

MX2020 Universal Routing Platform

Published
2024-05-29

RELEASE

Table of Contents

MX2020 Quick Start Description

Step 1: Prepare the Site for Installation

Rack-Mounting Requirements | 2

Moving Requirements and Guidelines Using a Router Transport Kit | 6

Tools Required to Unpack and Prepare the MX2020 Router for Installation | 9

Step 2: Install the Mounting Hardware

Step 3: Install the Router

Unpack the Router | 11

Remove Components | 15

Install the Router Using a Pallet Jack with Attachment | 23

Install the Pallet Jack Attachment | 23

Use a Pallet Jack with Attachment to Install the Router in the Rack | 24

Install the Router Using a Router Transport Kit | 30

Unpack the Router Transport Kit | 30

Install the Router Transport Kit onto the Router | 33

Use the Transport Kit to Install the Router in the Rack | 36

Step 4: Connect the Grounding Cable

Step 5: Reinstall Components

Step 6: Connect External Devices and Line Card Cables

Connect to a Network for Out-of-Band Management | 53

Connect a Management Console | 53

Connect the Line Card Cables | 54

Step 7: Connect Power Cables

Connect Power to a Three-Phase Delta AC Power Distribution Module | 55

Connect Power to a Three-Phase Wye AC Power Distribution Module | 60

Connect Power to a DC Power Distribution Module | 66

Connect DC Power Supply Modules | 68

Step 8: Perform Initial Software Configuration

Enter Configuration Mode | 72

Configure User Accounts and Passwords | 72

Configure System Attributes | 73

Commit the Configuration | 75

Safety Warnings

MX2020 Quick Start Description

This Quick Start contains information you need to install and configure the MX2020 Universal Routing Platform quickly. For complete installation instructions, see the [MX2020 Universal Routing Platform Hardware Guide](https://www.juniper.net/documentation/) at <https://www.juniper.net/documentation/>.



WARNING: This Quick Start contains a summary of safety warnings in "Safety Warnings" on page 76. For a complete list of warnings for this router, including translations, see the [MX2020 Universal Routing Platform Hardware Guide](https://www.juniper.net/documentation/) at <https://www.juniper.net/documentation/>.

The MX2020 Universal Routing Platform with the standard cable manager is 45 rack units (U) tall. One router with the standard cable manager can be installed in a single rack or cabinet.

NOTE: There must be a minimum of 45-U of usable rack space when installing the MX2020 router into a 45-U rack.

NOTE: If you are installing the MX2020 router into a network cabinet, make sure that no hardware, device, rack, or cabinet component obstructs the 45-U rack space from access during installation.

The MX2020 router has 20 dedicated line card slots, which means a maximum of 20 Modular Port Concentrators (MPCs) housed in adapter cards (ADCs) that can accommodate Modular Interface Cards (MICs), a host subsystem consisting of 2 Control Boards with Routing Engines (CB-REs), and 8 Switch Fabric Boards (SFBs).

Adapter cards provide housing to MPCs. The MPCs attach to the adapter cards, which in turn connect to the backplane.

Up to two MICs can be installed in each MPC. Fully populated, the MX2020 router supports up to 40 MICs.

For a list of the supported MPCs and MICs, see the [MX Series Interface Module Reference](#).

The router is shipped in a wooden crate, bolted securely to a wooden pallet. Metal latches secure the top and bottom in place. Quick Start installation instructions, a large rack mount tray, EMI covers, and a cardboard accessory box are also included in the shipping container.

NOTE: The shipping container and router (fully populated) weighs approximately 2042 lb (926.24 kg), depending on your configuration.

Step 1: Prepare the Site for Installation

IN THIS SECTION

- [Rack-Mounting Requirements | 2](#)
- [Moving Requirements and Guidelines Using a Router Transport Kit | 6](#)
- [Tools Required to Unpack and Prepare the MX2020 Router for Installation | 9](#)

Rack-Mounting Requirements

- You can install the router in a four-post rack or cabinet.

NOTE: The shipping and installation site must be an ESD-approved area.

- The rack rails must be spaced wide enough to accommodate the router chassis's external dimensions: 78.75 in. (200 cm) high, 36.22 in. (92 cm) deep, and 19 in. (48.3 cm) wide (see [Figure 1 on page 5](#)).

NOTE: A typical four-post rack measures 84 in. (213.4 cm) high, 24 in. (61 cm) to 30 in. (76.2 cm) deep, and 19 in. (48.3 cm) wide.

NOTE: The dimensions also include the standard and extended cable manager systems and standard EMI covers.

- The rack must be able to accommodate the additional depth of the extended cable manager system, 40.15 in. (102 cm) deep (see [Figure 1 on page 5](#)).

- The rack must be strong enough to support the weight of the fully populated router. See [Table 1 on page 3](#) for MX2020 shipping weight specifications.

Table 1: MX2020 Shipping Weight Specifications

Item	Shipping Weight
Shipping crate and pallet	527 lb (239.04 kg)
Unpopulated MX2020	429.6 lb (194.86 kg)
Unpopulated MX2020 with shipping crate and pallet	956.6 lb (433.9 kg)
Fully populated MX2020	1515 lb (687.19 kg)
Fully populated MX2020 with shipping crate and pallet	2042 lb (926.23 kg)

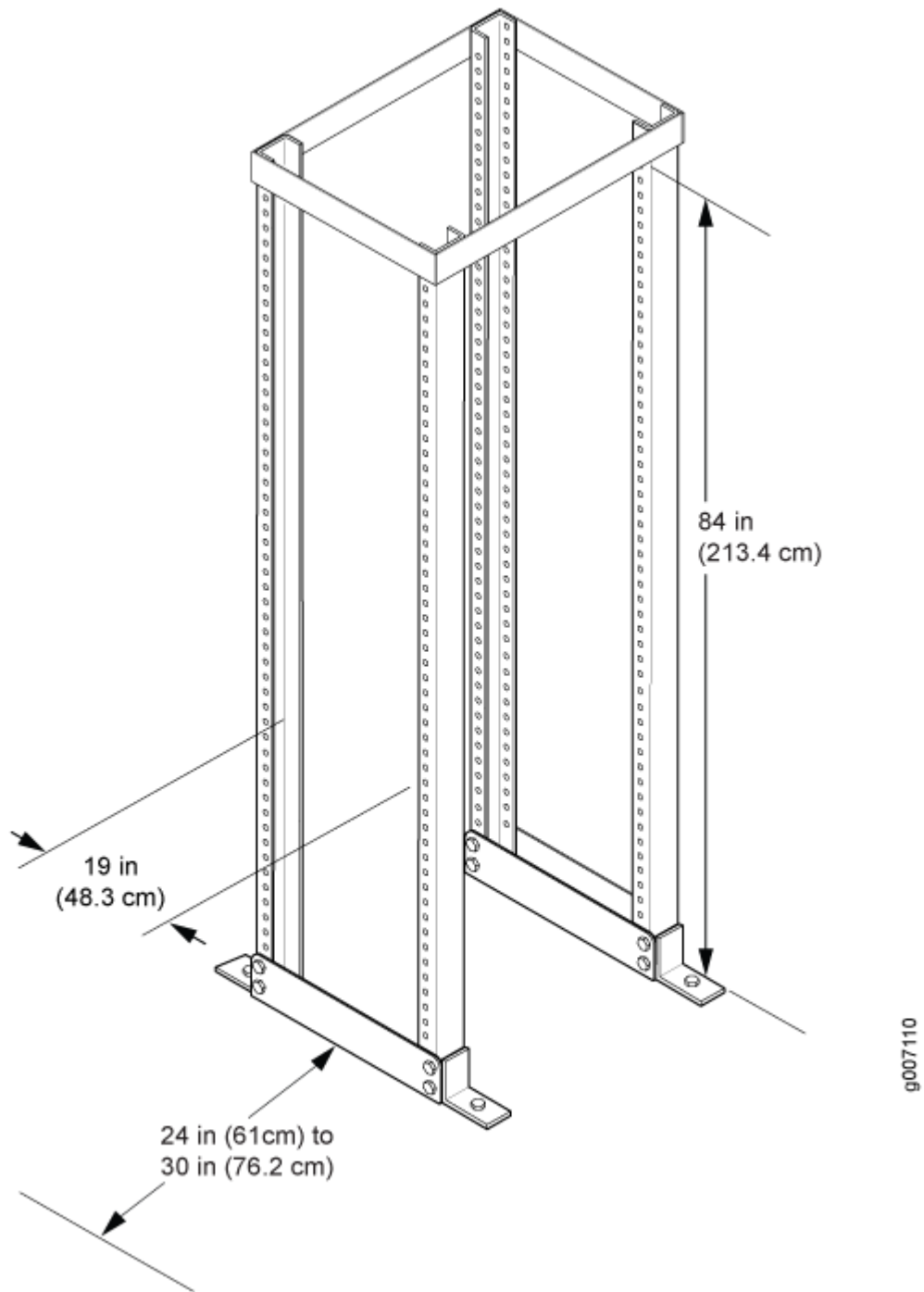
NOTE: For a complete list of individual line card and component weights and measurements, see the [MX2020 Universal Routing Platform Hardware Guide](https://www.juniper.net/documentation/) at <https://www.juniper.net/documentation/>.

