# MX960 3D Universal Edge Router Extended Cable Manager Installation Instructions

1 April 2014

This document describes how to install the extended cable manager on a Juniper Networks MX960 3D Universal Edge Router.

NOTE: **This installation procedure requires you to power down the router.**

**Read this document completely before you install the extended cable manager.**

**Contents**

## Extended Cable Manager Description

The extended cable manager allows you to manage a large number of fiber-optic and copper cables attached to the Dense Port Concentrators (DPCs) installed in the router. It is installed in the top of the MX960 chassis.

The extended cable manager consists of the following parts (see Figure 1 on page 3 and Figure 2 on page 4):

- Top hat assembly—A sheet metal assembly that contains the cable routing channels and cable routing bay cover, the front panel ribbon cable, and the double-sided electrical connector for the upper fan tray.
- Rear air exhaust grate—Replaces the existing air exhaust grate and attaches to the rear of the top hat assembly and the chassis.
- Cable routing bay cover—Covers the cable routing channels and attaches to the front of the top hat assembly.
- Two 8-32 screws—Secure the top hat assembly to the rear of the chassis.

### Figure 1: Extended Cable Manager With Cover Installed (Front View)

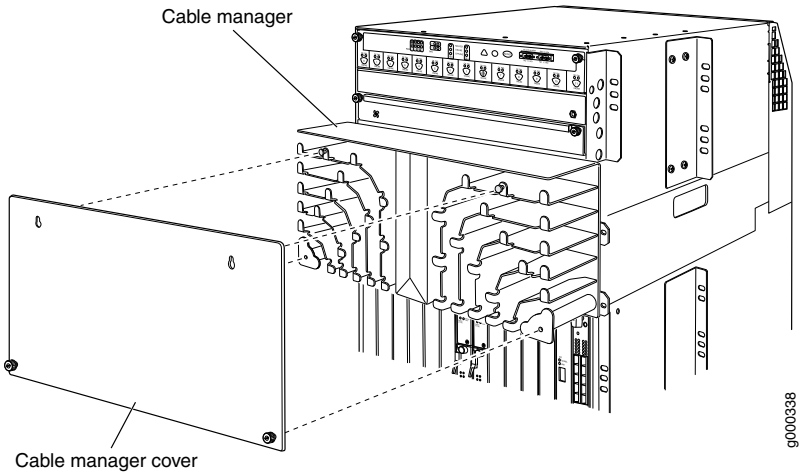
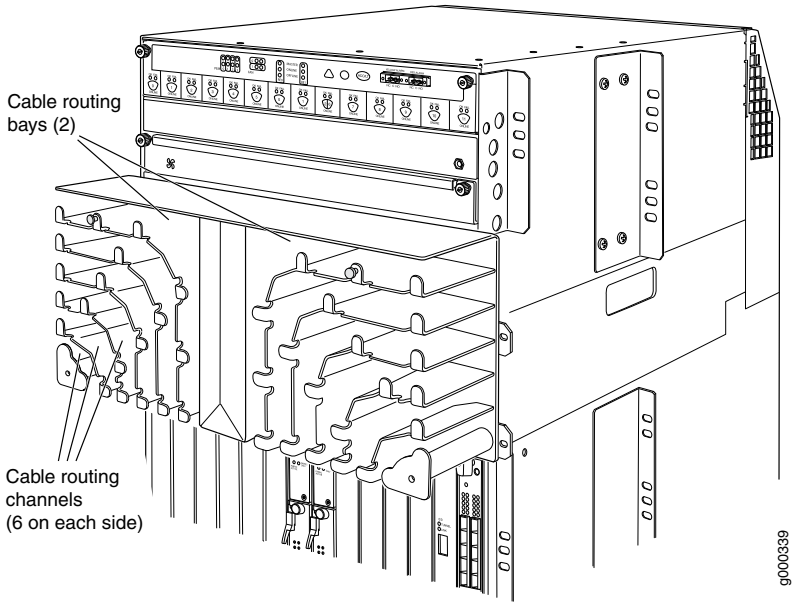


Figure 2: Extended Cable Manager (Rear View)


The extended cable manager contains two cable routing bays, and each bay contains six cable routing channels (see Figure 3 on page 5, which shows the extended cable manager with its cover removed). Each routing channel corresponds to a DPC below it. You route the cables from a DPC through the bottom of a routing channel and out the side of the bay. The retaining flanges on each channel keep the cables inside the channels.

The extended cable manager is used in conjunction with the standard cable manager attached to the bottom of the chassis. We recommend that you use the standard cable manager for fiber-optic cables that cannot fit in the extended cable manager and for cables that do not connect to a DPC (such as an out-of-band Ethernet cable connected to the Routing Engine). See "Dressing the Cables" on page 36 for more information about routing cables.

Figure 3: Extended Cable Manager With Cover Removed




## Installing the Extended Cable Manager

To install the extended cable manager, perform the following procedures:

- Powering Off the Router on page 5
- Removing the Craft Interface on page 6
- Removing the Upper Fan Tray on page 6
- Removing the AC Power Inlet Cover (DC-Powered Routers Only) on page 8
- Removing the Rear Air Exhaust Grate on page 9
- Disconnecting the Craft Interface Ribbon Cable from the Chassis Midplane on page 14
- Removing the Original Top Hat of the Chassis on page 16
- Installing the Extended Cable Manager Top Hat on page 20
- Installing the New Rear Air Exhaust Grate on page 28
- Reinstalling the AC Power Inlet Cover (DC-Powered Routers Only) on page 31
- Reinstalling the Upper Fan Tray on page 32
- Reinstalling the Craft Interface on page 33

### Powering Off the Router

You must power off the router before installing the extended cable manager. To power off the router, follow this procedure:

1. On the external management device connected to the Routing Engine, issue the **request system halt both-routing-engines** operational mode command. The command

shuts down the Routing Engines cleanly, so their state information is preserved. (If the router contains only one Routing Engine, issue the **request system halt** command.)

```
user@host> request system halt both-routing-engines
```

Wait until a message appears on the console confirming that the operating system has halted. For more information about the command, see the CLI Explorer.

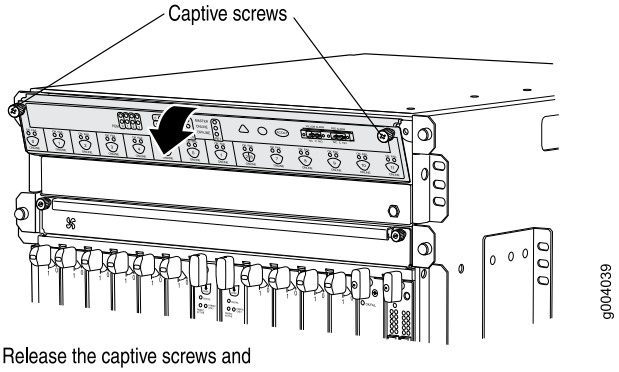
2. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist and connect the strap to one of the ESD points on the chassis.
3. On an AC-powered router, switch the circuit breaker in the chassis above each power supply to the off position (**O**). On a DC-powered router, switch the circuit breaker on each power supply faceplate to the off position (**OFF**).

## Removing the Craft Interface

To remove the craft interface, follow this procedure (see Figure 4 on page 6):

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Detach any external devices connected to the craft interface.
3. Loosen the captive screws at the top left and right corners of the craft interface faceplate.
4. Grasp the craft interface faceplate and carefully tilt it toward you until it is horizontal.
5. Locate the latch on the inside of the craft interface. Grasp both sides of the latch on the inside of the craft interface and with your thumb and forefinger, gently press both sides of the latch to disengage it.

### Figure 4: Removing the Craft Interface




Release the captive screws and tilt the craft interface toward you.

## Removing the Upper Fan Tray

In the front of the chassis, the upper fan tray is located above the DPC card cage. The fan tray weighs about 13 lb (5.9 kg).

To remove the upper fan tray, follow this procedure (see Figure 5 on page 7):

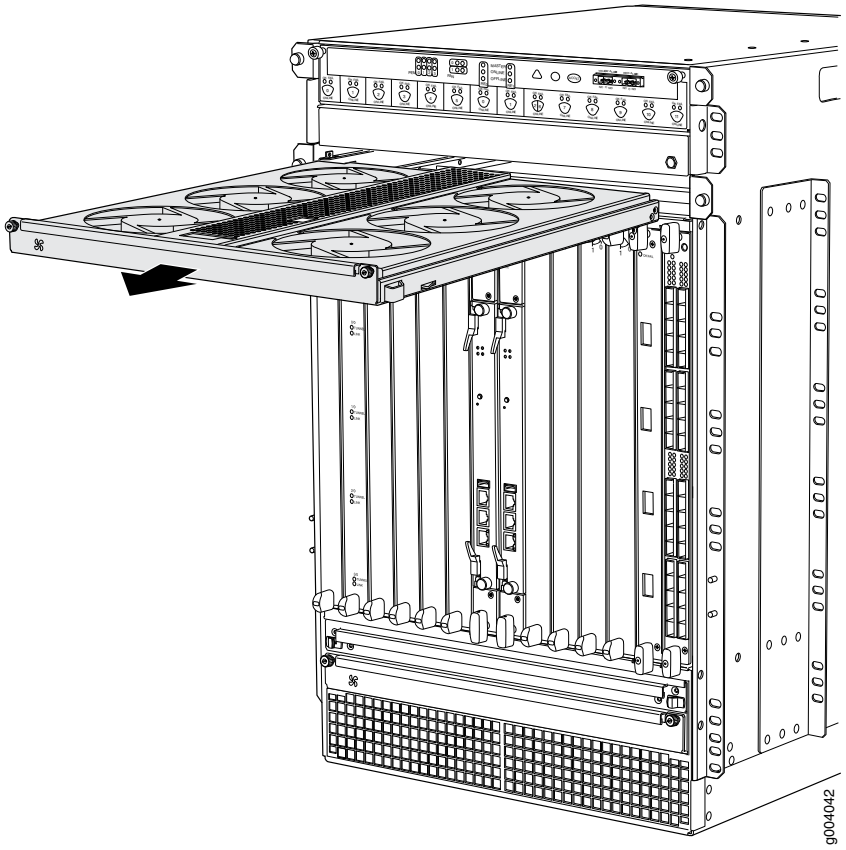
NOTE: Figure 5 on page 7 shows the craft interface installed in the chassis. You have already removed the craft interface.

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Loosen the captive screw on each side of the fan tray faceplate.
3. Grasp both sides of the fan tray and pull it out approximately 1 to 3 inches.

CAUTION: To avoid injury, keep tools and your fingers away from the fans as you slide the fan tray out of the chassis. The fans might still be spinning shortly after you power down the router.

4. When the fans stop spinning, press on the two latches located on the inside of the fan tray.
5. Place one hand under the fan tray to support it and pull the fan tray completely out of the chassis.

