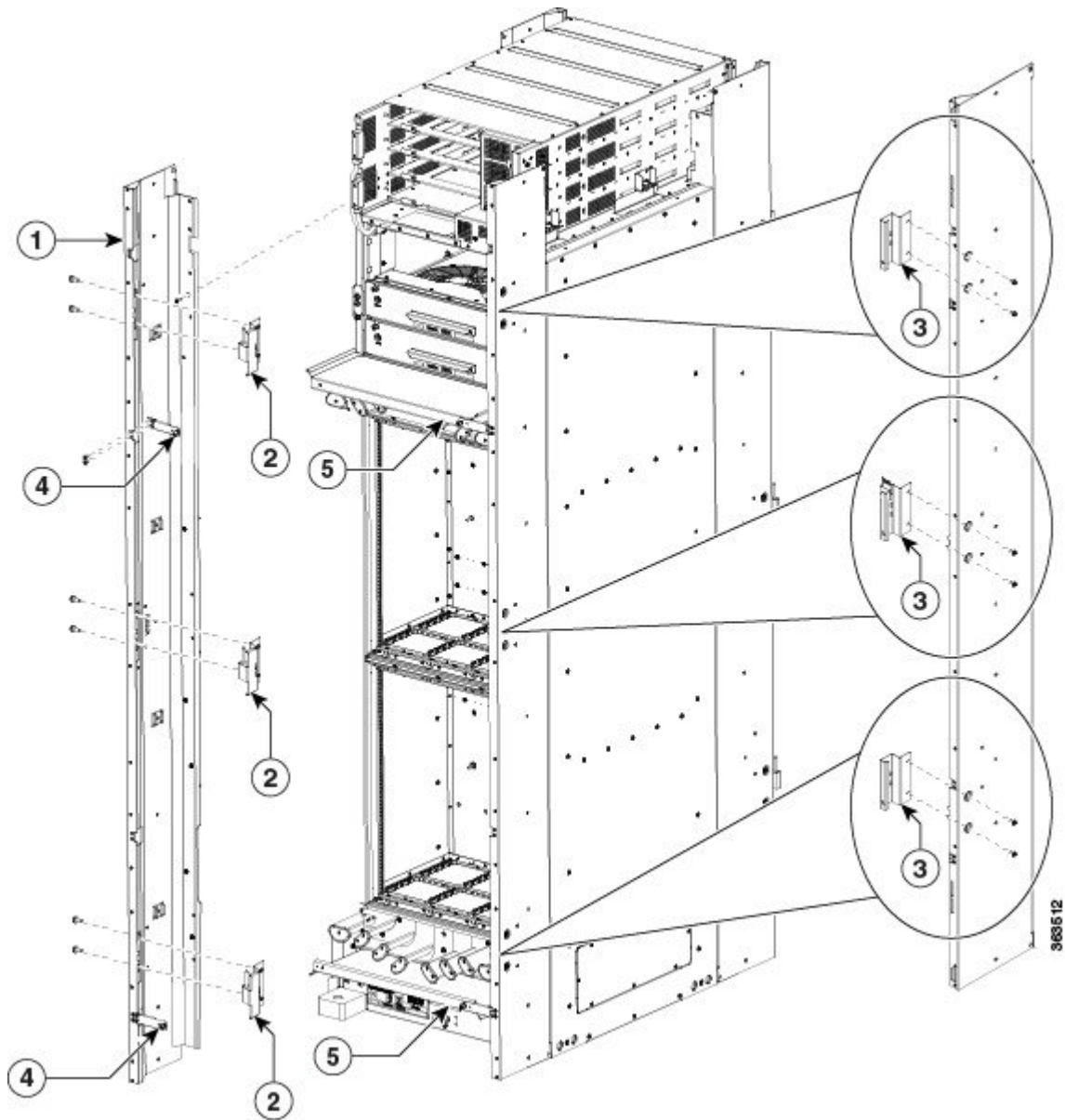
Steps

To install the rear exterior cosmetics, follow these steps:

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- Step 1** Remove the upper and lower horizontal cable management brackets (preinstalled on the FCC) by loosening and removing the eight pan-head screws (four per bracket). One bracket is located above the upper card cage and the other bracket is below the lower card cage.
- Step 2** Attach the left and right vertical cable troughs to the rear of the FCC. The two vertical cable troughs are inverted from each other. Each trough is marked REAR to ensure that you install the trough on the correct side of the FCC.