- For the cooling system to function properly, the airflow around the chassis must be unrestricted. Allow at least 36 in. (91.44 cm) of clearance between front-to-rear-cooled routers. Allow 2.8 in. (7 cm) between the side of the chassis and any non-heat-producing surface such as a wall.
- For service personnel to remove and install hardware components, there must be adequate space at the front and back of the router. Allow at least 36 in. (91.44 cm) in front of the router and 36 in. (91.44 cm) behind the router.
- The rack or cabinet must have an adequate supply of cooling air.
- Ensure that the cabinet allows the hot exhaust air of the chassis to exit from the cabinet without recirculating into the router.
- The router must have the front and rear shipping covers installed to help move the router into the rack or cabinet.
- The router must be installed into a rack or cabinet that is secured to the building structure.

- Ensure that there is adequate turn radius and aisle space for the router to be installed into a rack or cabinet by using a pallet jack with attachment.
- Ensure that there is adequate turn radius and aisle space for the router to be installed into a rack or cabinet by using a router transport kit.
- The cabinet must be clear of any hardware, device, rack, or cabinet component that obstructs the 45-U rack space from being access during installation.

NOTE: There must be a minimum of 45 U of usable rack space when installing the MX2020 router into a 45-U rack.

Figure 1: Typical Four-Post Rack

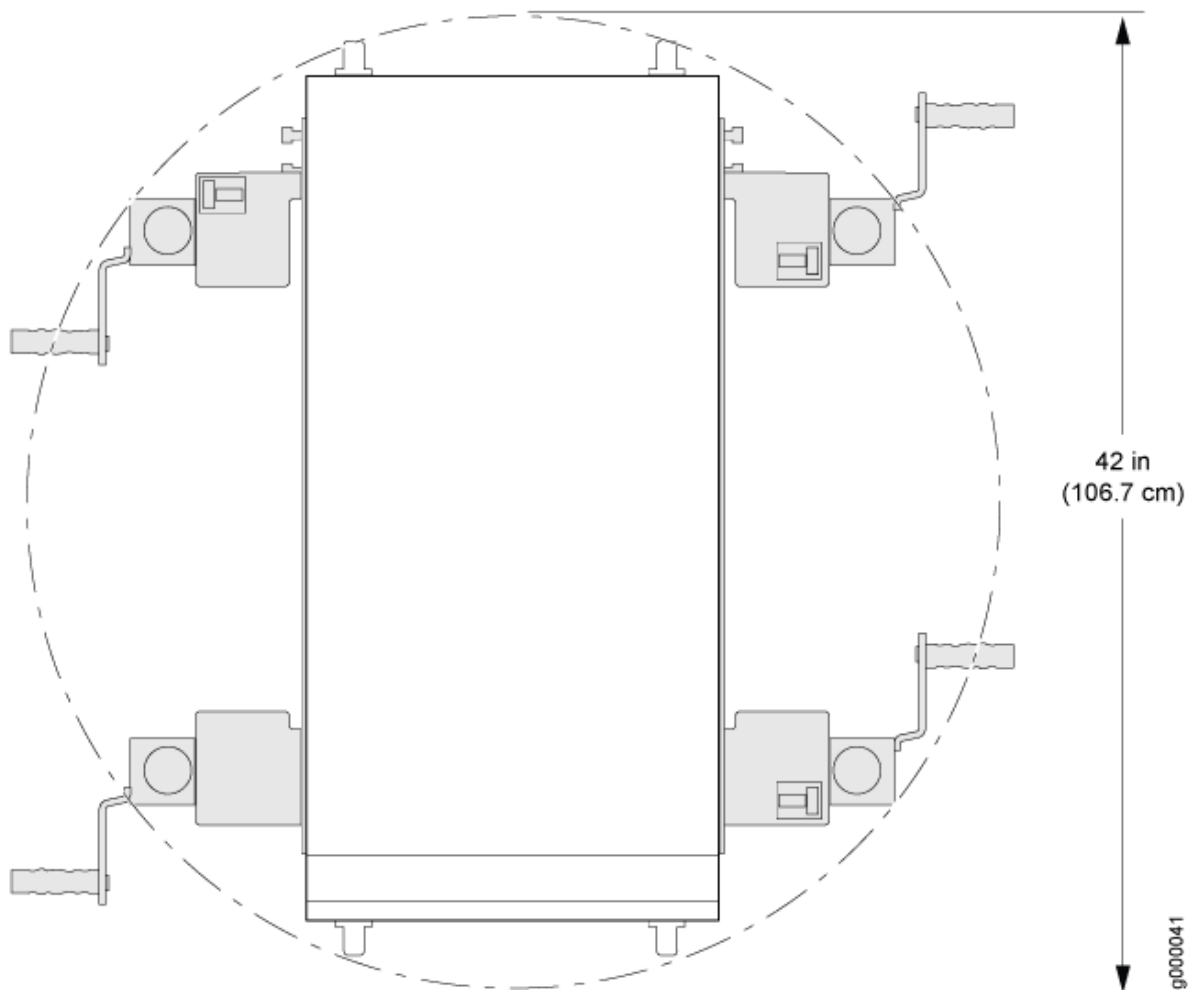


Moving Requirements and Guidelines Using a Router Transport Kit

The MX2020 requires a minimum 42 in. (106.7 cm) diameter of space to turn the chassis on the router transport kit (see [Figure 2 on page 6](#)).

NOTE: The router transport kit handles can be removed to accommodate aisle width.

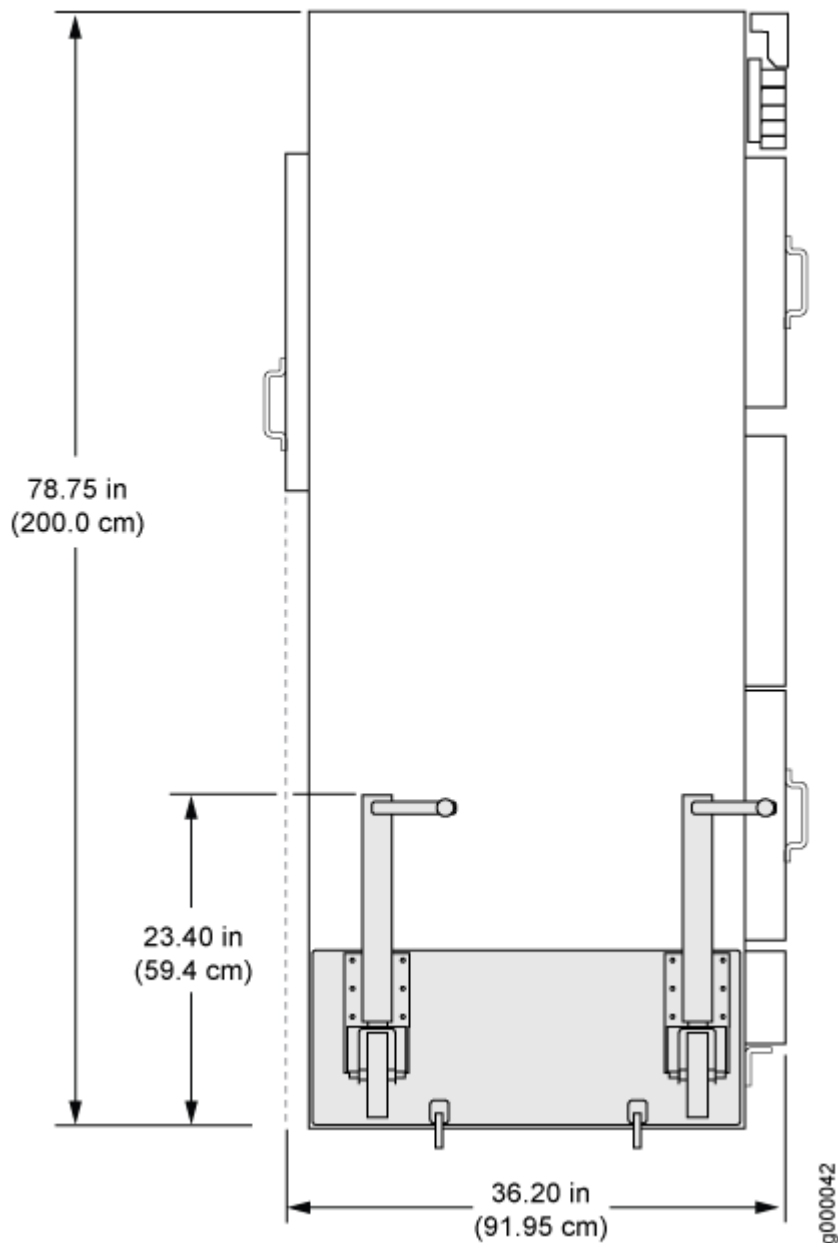
Figure 2: Turning Diameter of Router Transport Kit



The weight of the router transport kit is 138.5 lb (63 kg). The maximum recommended height the MX2020 should be lifted from the floor using the router transport kit is 1.5 in. (3.8 cm).