Figure 5: Removing the Upper Fan Tray



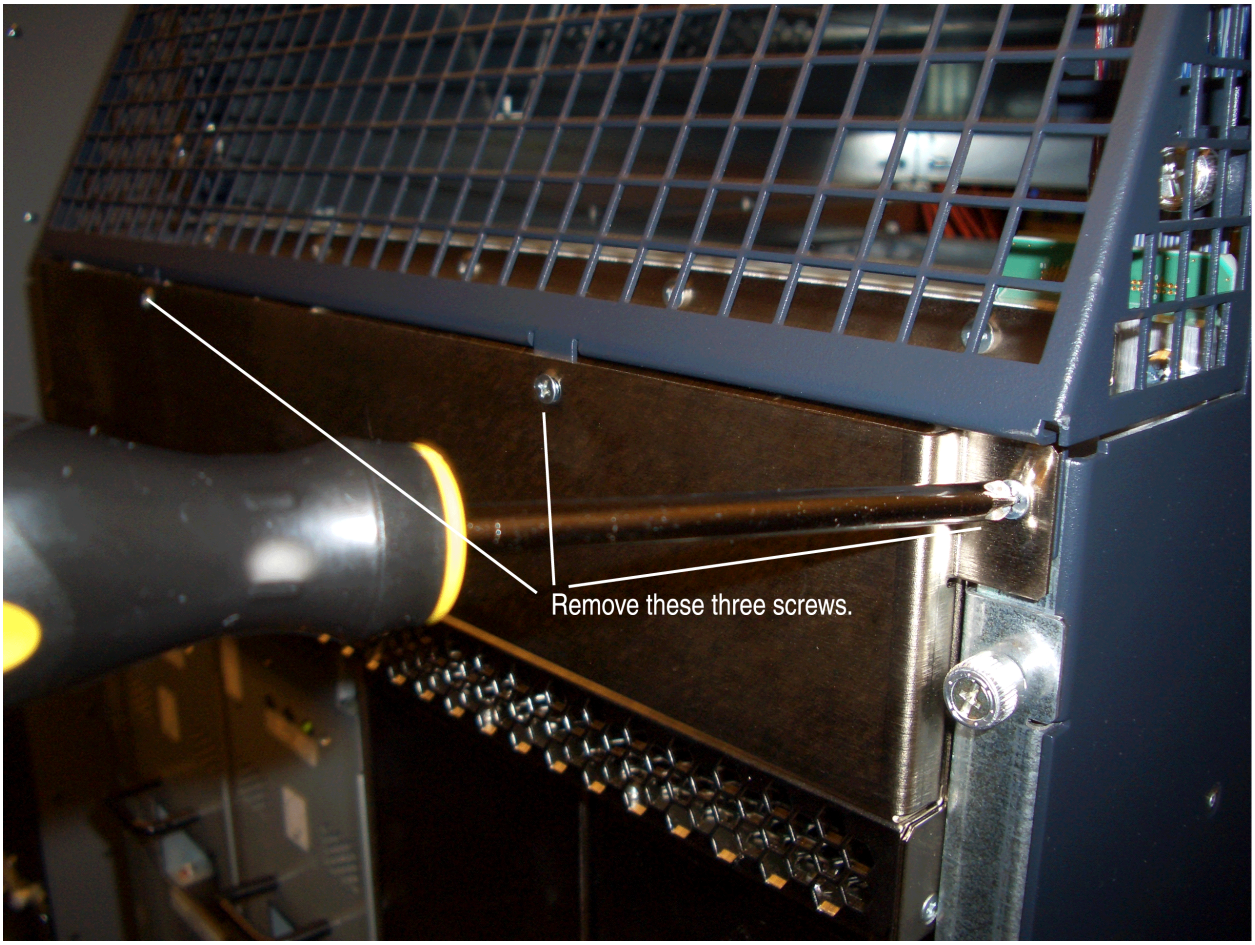
## Removing the AC Power Inlet Cover (DC-Powered Routers Only)

A DC-powered router contains a cover over the four unused AC power inlets in the rear of the chassis. If you have a DC-powered router, remove the cover by following this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. With a Phillips screwdriver, loosen the three screws that secure the cover to the back of the chassis (see Figure 6 on page 8). Take care to prevent the cover from falling off the chassis after you remove the last screw.

   Save the three screws, which will be needed later to secure the cover to the chassis.

Figure 6: Removing the AC Power Inlet Cover




3. Remove the cover and temporarily place it aside for later reinstallation.

## Removing the Rear Air Exhaust Grate

To remove the rear air exhaust grate, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. With a flatblade or Phillips screwdriver, loosen the two captive screws that secure the grate to the back of the chassis (see Figure 7 on page 9 and Figure 8 on page 10).

Figure 7: Removing the Right Captive Screw of the Rear Air Exhaust Grate

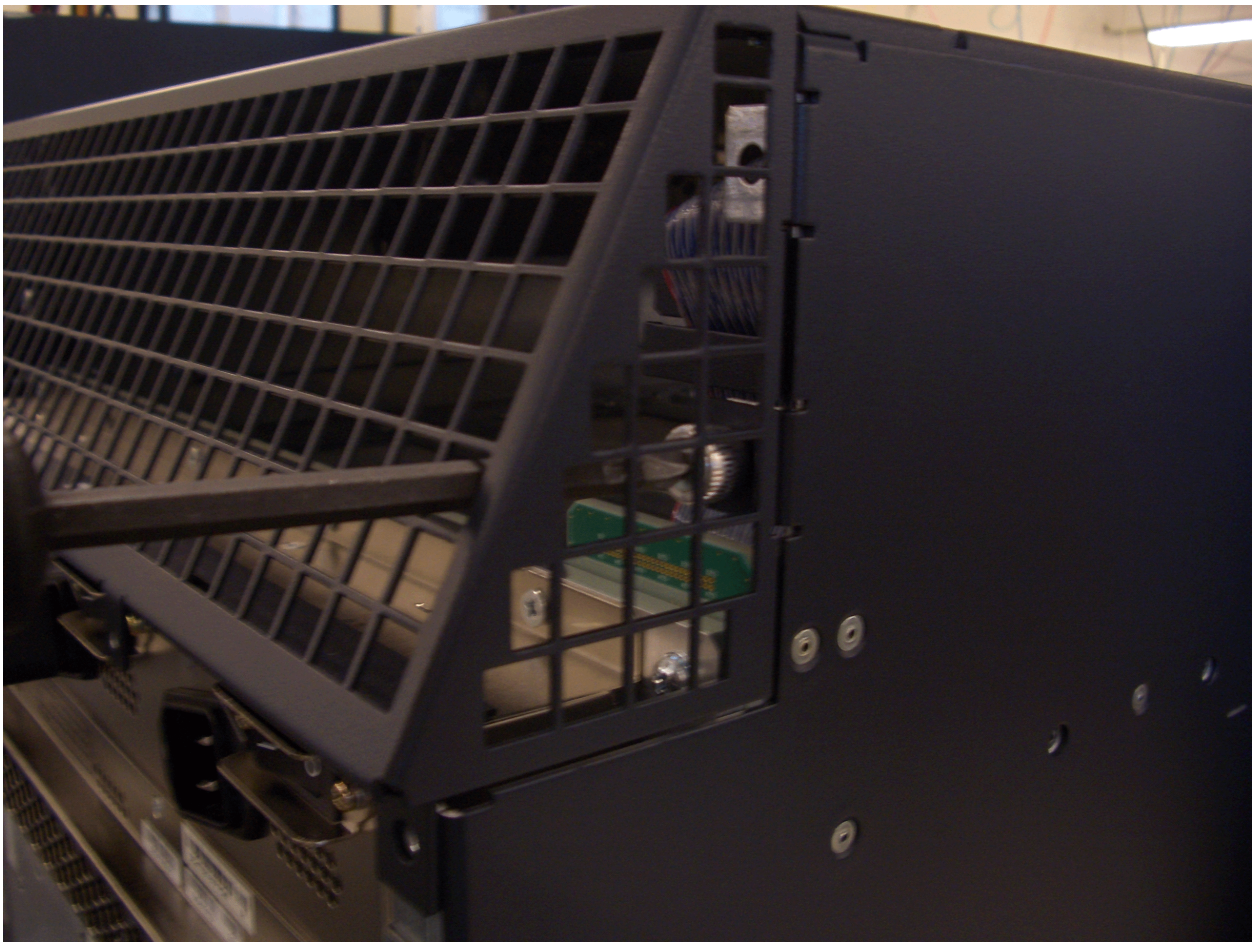


Figure 8: Removing the Left Captive Screw of the Rear Air Exhaust Grate

3. With a flatblade or Phillips screwdriver, remove the three screws that secure the grate to the top of the chassis (see Figure 9 on page 11 through Figure 11 on page 13). These three screws are no longer needed.

CAUTION: To avoid damaging the router, take care to avoid dropping any screws into the router.

Figure 9: Removing the Top Right Screw of the Rear Air Exhaust Grate

Figure 10: Removing the Top Middle Screw of the Rear Air Exhaust Grate

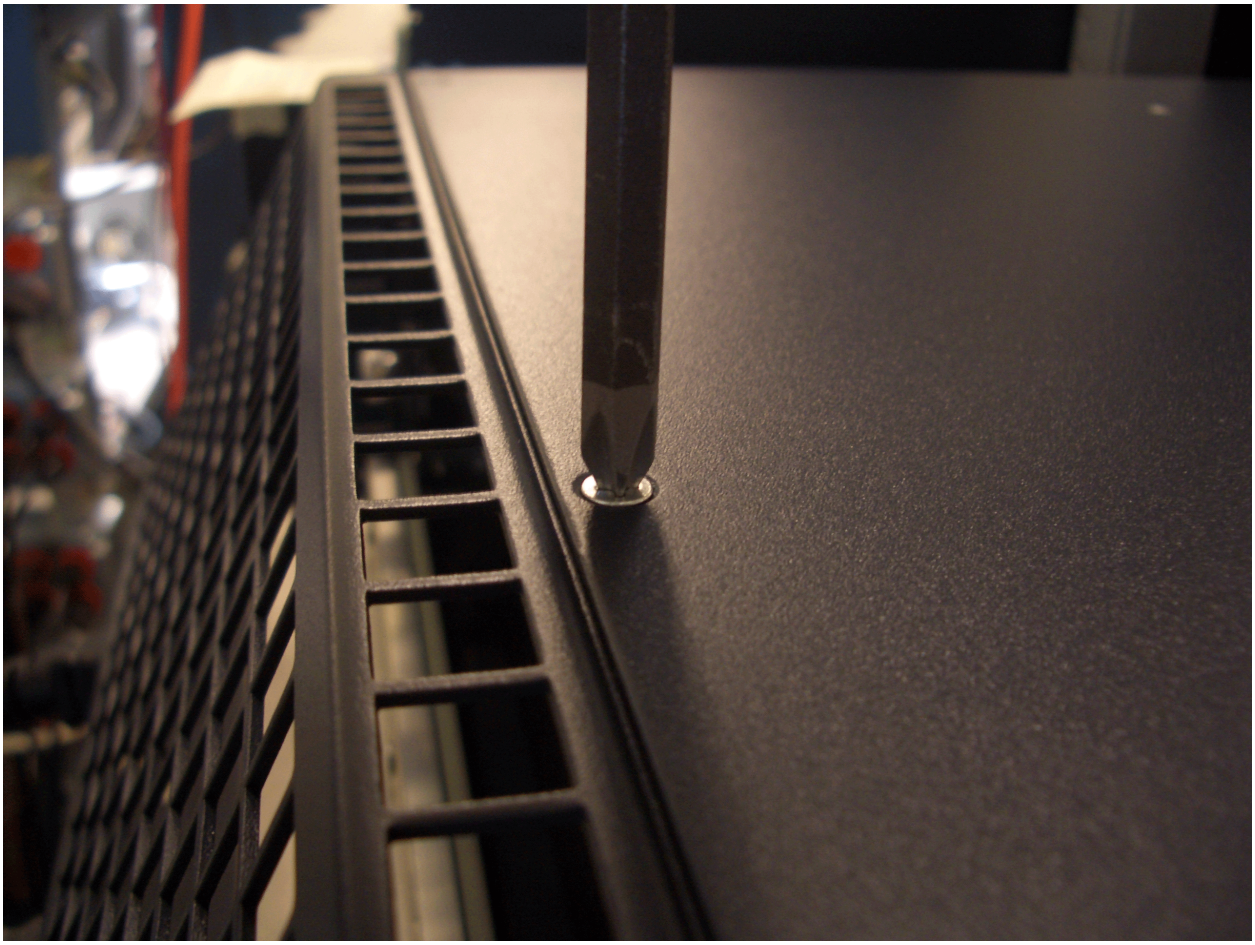
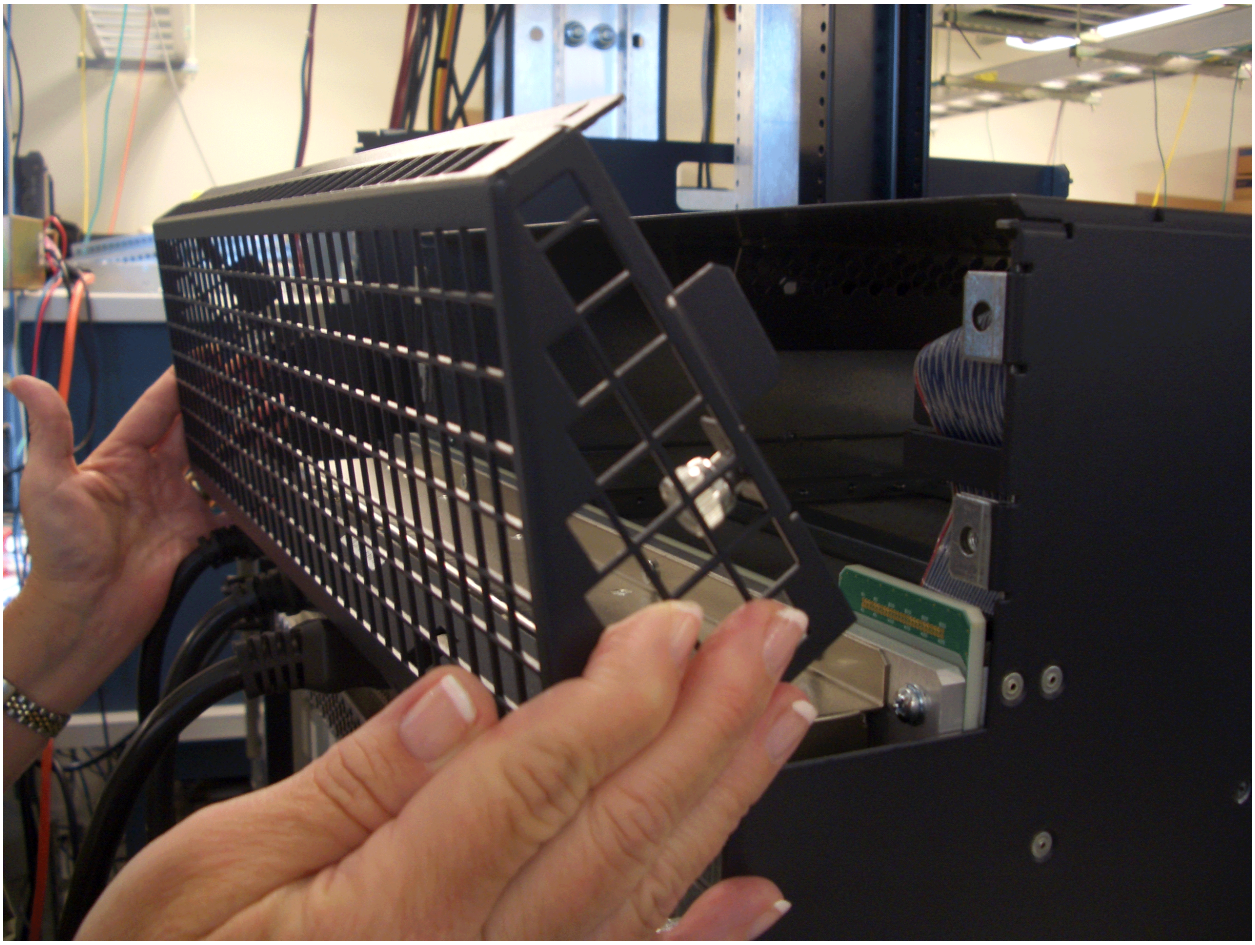