Note We recommend that you use two people to attach the vertical cable troughs; one person to hold the vertical cable troughs in place while the other person inserts and tightens the screws

Figure 13: Rear Door Trough Hinges, Latches, and Retention Brackets



1	Vertical cable troughs (one per side), each attached to the FCC with eight pan-head screws	4	Trough retention brackets (two per trough)
2	Three door hinges	5	Two horizontal cable troughs (preinstalled)

3	Three door latches: Door stop latch, top and bottom (700-39150-01)Door latch, middle (700-46854-01)		
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For each vertical cable trough:

- a) Align the guide pins on the rear of the vertical cable trough with the positioning holes on the rear of the chassis.
- b) Loosely insert eight pan-head screws, and then use the screwdriver to tighten them clockwise to attach the vertical cable troughs firmly to the front of the FCC. You might need to use a ladder to reach the upper screws .
- c) Attach the trough retention brackets to each vertical trough with two 8-32 flat-head screws (two per trough).
- d) Using the captive screw, insert the trough retention brackets into each upper and lower horizontal cable troughs on the FCC (two screws per side).

Step 3

Reattach the upper and lower horizontal cable management brackets by inserting and tightening the eight pan-head screws (four per bracket).

Step 4

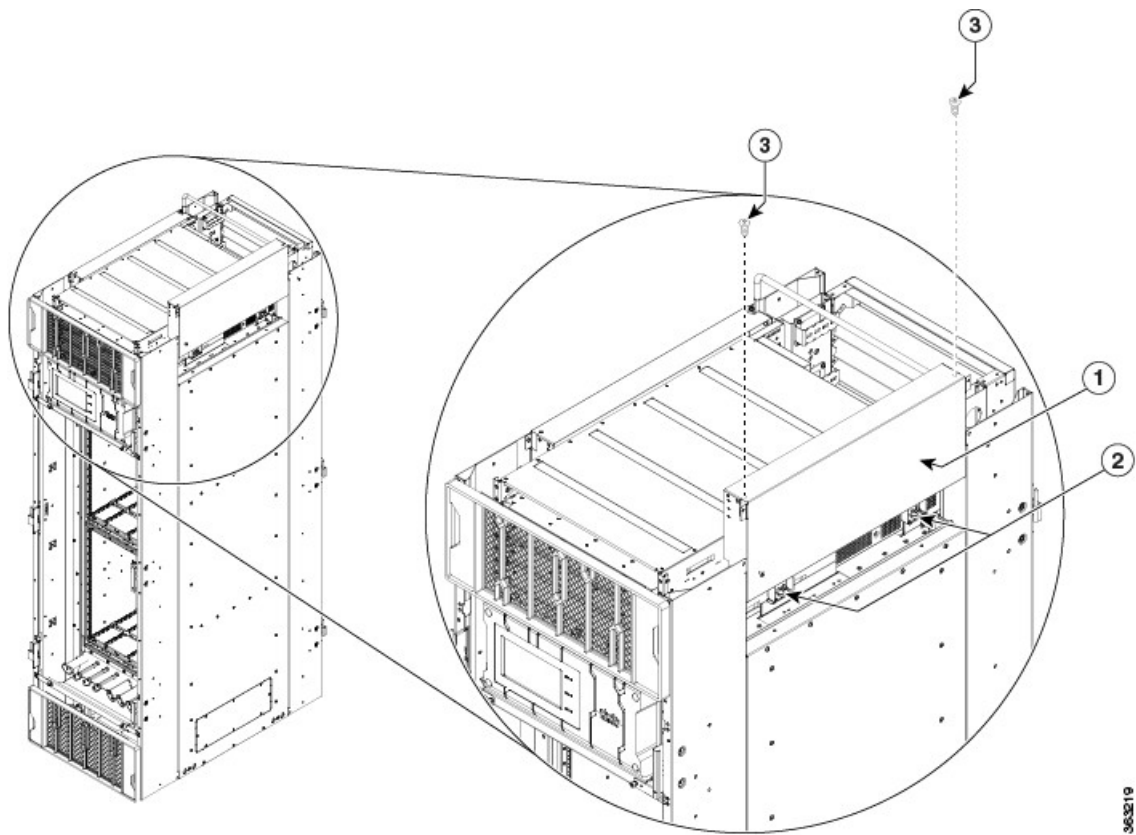
Attach the side filler panels.

For each filler panel:

- a) Align the guide pins on the filler panel with the positioning holes on top of the FCC.
- b) Insert the filler panel into the FCC and slide it down until it is fully seated.

- c) Loosely attach the filler panel to the FCC with two 8-32 screws.