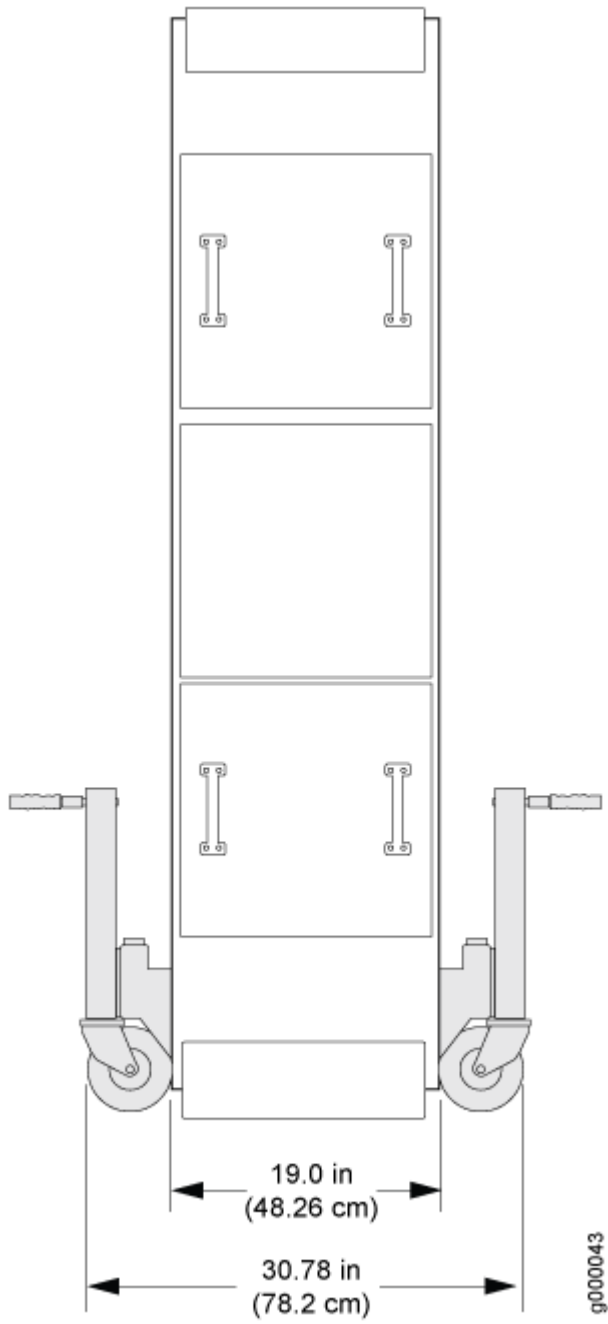
Viewed from the side, the router with the router transport kit installed measures 78.75 in. (200 cm) high and 36.20 in. (91.95 cm) wide, with the transport kit measuring 23.40 in. (59.4 cm) high (see [Figure 3 on page 7](#)).

Figure 3: Measurements of the Router Transport Kit Installed on the MX2020 (Side View)



Viewed from the front, the router with the router transport kit installed measures 30.78 in. (78.2 cm) wide (see [Figure 4 on page 8](#)).

Figure 4: Measurements of the Router Transport Kit Installed on the MX2020 (Front View)



Tools Required to Unpack and Prepare the MX2020 Router for Installation

To unpack the router and prepare for installation, you need the following tools and equipment:

- Standard pallet jack—48 in. (121.92 cm) deep x 27 in. (68.58 cm) wide
- Pallet jack attachment (model number MX2000-PLLT-JCK-ADPTR)
- Router transport kit (model number MX2K-TRNSPRT-KIT)
- Front component shipping covers
- Rear component shipping covers
- Phillips (+) screwdrivers, numbers 1, 2, and 3
- 1-1/8-in. (28.57 mm) torque-controlled driver or socket wrench to tighten router transport kit winch mechanism
- 9/16-in. (14 mm) open-end or socket wrench with extension to remove bracket bolts from the shipping pallet
- Electrostatic discharge wrist strap
- Antistatic mat

NOTE: We recommend that you install the MX2020 by using a pallet jack with attachment or a router transport kit.

Step 2: Install the Mounting Hardware

1. Slide the four-post rack mounting shelf between the rack rails, resting the bottom of the shelf on the rack supports. The four-post rack mounting shelf installs on the rear rack rails, extending toward the front of the rack, as specified in the [MX2020 Universal Routing Platform Hardware Guide](#), for large shelf installation.

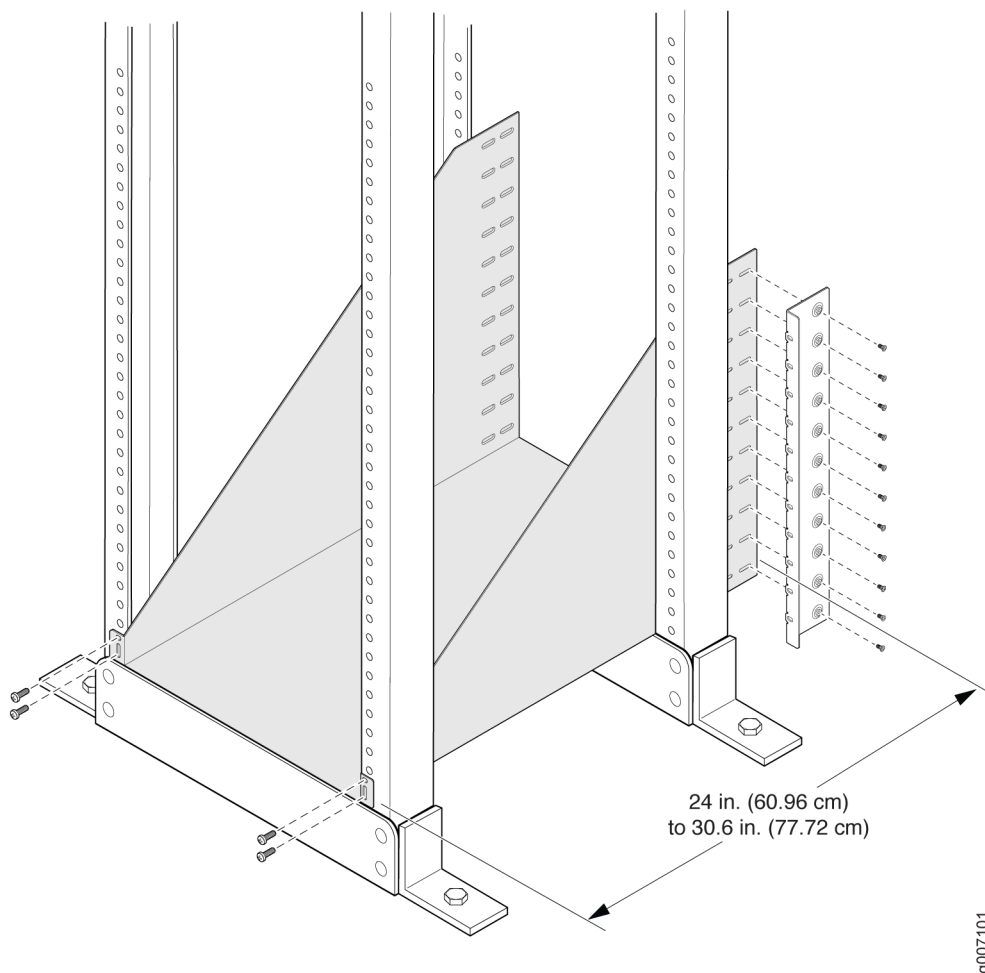
NOTE: The two brackets on the four-post rack mounting shelf are adjustable from 24 in. (60.96 cm) through 30 in. (76.2 cm) to accommodate different types of racks rails.

2. On the front of the rear rack rails, partially insert screws into the holes in each ear of the four-post rack mounting shelf (see [Figure 5 on page 10](#)).

NOTE: Depending on the type of rack or cabinet you have, cage nuts might be required.

3. Partially insert screws into the open holes in the front ears of the four-post rack mounting shelf.
4. Tighten all the screws completely.

Figure 5: Mounting Hardware for a Four-Post Rack or Cabinet



NOTE: There must be a minimum of 45-U unobstructed front-to-back usable rack space when installing the MX2020 router into a four-post rack or cabinet.

NOTE: If you are installing the MX2020 router into a network cabinet, make sure that no hardware, device, rack, or cabinet component obstructs the 45-U rack space from access during installation.