Figure 11: Removing the Top Left Screw of the Rear Air Exhaust Grate

4. With one hand on each side of the grate, remove the grate by pulling it away from the chassis (see Figure 12 on page 14).
5. Set the grate aside where it will not interfere with the remainder of the extended cable manager installation procedure. The grate is no longer needed.

Figure 12: Removing the Rear Air Exhaust Grate



## Disconnecting the Craft Interface Ribbon Cable from the Chassis Midplane

The craft interface communicates with the router through a ribbon cable that is attached to the original top hat. Attached to the end of the ribbon cable is a female connector that plugs into a male connector on the chassis midplane. The female connector contains a small mating clip on each of its sides. During normal operation, the female connector is plugged inside the male connector and is held into place by the mating clips. Figure 13 on page 16 shows the ribbon cable plugged into the male connector (viewed from the front of the chassis).

The craft interface ribbon cable must be disconnected from the midplane connector before the top hat of the chassis can be removed (as described in "Removing the Original Top Hat of the Chassis" on page 16).

To disconnect the ribbon cable from the chassis midplane, follow this procedure (see Figure 13 on page 16):

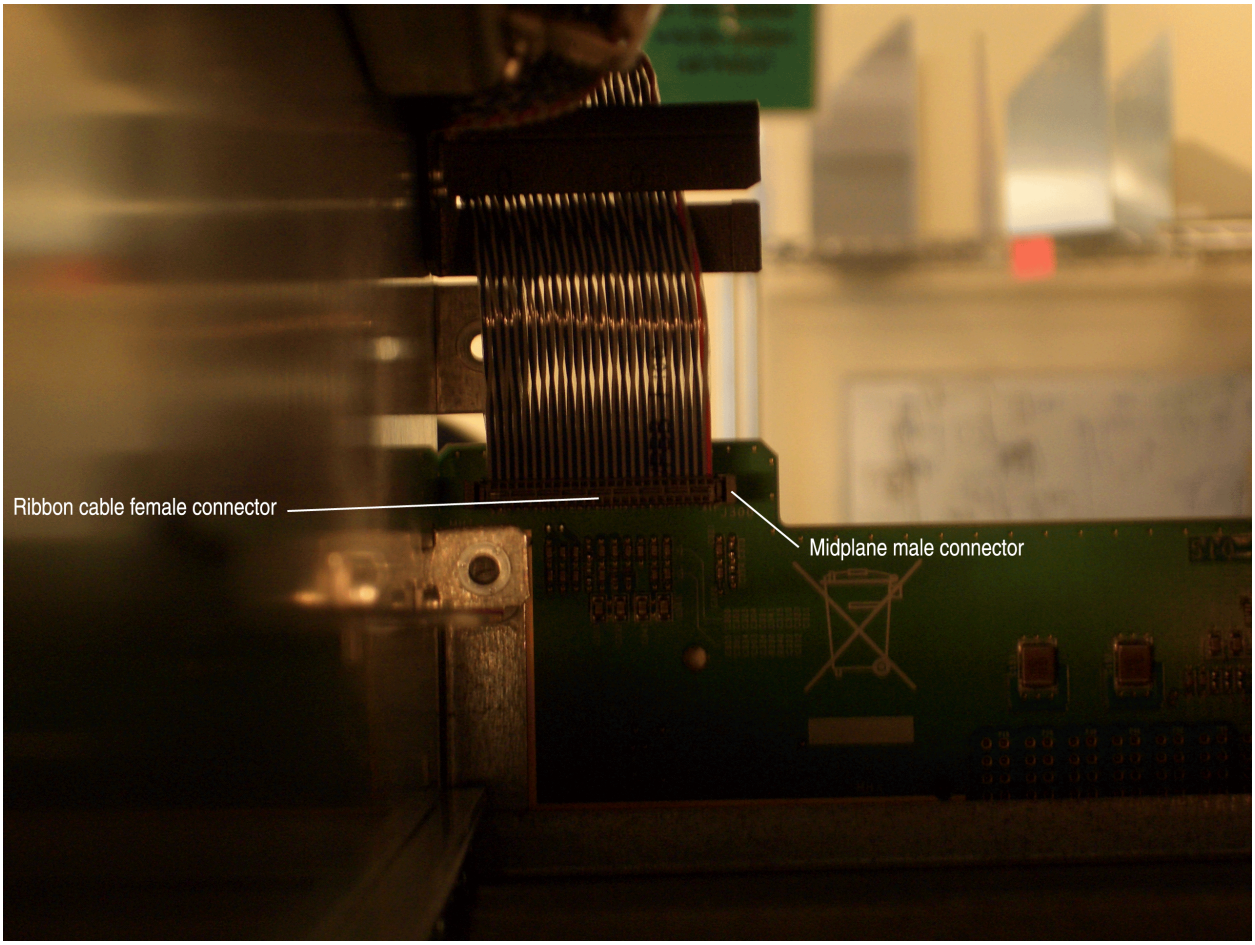
1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.

2. Standing at the rear of the chassis, use your left hand to reach into the top of the chassis and locate the female connector and its mating clips at the end of the ribbon cable. If the chassis is mounted above your reach, stand on a ladder to comfortably access the ribbon cable.
3. Using your left hand, gently squeeze the clips on the female connector together and slowly pull the connector straight out from the rear of the chassis.

CAUTION: To avoid bending or breaking the pins in the male connector, make sure you keep the face of the female connector parallel to the face of the male connector while disconnecting them. You can gently rock the female connector from side to side as you pull it out.

NOTE: The space between the mating clip and the chassis is narrow, so it might be difficult to get a good grip on that side of the connector with your fingers. You can use your right hand to gently push on the ribbon cable while using your left hand to pull on the connector.

Figure 13: Craft Interface Ribbon Cable Attached to the Chassis Midplane




## Removing the Original Top Hat of the Chassis

To remove the original top hat from the chassis, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. With a 3/8-in. hexagonal-head external drive socket wrench or nut driver, remove the four acorn nuts that secure the top hat to the chassis (see Figure 14 on page 17 and Figure 15 on page 18). Save these four nuts, which will be needed later to secure the extended cable manager top hat.

Figure 14: Removing the Two Right Acorn Nuts That Secure the Original Top Hat

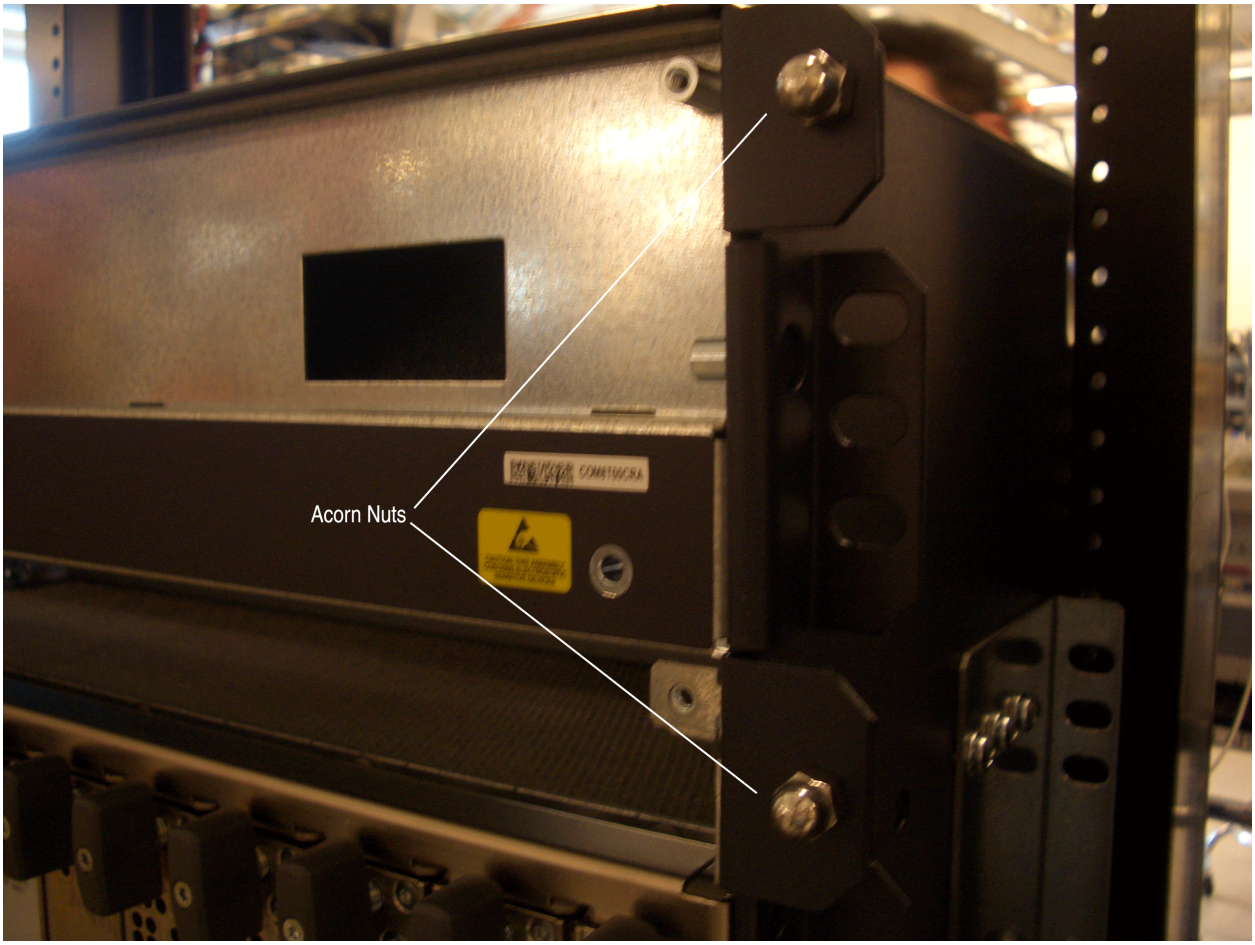
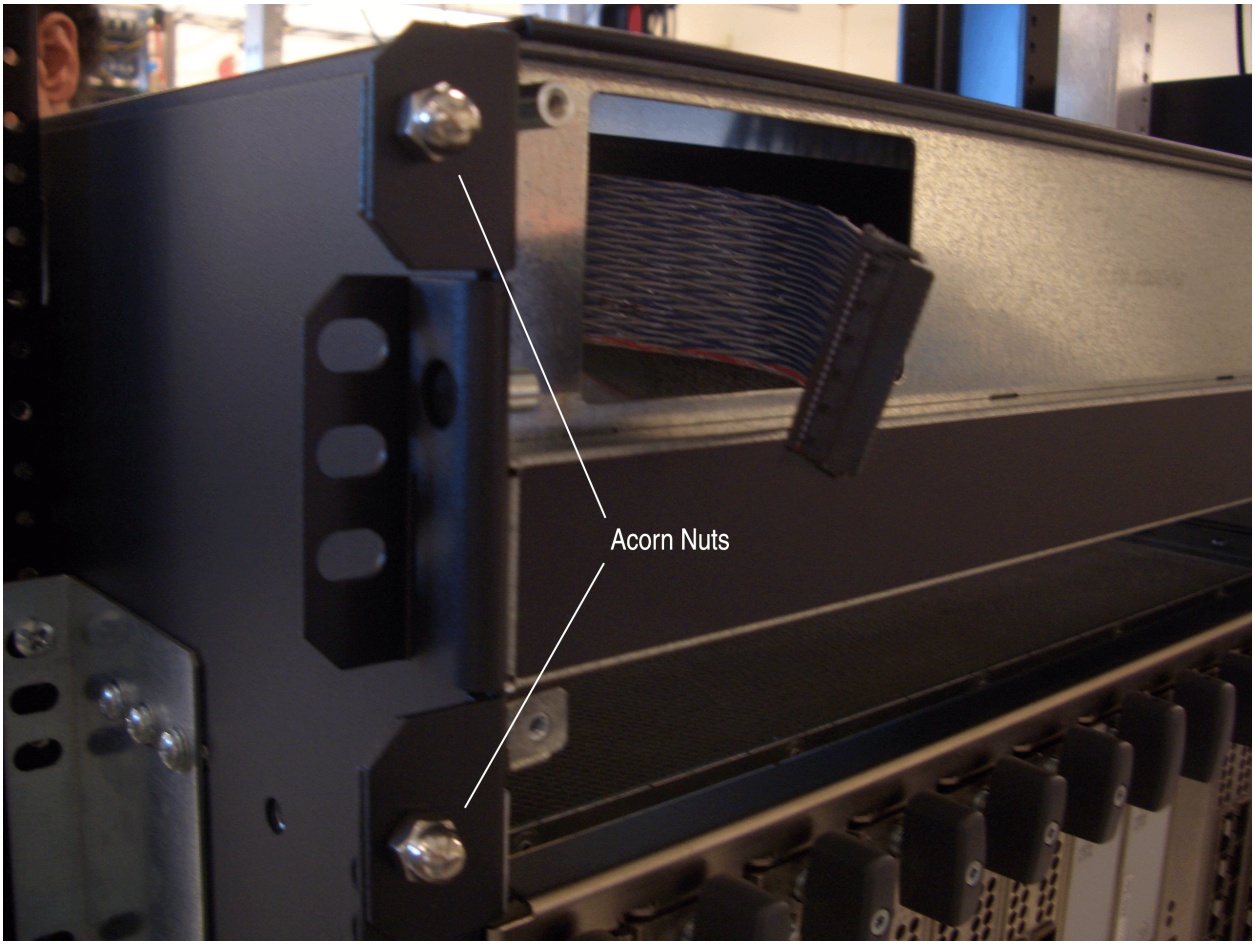