Figure 14: Side Filler Panels

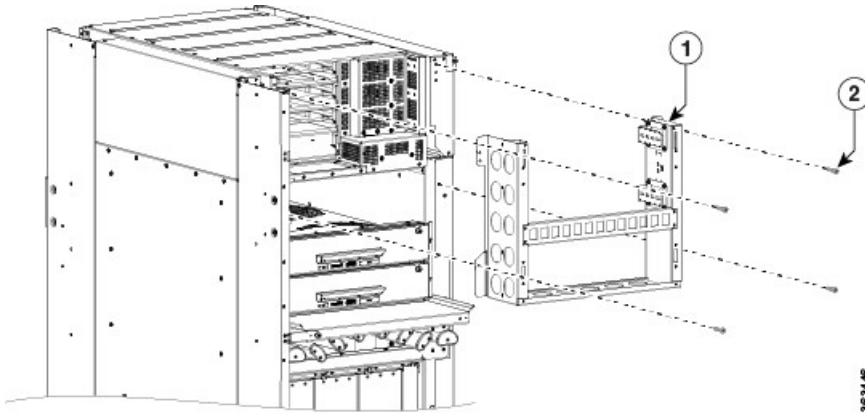


1	Side filler panel (one each side)	3	Two 8-32 screws
2	Guide pins		

Step 5 Attach the exhaust plenum bracket to the FCC (cutouts facing up) using six pan-head screws, three screws each side. Before installing the bracket, remove the topmost screw on each of the vertical troughs.

Step 6 Tighten the two 8-32 screws on the filler panel (that you previously installed) securely to the FCC.

Figure 15: Exhaust Plenum Bracket



1	Exhaust plenum bracket	2	Six pan-head screws (three per side)
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Step 7 Attach the three door hinges and the three door latches by using two pan-head screws each ([Figure 13: Rear Door Trough Hinges, Latches, and Retention Brackets](#)).

Step 8 Align the rear door with the three door hinges on the FCC ([Figure 11: Attaching the Front Door](#)). The door will then drop into position onto the hinge attachment pins.

Note We recommend that you use two people to lift the door onto the FCC.

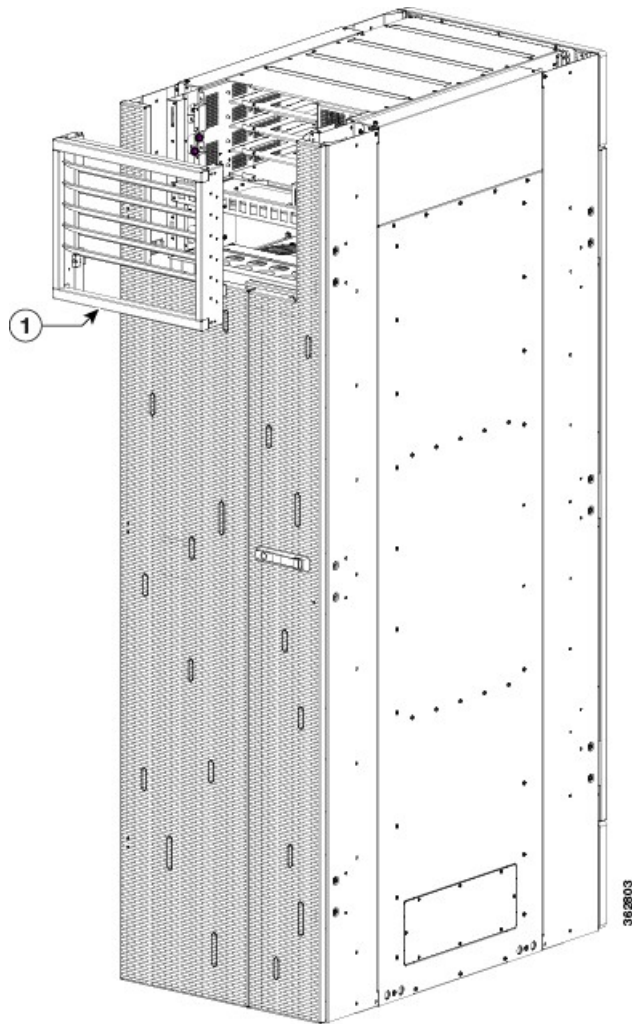
Step 9 Attach the grounding cable to the rear door (step 7).

a) Insert and tighten one pan-head screw to attach one end of the ground cable to the inside of the door.

b) Insert and tighten one pan-head screw to attach the other end of the ground cable to the vertical cable trough.

Step 10 Attach the exhaust air deflector by carefully inserting its mounting tabs into the exhaust plenum brackets. Press the deflector firmly against the vertical cable troughs until it snaps on.

Figure 16: Exhaust Air Deflector—Rear of the Chassis



1	Exhaust air deflector
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