Step 3: Install the Router

IN THIS SECTION

- [Unpack the Router | 11](#)
- [Remove Components | 15](#)
- [Install the Router Using a Pallet Jack with Attachment | 23](#)
- [Install the Router Using a Router Transport Kit | 30](#)

- ["Unpack the Router" on page 11](#)
- ["Remove Components" on page 15](#)
- Install the router using one of the following procedures:
 - ["Install the Router Using a Pallet Jack with Attachment" on page 23](#)
 - ["Install the Router Using a Router Transport Kit" on page 30](#)

Unpack the Router

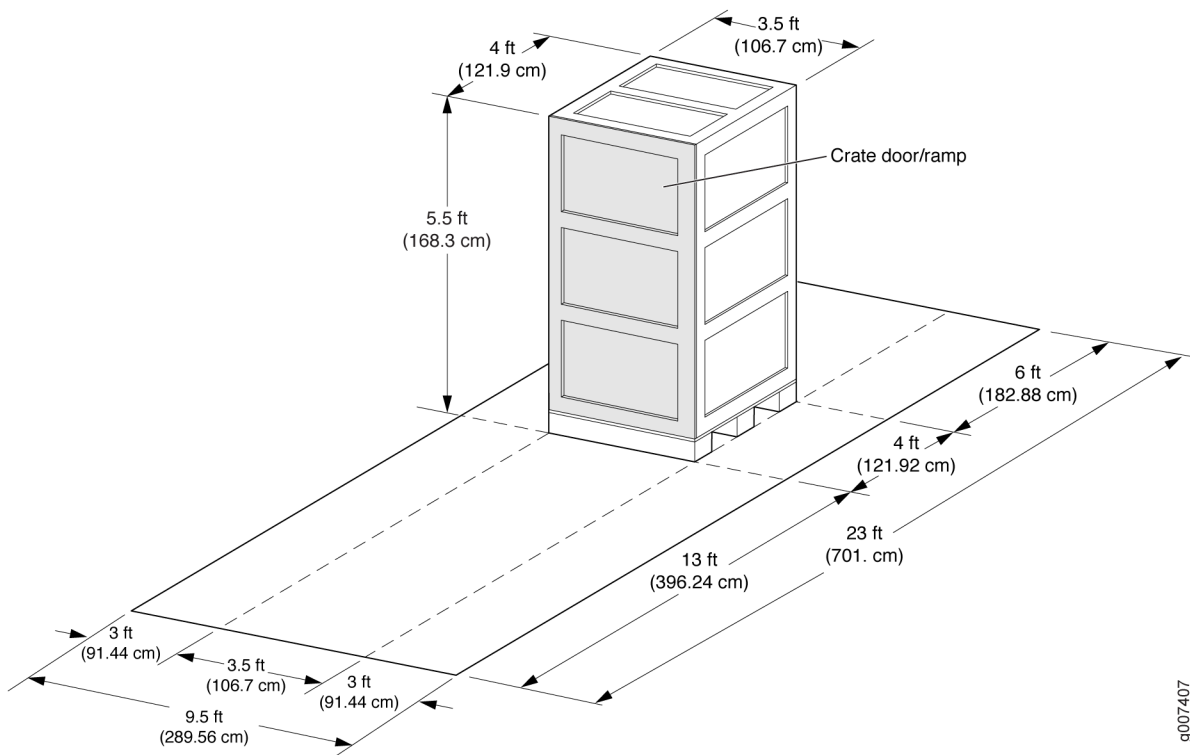
The router is shipped in a wooden crate. A wooden pallet forms the base of the crate. The router chassis is bolted to this pallet. Metal latches secure the top and bottom in place. A large rack mount tray, pallet

jack attachment, EMI covers, and a cardboard accessory box are also included in the shipping crate. The total weight of the container including the router, FRUs, and accessories is 2042 lb (926.24 kg).

The shipping container measures 85.0 in. (215.9 cm) high, 42.0 in. (106.7 cm) wide, and 48.0 in. (121.9 cm) deep (see [Figure 6 on page 12](#)). See [Table 1 on page 3](#) for MX2020 shipping weight specifications.

NOTE: The total weight of the shipping crate with router and accessories varies depending on your configuration.

Figure 6: MX2020 Shipping Crate Specifications



NOTE: Depending on your configuration, the MX2020 might be shipped with additional components already installed.

NOTE: The MX2020 can be ordered with extended EMI covers and extended cable managers.

Before removing the router from the shipping crate, you must remove all components (see ["Remove Components" on page 15](#)).

Because of the router's size and weight—up to 1515 lb (687.2 kg) depending on configuration—we strongly recommend that you install the router by using a pallet jack with pallet jack attachment or a router transport kit.

NOTE: The router is maximally protected inside the shipping crate. Do not unpack it until you are ready to begin installation.

To unpack the router:

1. Move the shipping crate to an ESD-approved staging area as close to the installation site as possible, where you have enough room to remove the components from the chassis. While the chassis is bolted to the shipping pallet, you can use a forklift or pallet jack to move it.

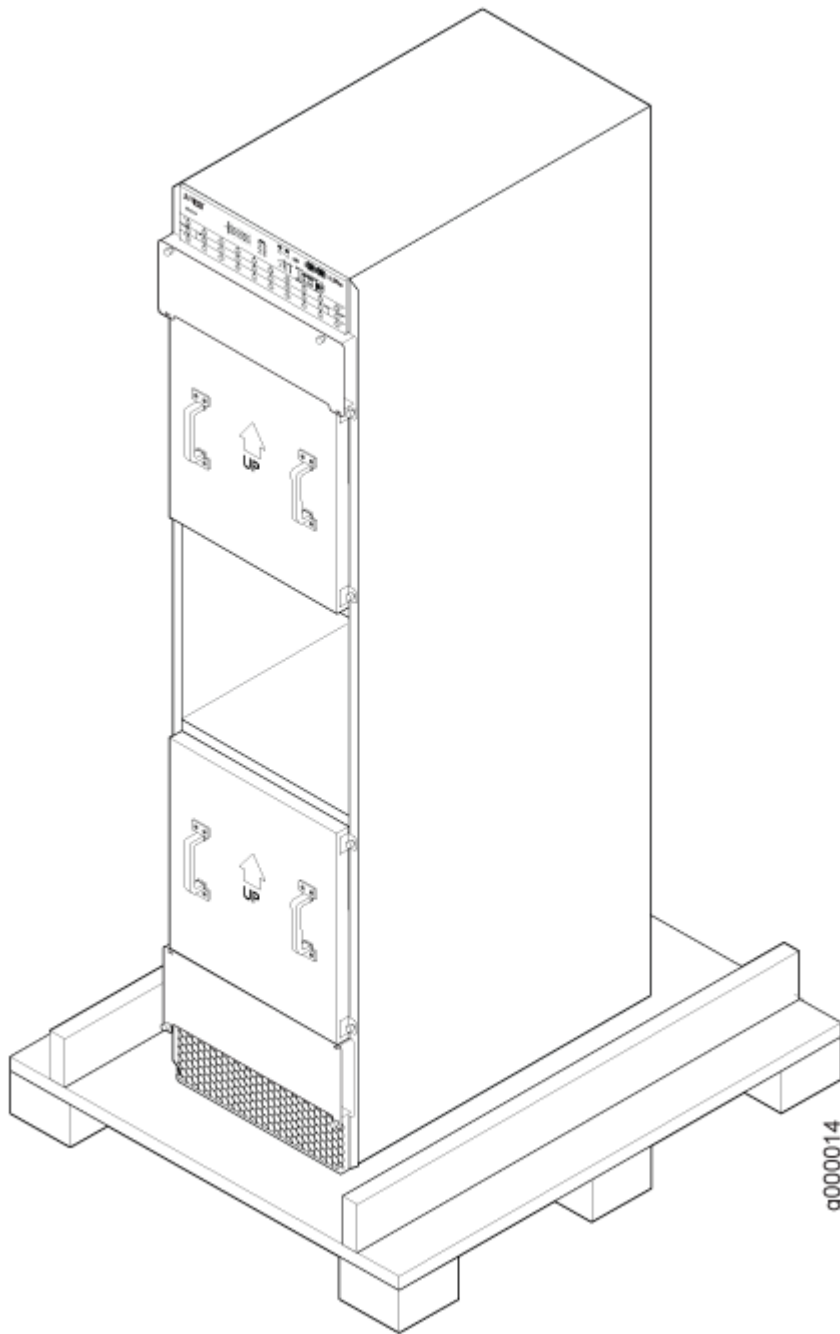
NOTE: We recommend that all components be removed from the chassis before installation.

2. Position the shipping crate with the arrows pointing up.
3. Open all the latches on the shipping crate.
4. Remove the front door of the shipping crate and set it aside.

NOTE: If you ordered a router transport kit, the shipping crate door is used as a ramp to guide the MX2020 out of the crate.

5. Using a two-person team, slide the remainder of the shipping crate off the pallet (see [Figure 7 on page 14](#)).

Figure 7: Unpacking the MX2020



6. Remove the foam covering the top of the router.
7. Remove the pallet jack attachment, if ordered. See ["Unpack the Router Transport Kit" on page 30](#) for instructions on how to unpack and install the router transport kit.
8. Remove the large mounting tray.
9. Remove the accessory box.

10. Verify the parts received against the list.
11. Remove the vapor corrosion inhibitor (VCI) packs attached to the pallet, being careful not to break the VCI packs open.
12. To remove the brackets holding the chassis to the pallet, use a 9/16-in. (14 mm) socket wrench, and a number 2 Phillips screwdriver to remove the bolts and screws from the brackets.
13. Set the shipping brackets aside for later use to secure the router to the pallet jack attachment.