Figure 15: Removing the Two Left Acorn Nuts That Secure the Original Top Hat




3. With each hand on a front flange of the top hat, remove the top hat halfway by slowly sliding it straight away from the chassis (see Figure 16 on page 19).

   Be prepared to support the full weight of the top hat (40 lbs [18 kg]).

4. With one hand on each side of the top hat, remove the top hat completely by slowly sliding it straight away from the chassis (see Figure 17 on page 20).

5. Set the top hat aside where it will not interfere with the remainder of the extended cable manager installation procedure. The original top hat is no longer needed.

Figure 16: Sliding the Original Top Hat Halfway Out of the Chassis

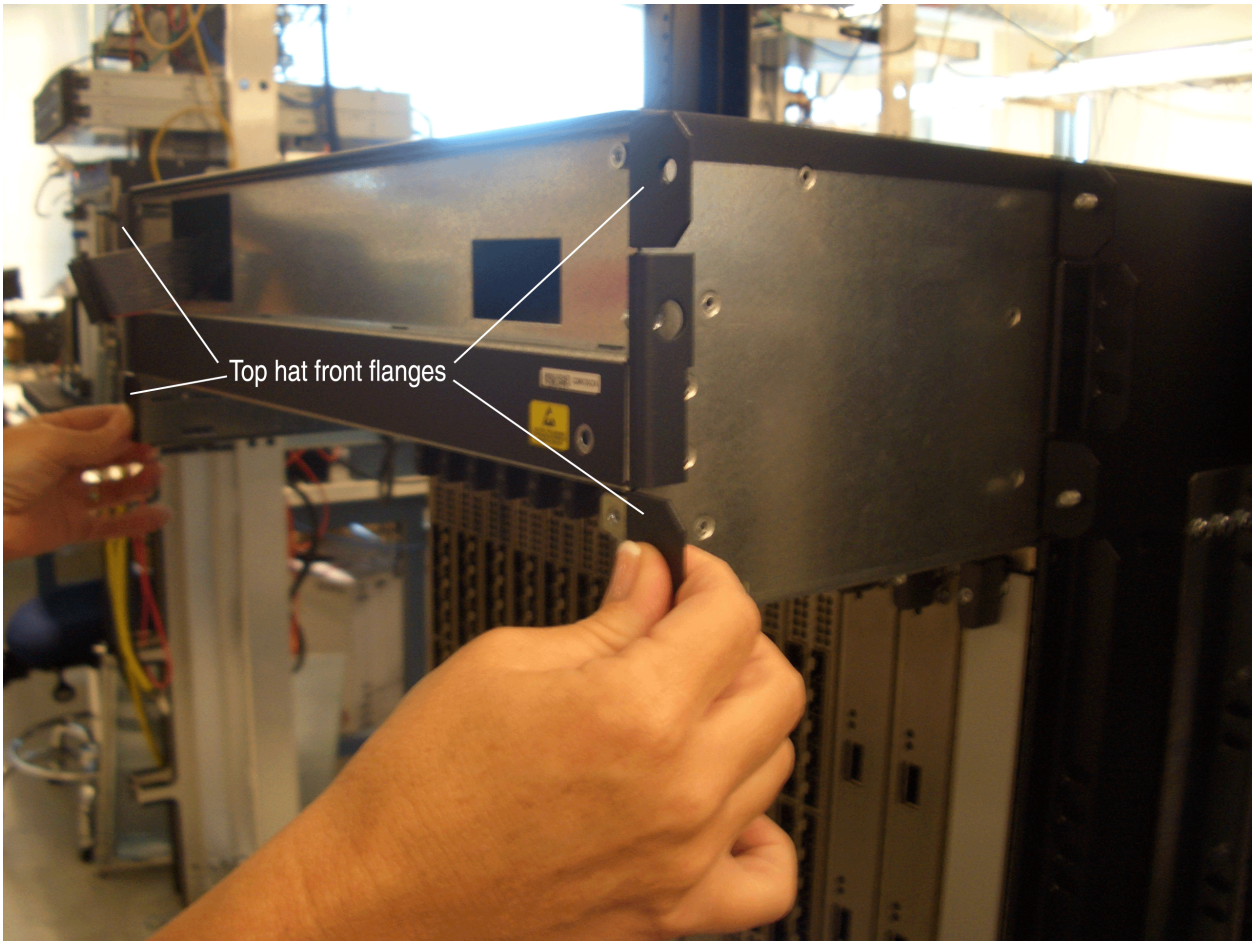
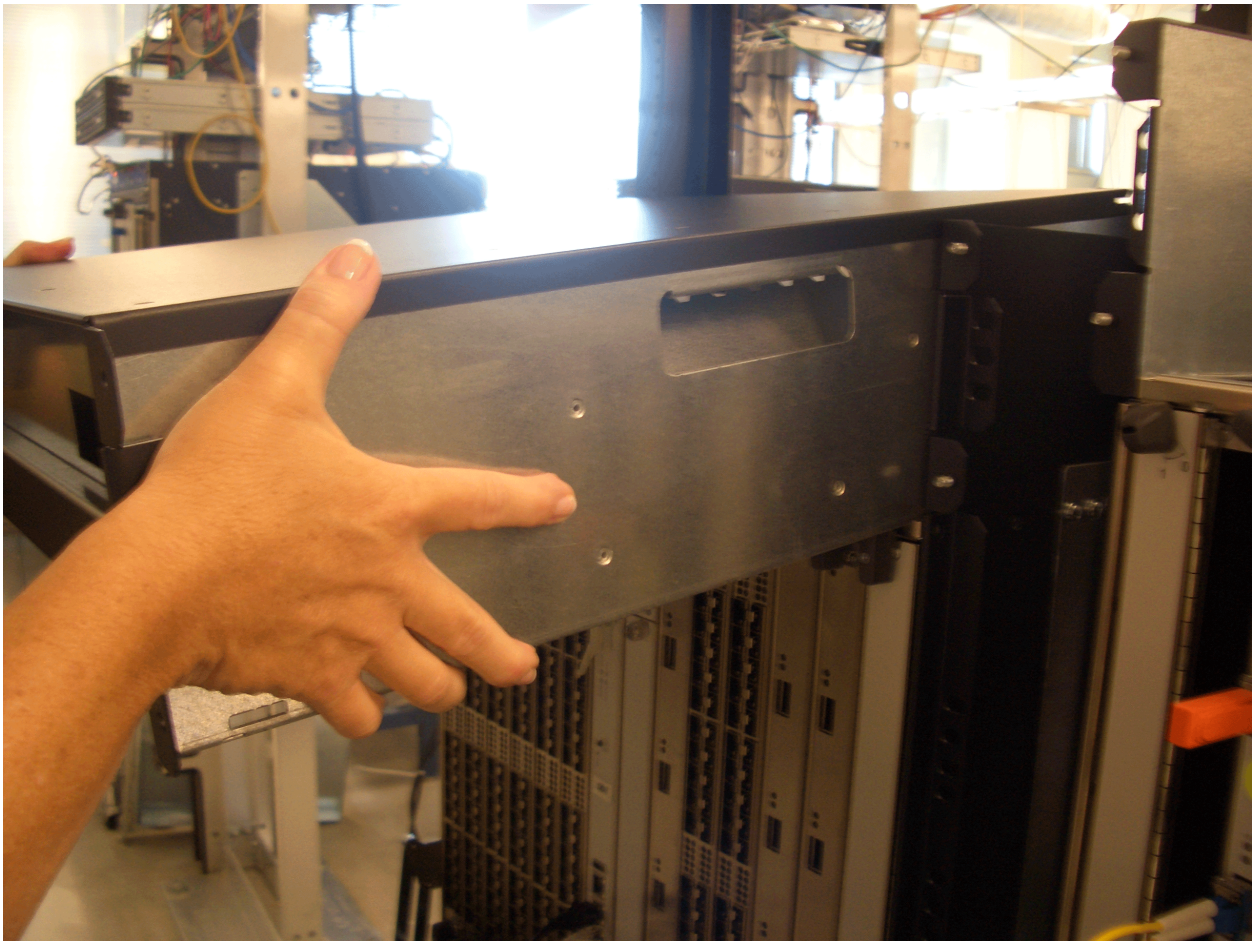


Figure 17: Sliding the Original Top Hat Completely Out of the Chassis

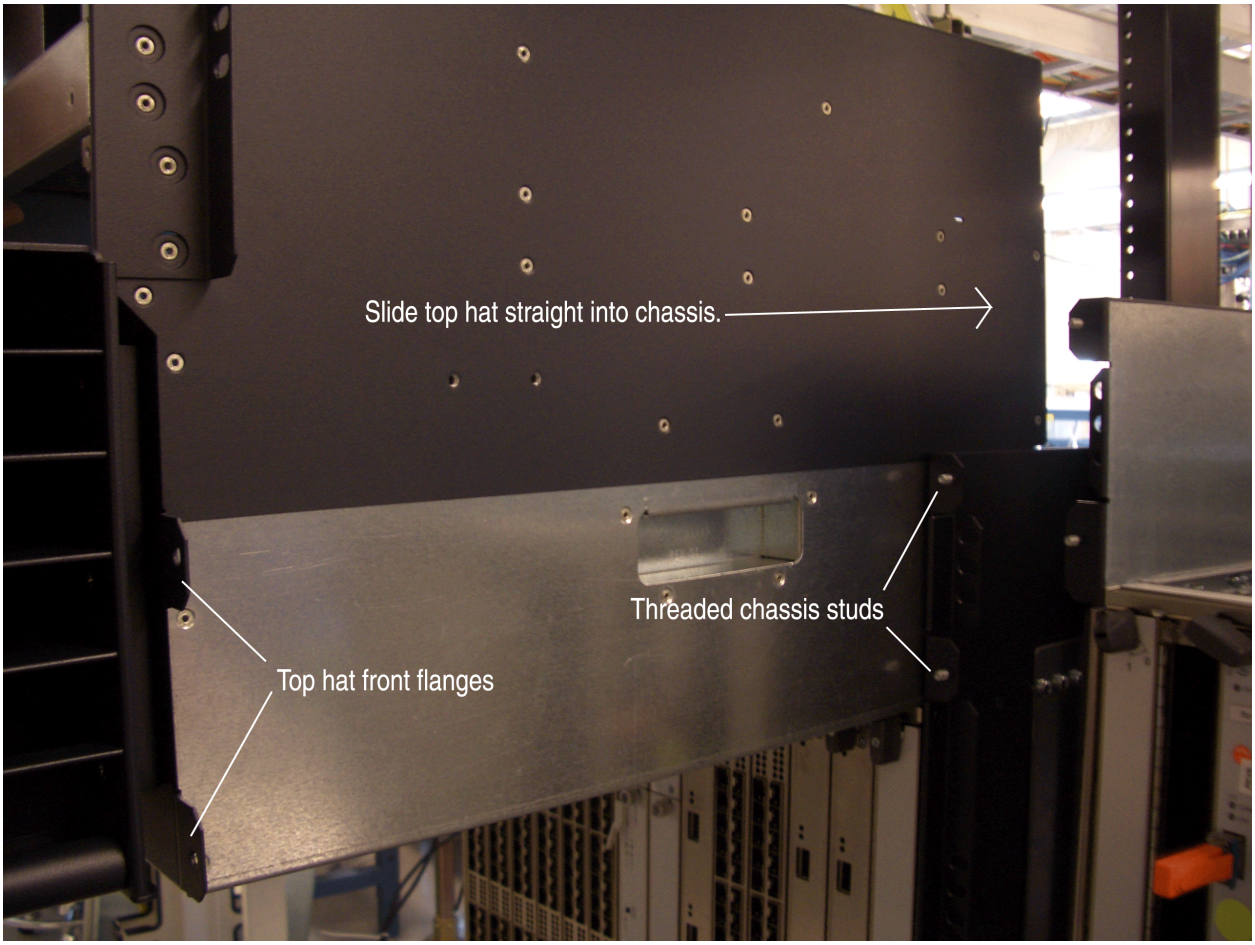


## Installing the Extended Cable Manager Top Hat

To install the extended cable manager top hat in the chassis, follow this procedure (the top hat weighs (40 lbs [18 kg]):

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Lift the top hat into place over the top of the chassis and rest it on the flanges along the side panels of the chassis (see Figure 18 on page 21).

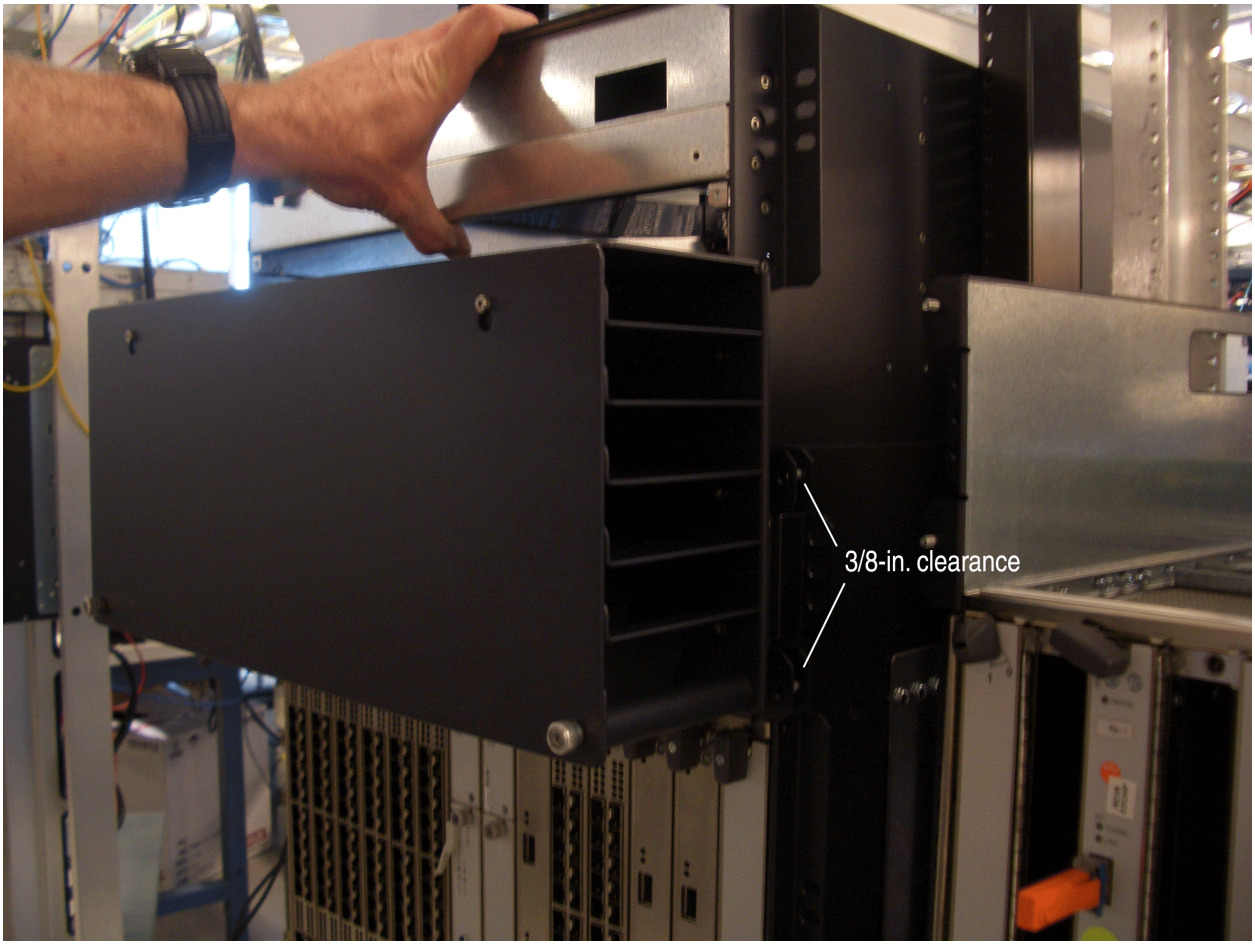
Figure 18: Resting the Top Hat on the Chassis




3. Slowly slide the top hat straight into the chassis until the front flanges are approximately 3/8-in. away from the corresponding chassis flanges. The threaded studs in the chassis flanges should be aligned with the center of the holes in the top hat front flanges (see Figure 19 on page 22).

   The 3/8-in. clearance is required to see the chassis midplane connector to which the craft interface ribbon cable connects. (The craft interface ribbon cable is attached to the extended cable manager top hat.)

Figure 19: Extended Cable Manager Top Hat Installed with 3/8-in. Clearance



4. Connect the craft interface ribbon cable:

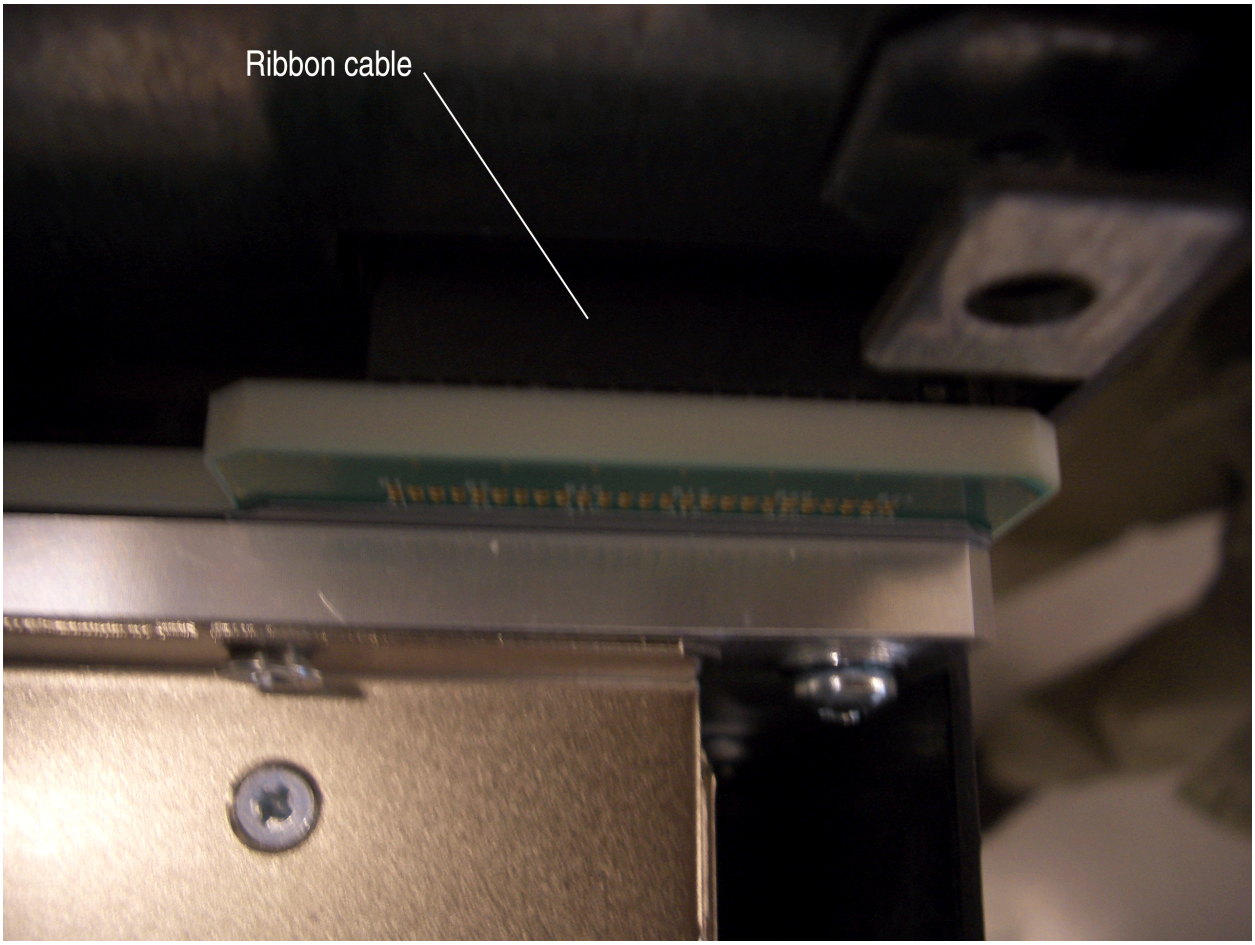
   a. Standing at the rear of the chassis, use your left hand to reach into the top of the chassis and locate the female connector and its mating clips at the end of the ribbon cable. If the chassis is mounted above your reach, stand on a ladder to comfortably access the ribbon cable.

   b. Using your left hand, gently squeeze the clips on the female connector together and slowly plug the connector straight into the male connector (see Figure 20 on page 24).

CAUTION: To avoid bending or breaking the pins in the male connector, make sure you keep the face of the female connector parallel to the face of the male connector while connecting them. You can gently rock the female connector from side to side as you plug it in.

NOTE: The space between the mating clip and the chassis is narrow, so it might be difficult to get a good grip on that side of the connector with your fingers.