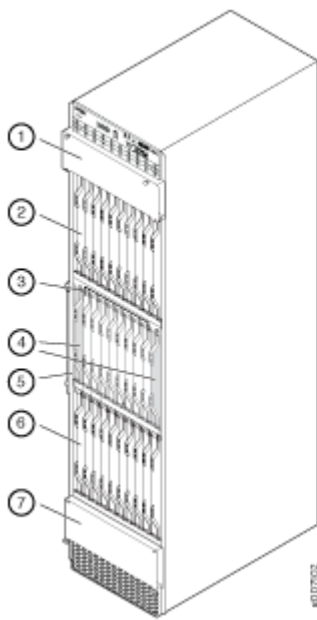
NOTE: If you ordered a router transport kit, see ["Unpack the Router Transport Kit" on page 30](#) for instructions on how to unpack and install the router transport kit.

14. Save the shipping crate cover, pallet, and packing materials in case you need to move or ship the router at a later time.

Remove Components

The router might have field replacement units (FRUs) installed. Remove these FRUs from the MX2020 router before installing the router into a rack or cabinet (see [Figure 8 on page 15](#), [Figure 9 on page 17](#), and [Figure 10 on page 19](#)).

Figure 8: Components to Remove from the Front of the MX2020 Router

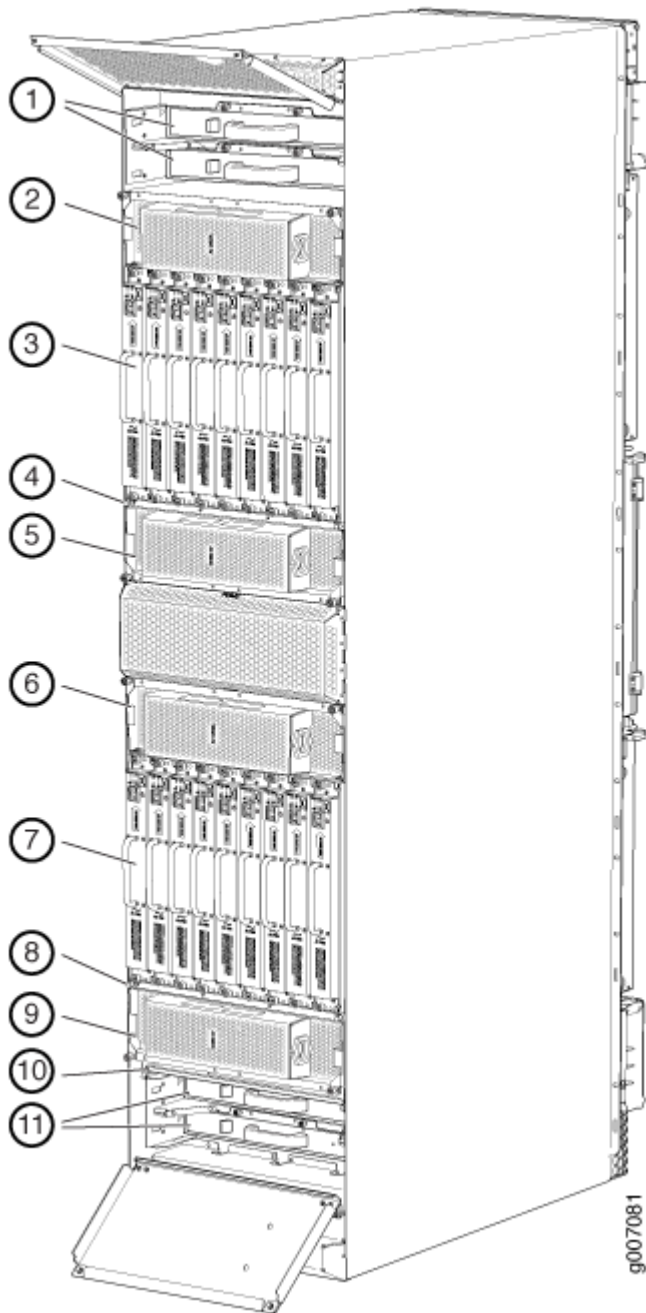


Remove field replacement units (FRUs) from the front of the MX2020 router before you install the router. See [Table 2 on page 16](#) for information about MX2020 router components.

Table 2: Components to Remove from the Front of the MX2020 Router

Component No.	Component Description	Slots	Number of FRUs
1	MPCs with ADCs and MICs (top)	10 through 19 (top)	10
2	Switch Fabric Boards (SFBs)	0 through 7	8
3	Control Board and Routine Engine (CB-RE)	0 and 1	2
4	MPCs with ADCs and MICs (bottom)	0 through 9	10

Figure 9: Components to Remove from the Rear of an AC-Powered MX2020 Router

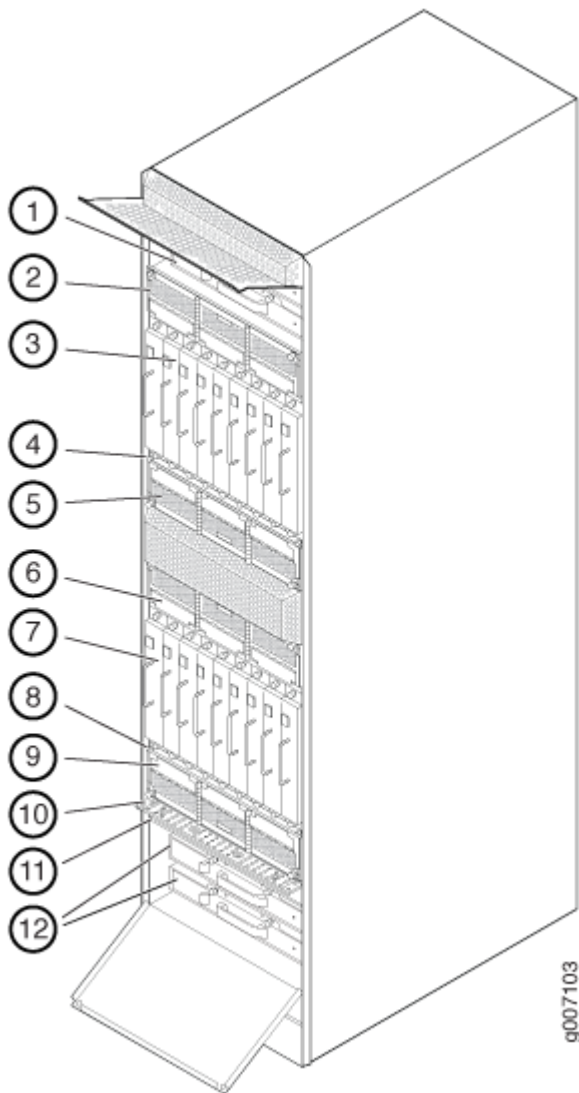


Remove field replacement units (FRUs) from the rear of the MX2020 router before you install the router. See [Table 3 on page 18](#) for information about MX2020 router components.

Table 3: Components to Remove from the Rear of an AC-Powered MX2020 Router

Component No.	Component Description	Slots	Number of FRUs
1	Upper fan trays (two)	Fan tray 2 and fan tray 3 (behind cage door)	2
2	AC PDM—Three-phase delta or wye	PDM3/Input1	1
3	AC PSM	9 through 17	9
4	PSM air filter	–	1
5	AC PDM—Three-phase delta or wye	PDM2/Input0	1
6	AC PDM—Three-phase delta or wye	PDM1/Input1	1
7	AC PSM	0 through 8	9
8	PSM air filter	–	1
9	AC PDM—Three-phase delta or wye	PDM0/Input0	1
10	Fan tray air filter	–	1
11	Lower fan trays (two)	Fan tray 0 and fan tray 1 (behind access door)	2

Figure 10: Components to Remove from the Rear of a DC-Powered MX2020 Router



Remove field replacement units (FRUs) from the rear of the MX2020 router before you install the router. See [Table 4 on page 19](#) for information about MX2020 router components.

Table 4: Components to Remove from the Rear of a DC-Powered MX2020 Router

Component No.	Component Description	Slots	Number of FRUs
1	Upper fan trays (two)	Fan tray 2 and fan tray 3 (behind cage door)	2

Table 4: Components to Remove from the Rear of a DC-Powered MX2020 Router (Continued)

Component No.	Component Description	Slots	Number of FRUs
2	DC PDM	PDM3/Input1	1
3	DC PSM	9 through 17	9
4	PSM air filter	-	1
5	DC PDM	PDM2/Input0	1
6	DC PDM	PDM1/Input1	1
7	PSM	0 through 8	9
8	PSM air filter	-	1
9	DC PDM	PDM0/Input0	1
10	DC cable manager-(standard or extended)	-	4
11	Fan tray air filter	-	1
12	Lower fan trays (two)	Fan tray 0 and fan tray 1 (behind access door)	2

To remove the components from the router:

1. Slide each component out of the chassis evenly so that it does not become stuck or damaged.
2. Label each component as you remove it so you can reinstall it in the correct location.