Figure 20: Extended Cable Manager Craft Interface Ribbon Cable Connected to the Chassis Midplane



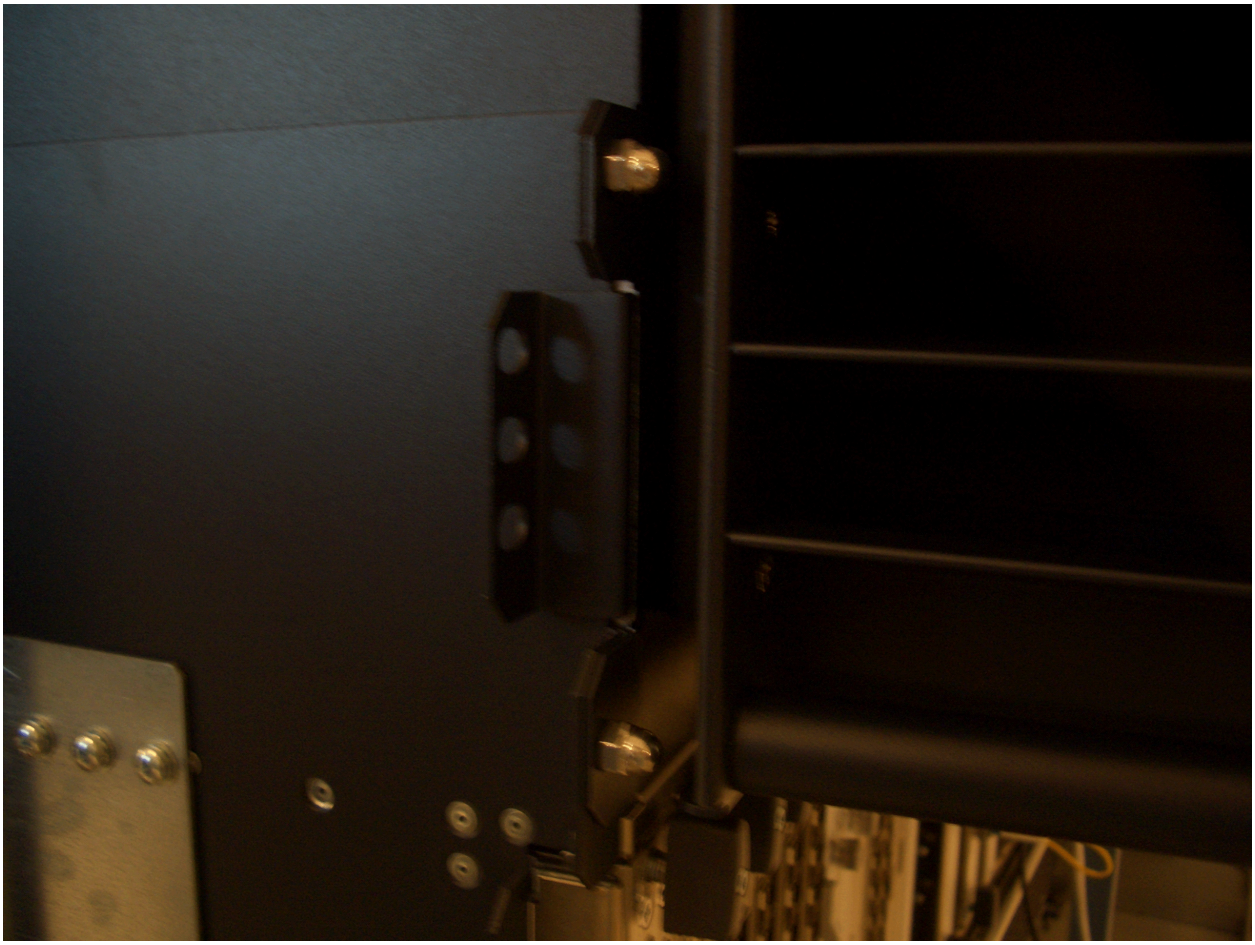

5. To close the 3/8-in. clearance, slide the top hat straight into the chassis until the front flanges are flush with the corresponding chassis flanges.

   When the top hat comes to a stop, a double-sided electrical connector on the rear of the top hat is mated with the midplane connector in which the upper fan tray used to mate (see Figure 21 on page 25, which is a view looking down into the chassis from the rear). The other side of the top hat connector is where the fan tray connector will mate when it is reinstalled in the chassis.

Figure 21: Fan Tray Connector on Extended Cable Manager Top Hat


6. Using the four acorn nuts saved in "Removing the Original Top Hat of the Chassis" on page 16, secure the top hat to the front of the chassis by tightening the nuts on the threaded studs inside the holes in the top hat front flanges (see Figure 22 on page 26). Use a 3/8-in. wrench to access the nuts between the top hat front flanges and the rear of the routing channel bays.

Figure 22: Tightening the Four Acorn Nuts That Secure the Extended Cable Manager Top Hat



7. Secure the top hat to the rear of the chassis by inserting and tightening two 8-32 screws into the upper threaded chassis holes, as shown in Figure 23 on page 27 and Figure 24 on page 28.

NOTE: The threaded holes immediately below those used to secure the top hat are used to secure the new extended cable manager rear exhaust grate. Make sure that you use the correct holes for securing the top hat.

Figure 23: Tightening the Right 8-32 Screw for the Extended Cable Manager Top Hat

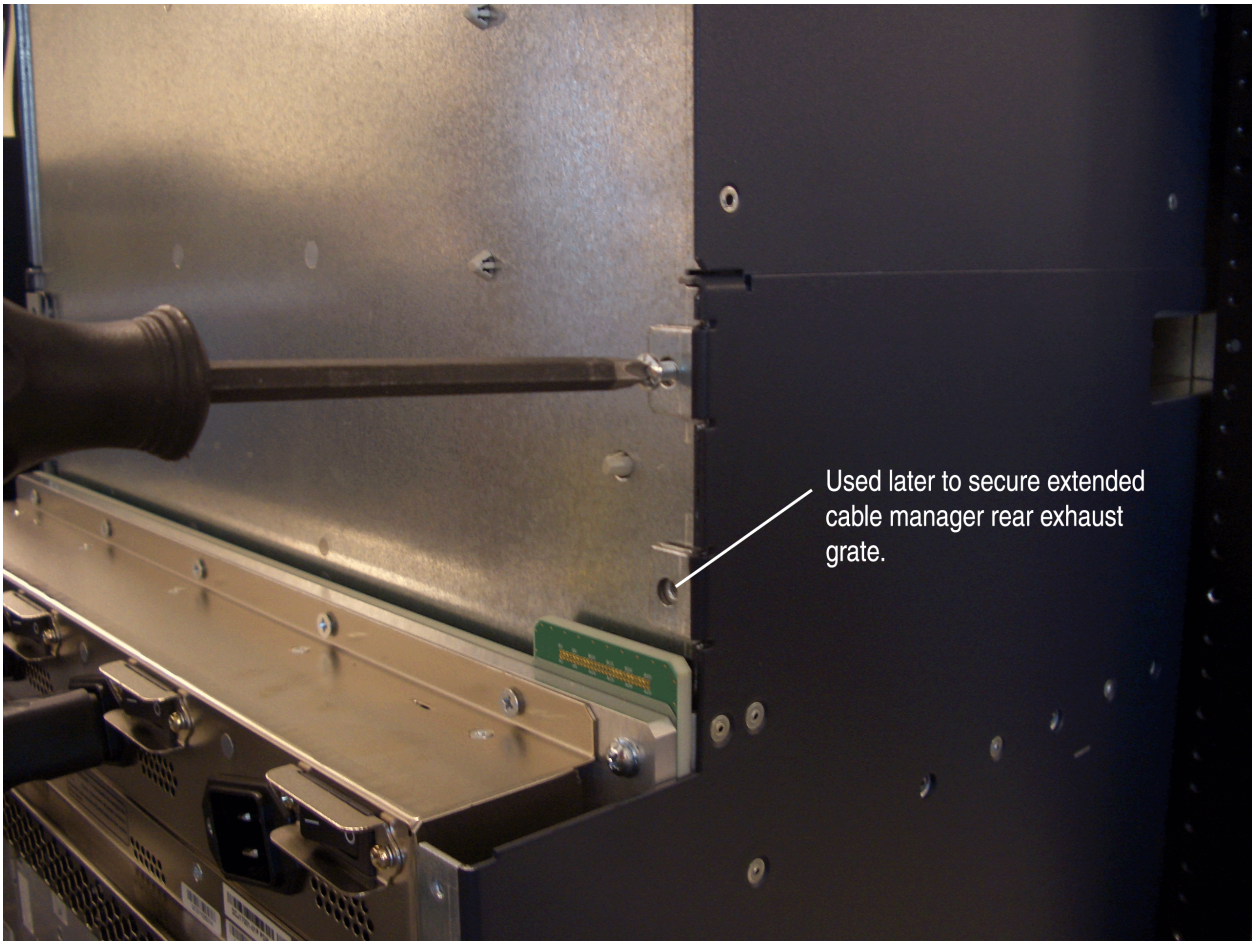
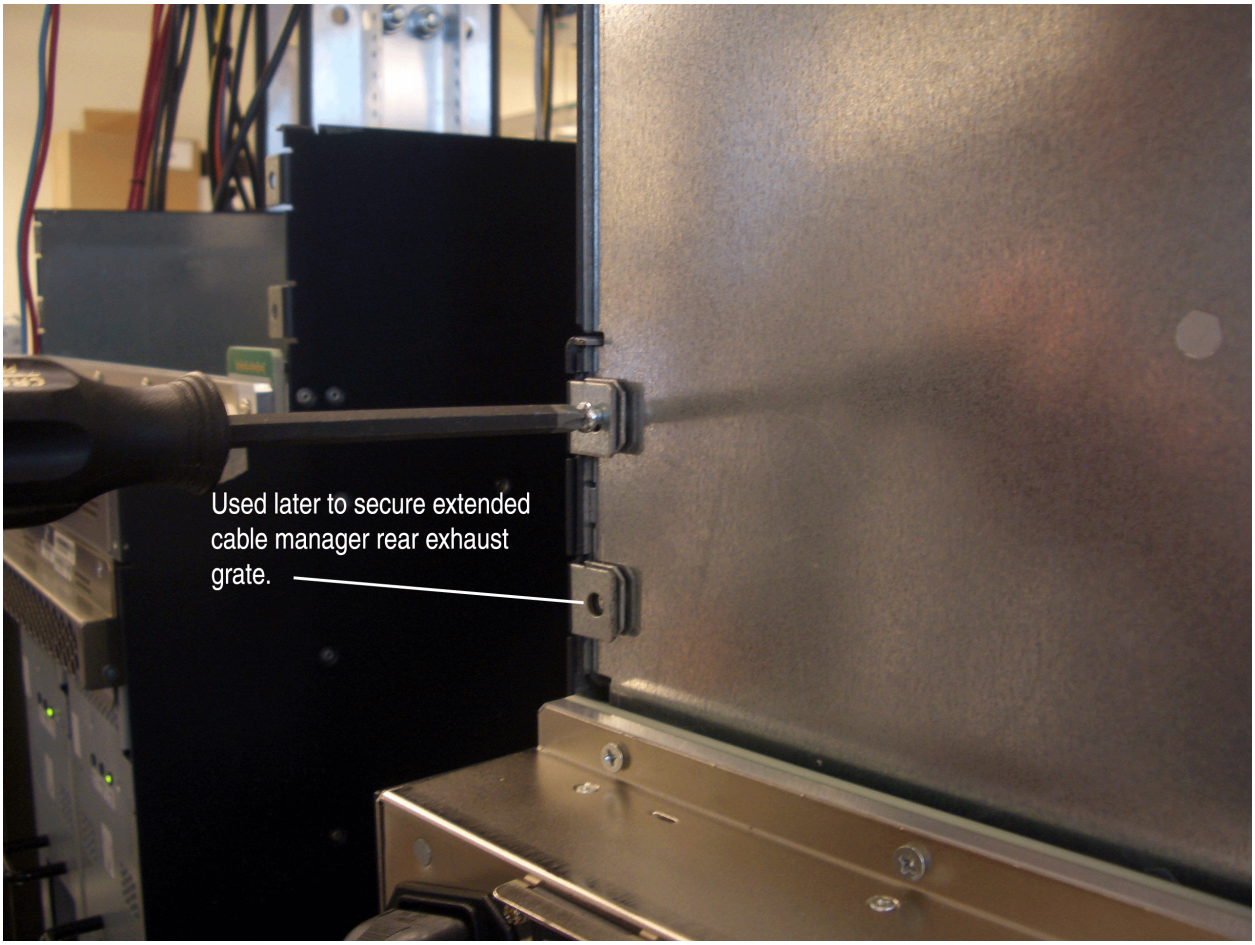


Figure 24: Tightening the Left 8-32 Screw for the Extended Cable Manager Top Hat




## Installing the New Rear Air Exhaust Grate

To install the new rear air exhaust grate, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Lift the grate into place at the top rear of the chassis. The sides and the top of the grate should be flush with the sides and top of the chassis (see Figure 25 on page 29).