NOTE: The MX2020 PSMs can be installed in any order in the chassis.

3. Immediately store each removed component in an electrostatic bag.
4. Do not stack removed components. Lay each one on a flat surface.



WARNING: Stacking components on top of one another can damage the component parts.

NOTE: For complete instructions on removing router components, see the [MX2020 Universal Routing Platform Hardware Guide](#).

To remove the upper and lower fan tray (see [Figure 11 on page 22](#) and [Figure 12 on page 22](#)):

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an approved site ESD grounding point. See the instructions for your site.
2. Loosen the two captive screws on each side of the fan tray access panel and open.
3. Loosen the two captive screws on the fan tray faceplate.
4. Press and hold the latch while simultaneously pulling the fan tray out approximately 1 to 3 in. Place one hand under the fan tray for support, while pulling the fan tray completely out of the router.

NOTE: The double latch system is a safety mechanism, so you cannot pull the fan tray out in one motion.

5. Place each component on an antistatic mat resting on a stable, flat surface.



CAUTION: Do not stack fan trays on one another after you remove them.

Figure 11: Removing Upper Fan Trays

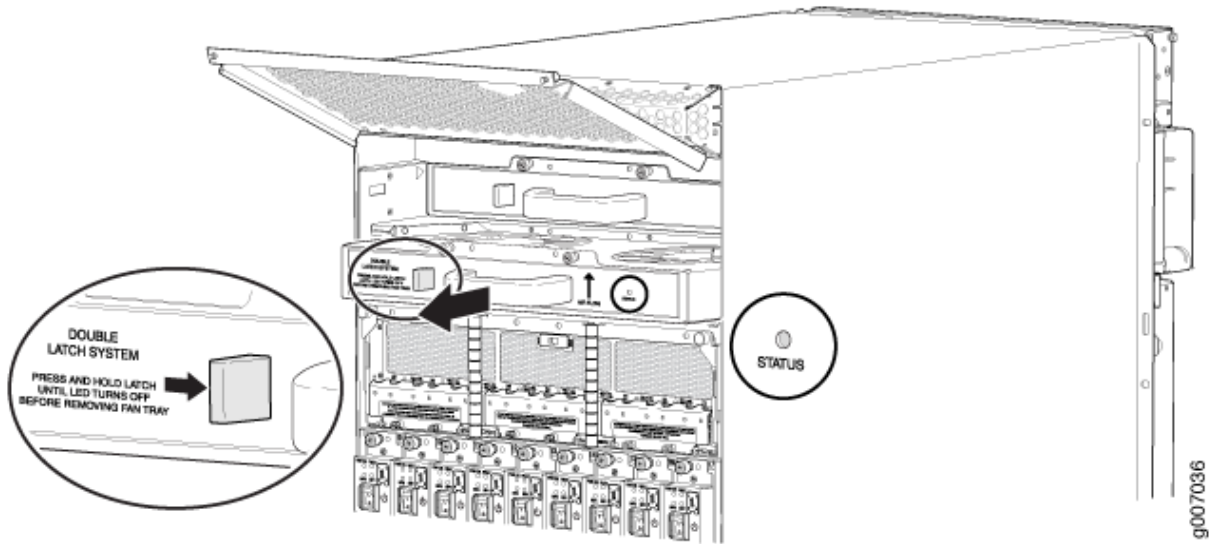
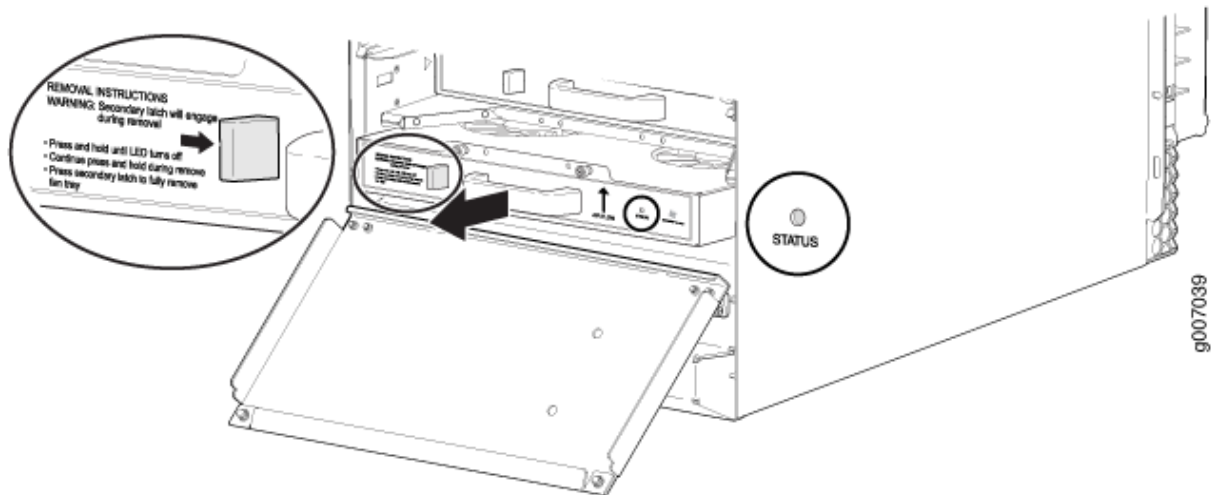


Figure 12: Removing Lower Fan Trays



Install the Router Using a Pallet Jack with Attachment

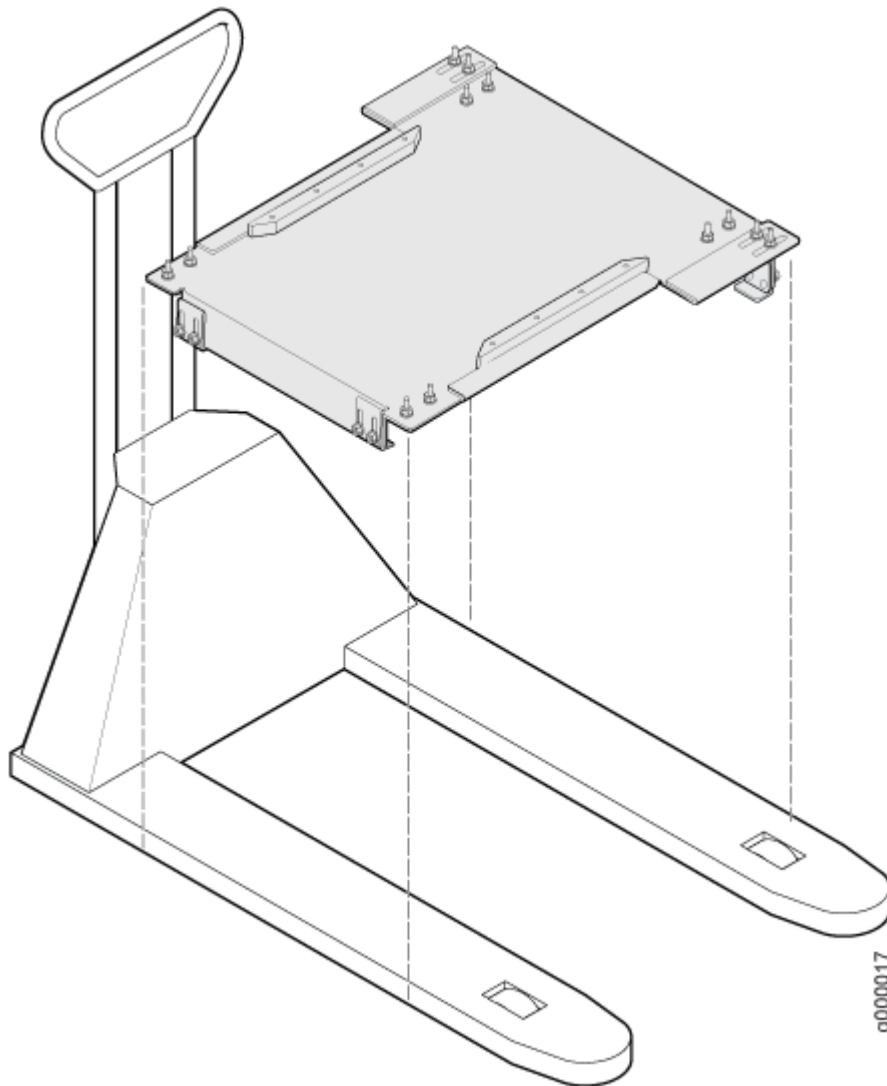
IN THIS SECTION

- [Install the Pallet Jack Attachment | 23](#)
- [Use a Pallet Jack with Attachment to Install the Router in the Rack | 24](#)

Install the Pallet Jack Attachment

1. Remove the pallet jack attachment from the shipping crate.
2. Place the pallet jack attachment across both pallet jack legs.
3. Using a 9/16-in. (14 mm) socket wrench, loosen and remove the eight shipping bracket support torque fasteners that are located on the top of the pallet jack attachment platform.
4. Using a 9/16-in. (14 mm) socket wrench, loosen the torque fasteners that are located on the four adjustable pallet jack attachment brackets.
5. Adjust the four pallet jack attachment brackets until they fit under the pallet jack legs.
6. Tighten the torque fasteners by using a 9/16-in. (14 mm) socket wrench to secure the brackets on the pallet jack attachment to the pallet jack (see [Figure 13 on page 24](#)).

Figure 13: Installing MX2020 Pallet Jack Attachment



Use a Pallet Jack with Attachment to Install the Router in the Rack

Before installing the router, you must remove all components (see ["Remove Components" on page 15](#)).

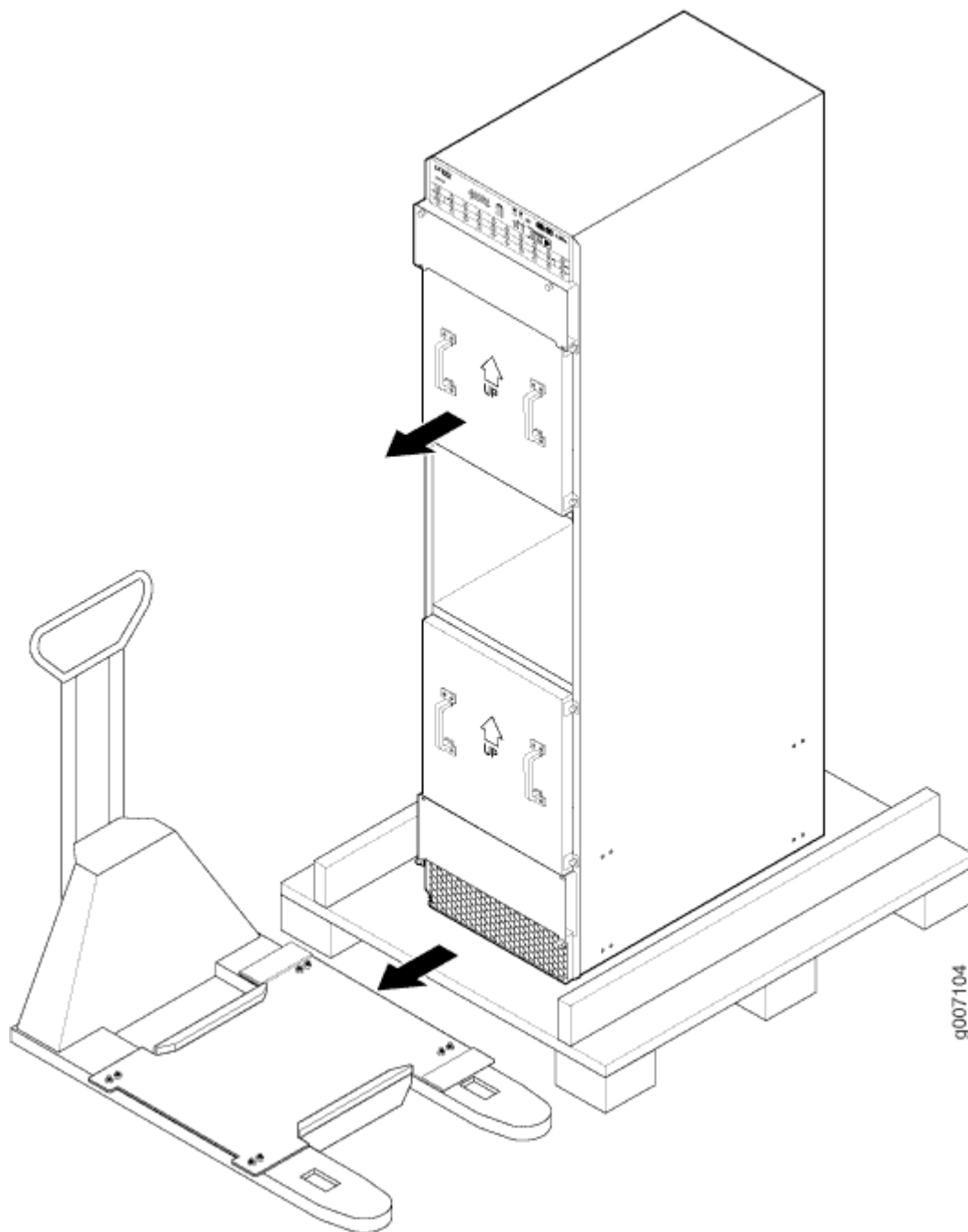
To install the router using a pallet jack with attachment:

1. Ensure that the rack or cabinet is in its permanent location and is secured to the building. Ensure that the installation site allows adequate clearance for both airflow and maintenance. For details, see the [MX2020 Universal Routing Platform Hardware Guide](#).
2. Reinstall the front and rear shipping covers to help guide the chassis during installation.
3. Place the pallet jack attachment across both legs and secure the attachment to the pallet jack.
4. Use a four-person team to load the router onto the pallet jack, making sure that it rests securely on the pallet jack attachment platform (see [Figure 14 on page 25](#)).



CAUTION: Applying force to any parts of the chassis other than the shipping covers can damage the chassis.

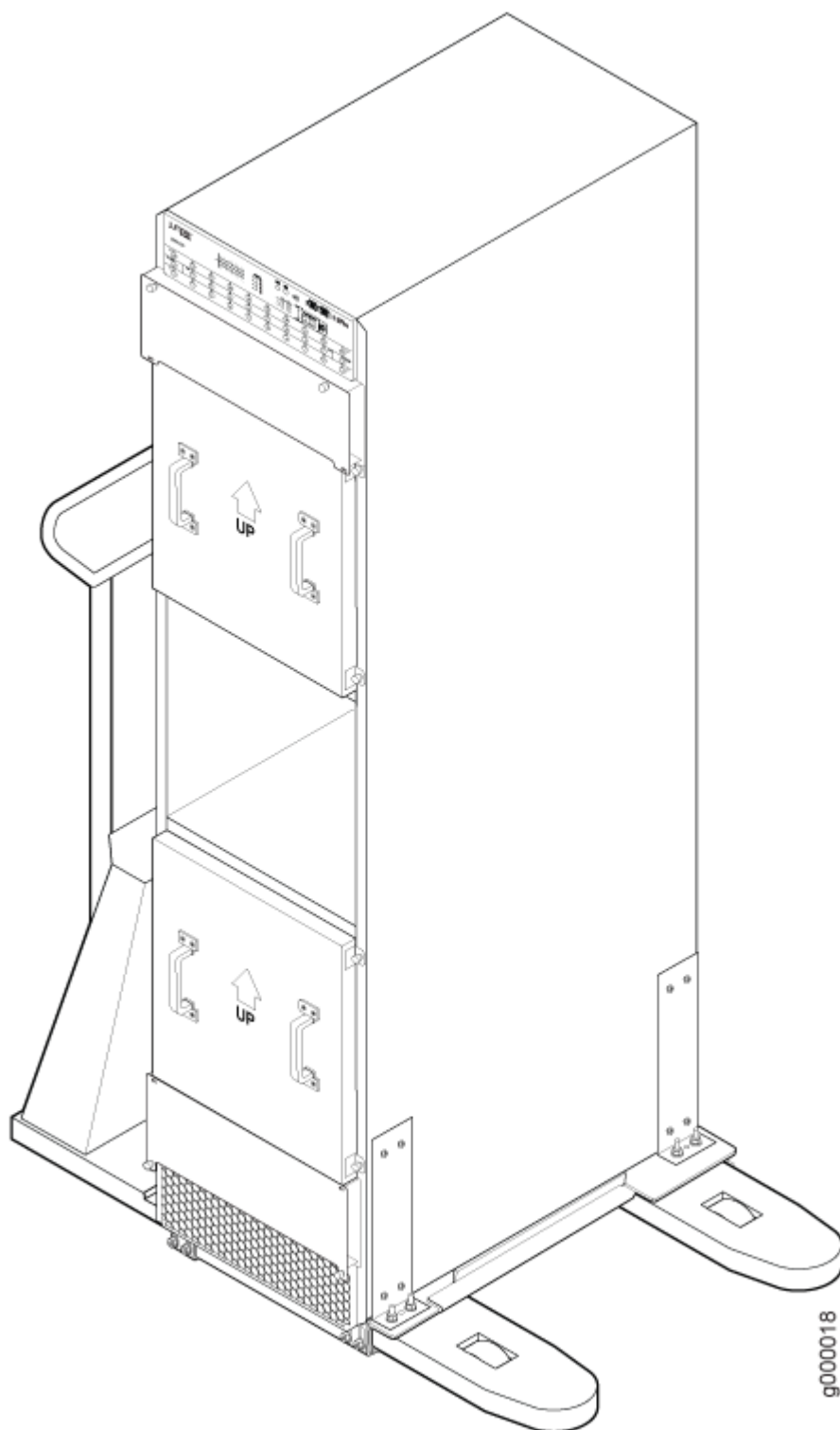
Figure 14: Loading the MX2020 Router onto the Pallet Jack



g007104

5. Attach the shipping brackets to the pallet jack attachment by using the existing bracket screws.
6. On each of the shipping brackets, partially insert screws into the holes to secure the brackets to the chassis. Tighten all screws. These brackets help prevent the chassis from tilting (see [Figure 15 on page 27](#)).