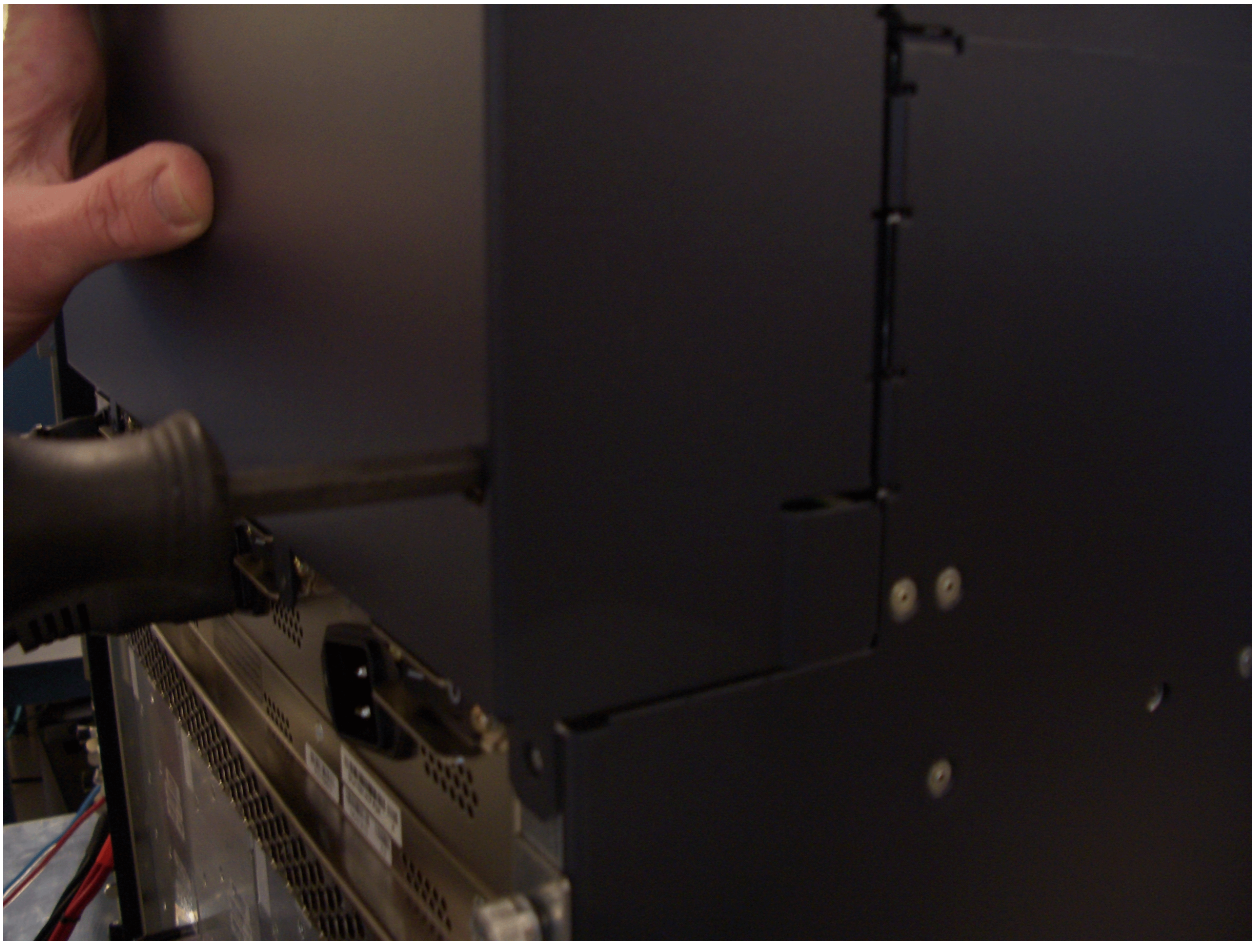
Figure 25: Installing the New Rear Air Exhaust Grate


3. With a flatblade or Phillips screwdriver, partly tighten the top two captive screws, then the bottom two captive screws, that secure the grate to the chassis.

   Figure 26 on page 30 and Figure 27 on page 31 show the top right and bottom right captive screws being tightened.

Figure 26: Tightening the Top Right Captive Screw of the New Rear Air Exhaust Grate

Figure 27: Tightening the Bottom Right Captive Screw of the New Rear Air Exhaust Grate



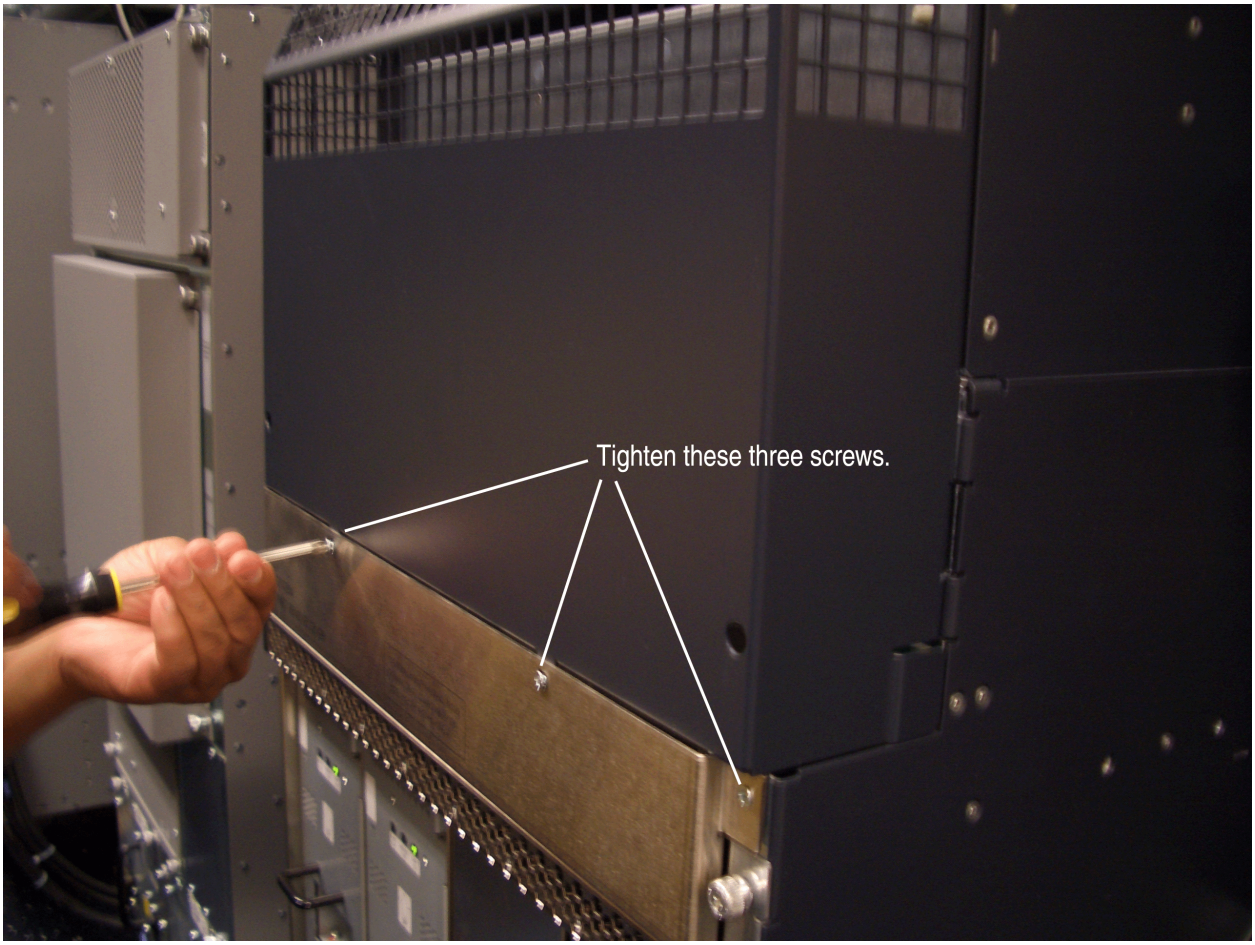
4. Fully tighten each of the four captive screws.

## Reinstalling the AC Power Inlet Cover (DC-Powered Routers Only)

To reinstall the cover over the four unused AC power inlets in a DC-powered router, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Place the cover directly below the new rear exhaust grate so that the three screw holes in the cover align with the corresponding threaded holes in the chassis.
3. Using the three screws saved in "Removing the AC Power Inlet Cover (DC-Powered Routers Only)" on page 8, secure the cover to the chassis by partly tightening each of the screws (see Figure 28 on page 32).

Figure 28: Removing the AC Power Inlet Cover




4. Fully tighten each of the three screws.

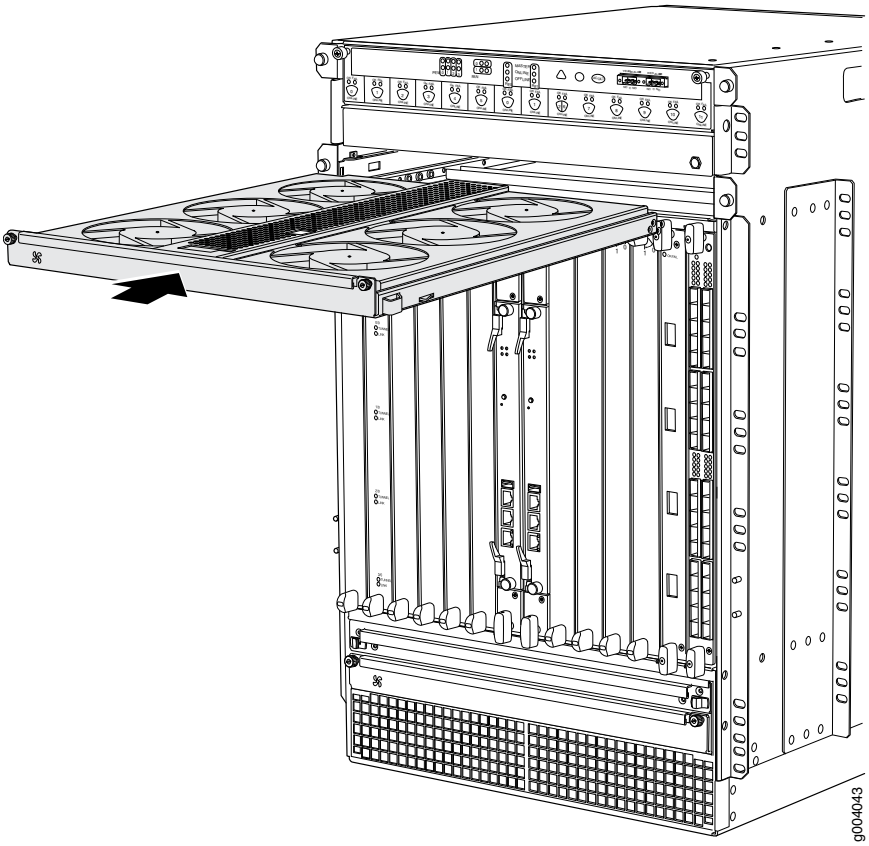
## Reinstalling the Upper Fan Tray

To reinstall the upper fan tray, follow this procedure (see Figure 29 on page 33):

NOTE: Figure 29 on page 33 does not show the extended cable manager and shows the craft interface installed in the chassis. You have not yet installed the craft interface.

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Grasp the fan tray on each side and insert it straight into the chassis. Note the correct orientation by the "this side up" label on the top surface of the fan tray.
3. Tighten the captive screws on each side of the fan tray faceplate to secure it in the chassis.

Figure 29: Installing an Upper Fan Tray



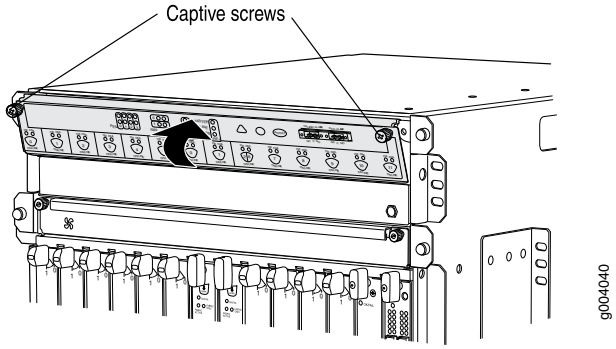

## Reinstalling the Craft Interface

To reinstall the craft interface, follow this procedure (see Figure 30 on page 34):

NOTE: Figure 30 on page 34 does not show the extended cable manager installed.

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Grasp the craft interface with one hand and hold the bottom edge of the craft interface with the other hand to support its weight.
3. Align the red line along the bottom of the internal strap with the bottom of the connector and snap gently into place.
4. Align the bottom of the craft interface with the sheet metal above the DPC card cage and press it into place.
5. Tighten the screws at the top left and right corners of the craft interface faceplate.
6. Reattach any external devices connected to the craft interface.

Figure 30: Installing a Craft Interface




Rest lower edge of the craft interface in the chassis bay, then tilt it toward the chassis, and secure the screws.

## Powering On the Router

To power on the router, follow this procedure:

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Verify that the power supplies are fully inserted in the chassis and that each of their release levers is locked into the chassis in the rightmost position.
3. For each power supply on an AC-powered router, verify that the source power cord is securely inserted into the appliance inlet. For each power supply on a DC-powered router, verify that the source power cables are connected to the appropriate terminal: the positive (+) source cable to the return terminal (labeled **RETURN**) and the negative (–) source cable to the input terminal (labeled **–48V**).
4. Verify that an external management device is connected to one of the Routing Engine ports on the Craft Interface (**AUX**, **CONSOLE**, or **ETHERNET**). For more information on connecting management devices, see the *MX960 3D Universal Edge Router Hardware Guide*.
5. Turn on the power to the external management device.
6. For an AC-powered router, switch the AC switch in the chassis above each power supply to the on position (**—**) and observe the status LEDs on each power supply faceplate. If an AC power supply is correctly installed and functioning normally, the **AC OK** and **DC OK** LEDs light steadily, and the **PS FAIL** LED is not lit.

   For a DC-powered router, switch the circuit breaker on each of the power supplies to the **ON** position and observe the status LEDs on each power supply faceplate. If a DC power supply is correctly installed and functioning normally, the **PWR OK**, **BREAKER ON**, and **INPUT OK** LEDs light steadily.

   If any of the status LEDs indicates the power supply is not functioning normally, repeat the installation and cabling procedures described in the *MX960 3D Universal Edge Router Hardware Guide*.

NOTE: After powering off a power supply, wait at least 60 seconds before turning it back on. After powering on a power supply, wait at least 60 seconds before turning it off.

If the system is completely powered off when you power on the power supply, the Routing Engine boots as the power supply completes its startup sequence.

After a power supply is powered on, it can take up to 60 seconds for status indicators—such as LEDs on the power supply, **show chassis** commands, and messages on the craft interface LCD—to indicate that the power supply is functioning normally. Ignore error indicators that appear during the first 60 seconds.

7. On the external management device connected to the Routing Engine, monitor the startup process to verify that the system has booted properly.

## Verifying the Extended Cable Manager Is Correctly Installed

To verify that the extended cable manager is correctly installed, follow this procedure:

1. Verify that air is flowing out of the rear air exhaust.
2. Verify that the appropriate LEDs on the craft interface are lit. For more information, see the *MX960 3D Universal Edge Router Hardware Guide*.
3. In Junos OS Release 8.5 or later, Issue the **show chassis hardware** command:

```
user@host> show chassis hardware
Hardware inventory:
Item             Version  Part number  Serial number     Description
Chassis                                JN107FC5DAFA      MX960
Midplane         REV 02   710-013698   CC6220            MX960 Midplane
FPM Board        REV 01   710-014974   JS4208            MX960 Front Panel
Display
PIM              Rev 02   740-013110   QCS10375009       Power Inlet Module
PEM 0            Rev 01   740-013682   QCS10374009       PS 1.7kW; 200-240VAC
 in
PEM 1            Rev 01   740-013682   QCS10374029       PS 1.7kW; 200-240VAC
 in
Routing Engine 0 REV 02   740-013063   1000639065        RE-S-2000
Routing Engine 1 REV 04   740-013063   1000664335        RE-S-2000
CB 0             REV 02.6 710-013385   JM7908            MX960 SCB
CB 1             REV 03   710-013385   JS9412            MX960 SCB
FPC 2            REV 03   710-013699   JS4284            MX960 40GE DPC
  CPU            REV 04   710-013713   JS9401            MX960 DPC PMB
  PIC 0                   BUILTIN      BUILTIN           10x 1GE
    ...
Fan Tray 0       REV 01   740-014971   FT0655            MX960 Fan Tray
Fan Tray 1       REV 01   740-014971   FT0653            MX960 Fan Tray
Fan Extender     REV 01   710-018051   JZ8674          Extended Cable Manager
```

Under the **Item** field, verify that you see all hardware components installed in the chassis, including the following:

- FPM Board
- Fan Tray 0
- Fan Extender (**Description** field is **Extended Cable Manager**)

NOTE: **The extended cable manager is shown in command output only in Junos OS Release 8.5 or later.**

## Dressing the Cables

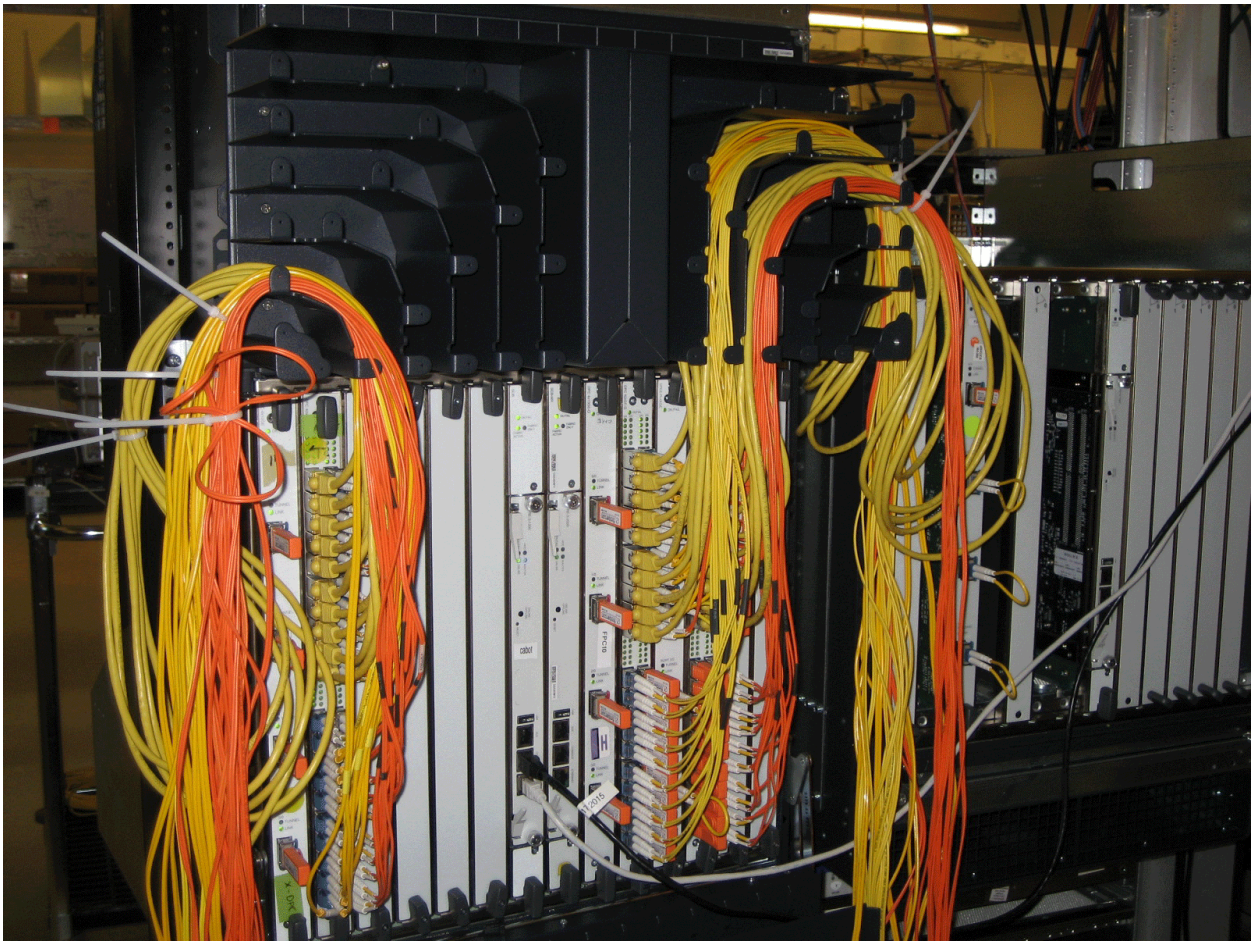
To dress the cables within the extended cable manager, follow this procedure:

1. With a flatblade or Phillips screwdriver, loosen the two captive screws at the bottom of the cable routing bay cover (see Figure 31 on page 37). The slots in the cover will rest on their supporting posts and keep the cover in place.
2. Holding the captive screws, lift the cover straight up and out to remove it from the supporting posts. Set the cover aside.
3. Carefully route all cables connected to the router as follows (see Figure 32 on page 38):
   - If a DPC has fiber-optic cables, use the extended cable manager to route up to 30 cables through the bottom of the corresponding routing channel and out the side of the routing bay. Route any additional fiber-optic cables through the standard cable manager.
   - If a DPC has copper cables, use the extended cable manager to route up to 40 cables through the bottom of the corresponding routing channel and out the side of the routing bay.
   - Route any cables that do not connect to a DPC, such as an out-of-band Ethernet cable connected to the Routing Engine, through the standard cable manager.

   Ensure that all cables routed through the extended cable manager are held inside the routing channels by the retaining flanges.
4. Place the cable routing bay cover over the cable bays by resting each of the cover slots on a supporting post.
5. With a flatblade or Phillips screwdriver, tighten the two captive screws at the bottom of the cover.

Figure 31: Cable Routing Bay Cover

Figure 32: Dressing the Cables Through the Routing Channels



## List of Technical Publications

Table 1 on page 39 lists the MX960 3D Universal Edge Router hardware documentation and describes the contents of each document.

**Table 1: Technical Documentation for the MX960 3D Universal Edge Routers**

| Book | Description |
|---|---|
| Hardware Documentation | |
| *MX960 3D Universal Edge Router Hardware Guide* | Describes how to install, maintain, and troubleshoot the router and its components. |
| *MX Series Interface Module Reference* | Describes the router's Dense Port Concentrators (DPCs). |
| Release Notes | |
| *MX960 3D Universal Edge Router Release Notes* | Describe the available documentation for the router and summarize known problems with the hardware and accompanying software. |

## Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract, or are covered under warranty, and need postsales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf.
- Product warranties—For product warranty information, visit http://www.juniper.net/support/warranty/.
- JTAC Hours of Operation —The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

### Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: http://www.juniper.net/customers/support/
- Find product documentation: http://www.juniper.net/techpubs/
- Find solutions and answer questions using our Knowledge Base: http://kb.juniper.net/
- Download the latest versions of software and review release notes: http://www.juniper.net/customers/csc/software/

- Search technical bulletins for relevant hardware and software notifications: http://kb.juniper.net/InfoCenter/
- Join and participate in the Juniper Networks Community Forum: http://www.juniper.net/company/communities/
- Open a case online in the CSC Case Management tool: http://www.juniper.net/cm/

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: https://tools.juniper.net/SerialNumberEntitlementSearch/

### Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at http://www.juniper.net/cm/.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, visit us at http://www.juniper.net/support/requesting-support.html

## Revision History

April 2014—Revised figures 1 and 3 to reflect updated branding.

April 2011—Converted file to PDF.

6 July 2007—530-021497-01 Revision 3. Added instructions for removing and reinstalling the AC power inlet cover on a DC-powered router.

26 June 2007—530-021497-01 Revision 2.

15 June 2007—530-021497-01 Revision 1.