Figure 15: Securing the MX2020 to the Pallet Jack Attachment



7. Lower the pallet jack before moving the chassis. This helps distribute the weight evenly and reduces the risk of tilting or damage to the chassis.

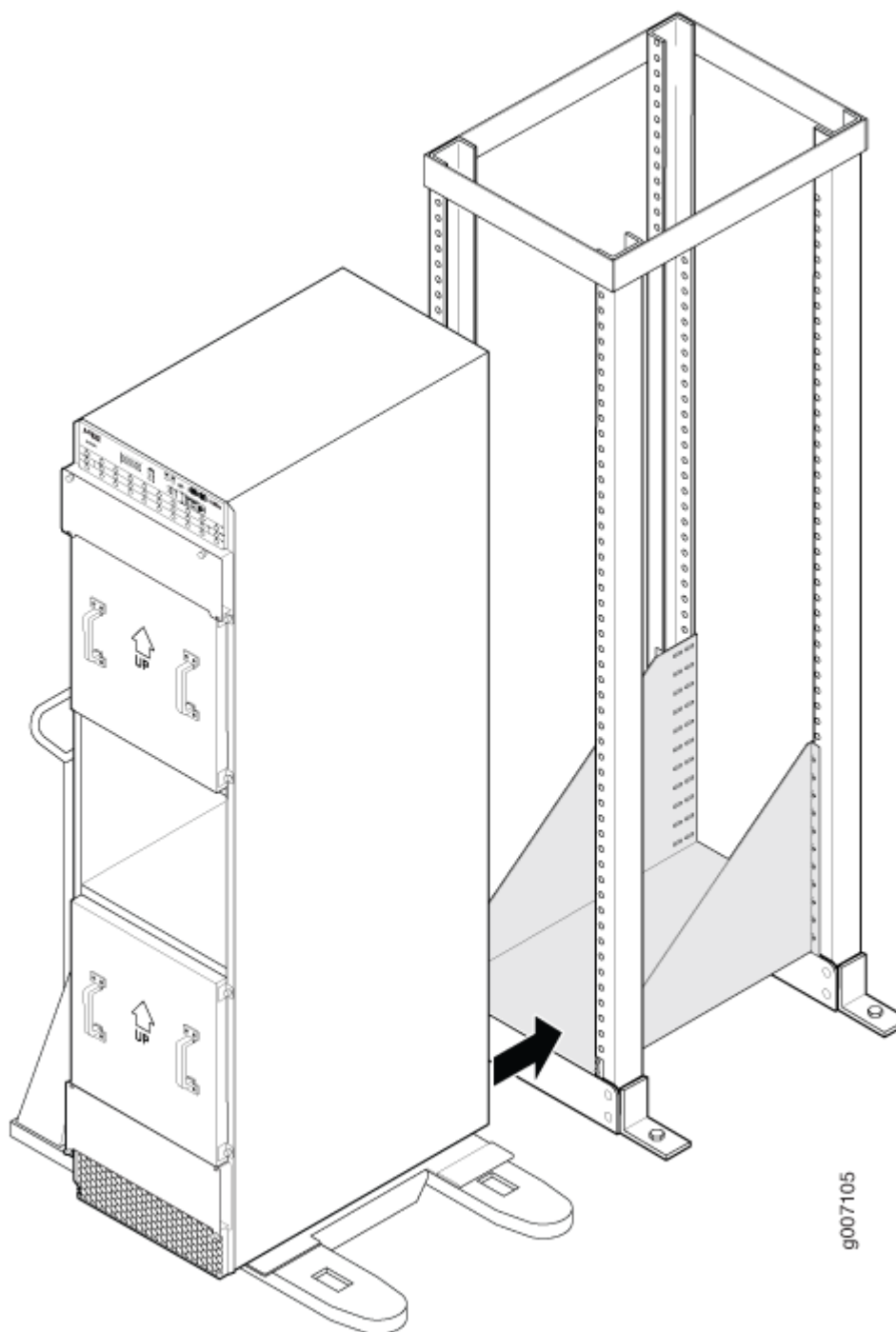
NOTE: An empty MX2020 router weighs approximately 300 lb (136 kg).

8. Using the pallet jack, position the router in front of the rack or cabinet, centering it in front of the mounting shelf.

NOTE: If you are installing the MX2020 router into a network cabinet, make sure that no hardware, device, rack, or cabinet component obstructs the 45-U rack space from access during installation.

9. Using the pallet jack, lift the chassis approximately 0.25 in. (0.6 cm) above the surface of the mounting shelf, and position it as close as possible to the shelf.
10. Remove the shipping brackets that are attached to the pallet jack attachment and chassis, and set them aside.
11. Grasping the handles on the shipping covers, carefully slide the router onto the mounting shelf so that the bottom of the chassis and the mounting shelf overlap by approximately 2 inches. Continue sliding the router until the front-mounting flanges contact the rack rails (depending on your type of installation). The shelf ensures that the holes in the front-mounting flanges of the chassis align with the holes in the rack rails (see [Figure 16 on page 29](#)).

Figure 16: Loading the MX2020 Router into the Rack



NOTE: There must be a minimum of 45 U of usable rack space when installing the MX2020 router into a 45-U rack.

12. Move the pallet jack away from the rack.
13. Insert sixteen mounting screws (eight on each side) into the mounting holes to secure the router to the rack.
14. Visually inspect the alignment of the router. If the router is installed properly in the rack, all the mounting screws on one side of the rack should be aligned with the mounting screws on the opposite side, and the router should be level.

Install the Router Using a Router Transport Kit

IN THIS SECTION

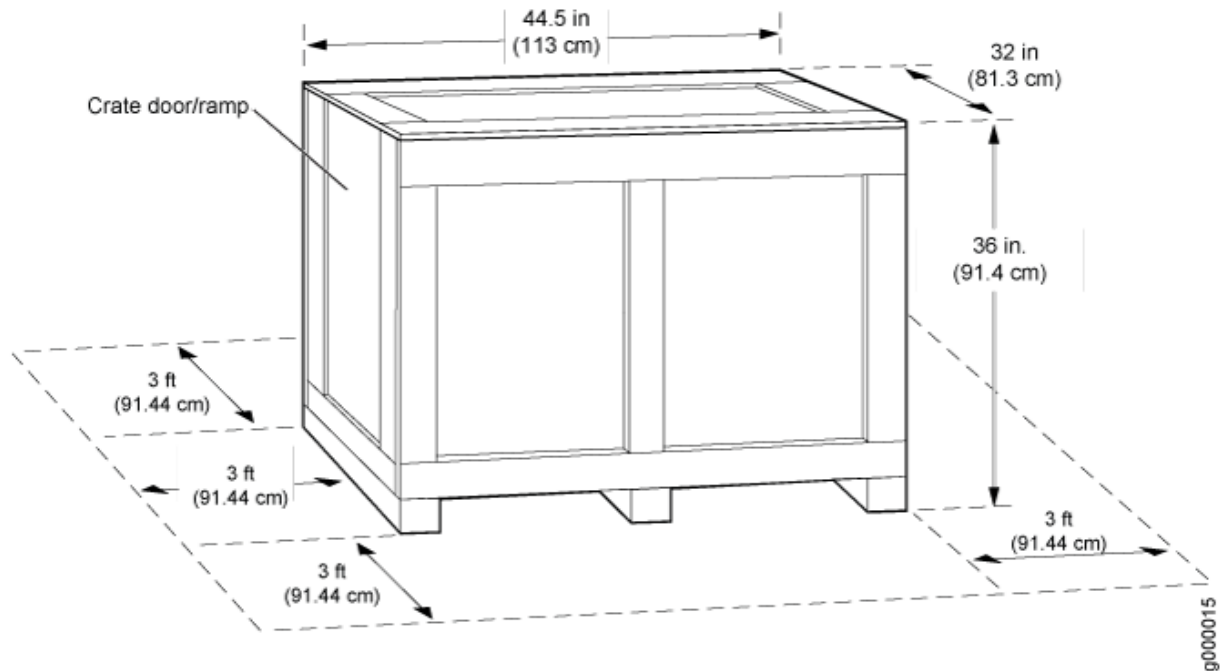
- [Unpack the Router Transport Kit | 30](#)
- [Install the Router Transport Kit onto the Router | 33](#)
- [Use the Transport Kit to Install the Router in the Rack | 36](#)

Unpack the Router Transport Kit

The router transport kit is shipped in a wooden crate. A wooden pallet forms the base of the crate. Metal clips secure the top and front of the crate in place.

The router transport kit shipping container measures 36 in. (91.4 cm) high, 32 in. (81.3 cm) wide, and 44.5 in. (113 cm) deep (see [Figure 17 on page 31](#)). The total weight of the container containing the router transport kit is 200 lb (90.71 kg).

Figure 17: Router Transport Kit Crate Dimensions

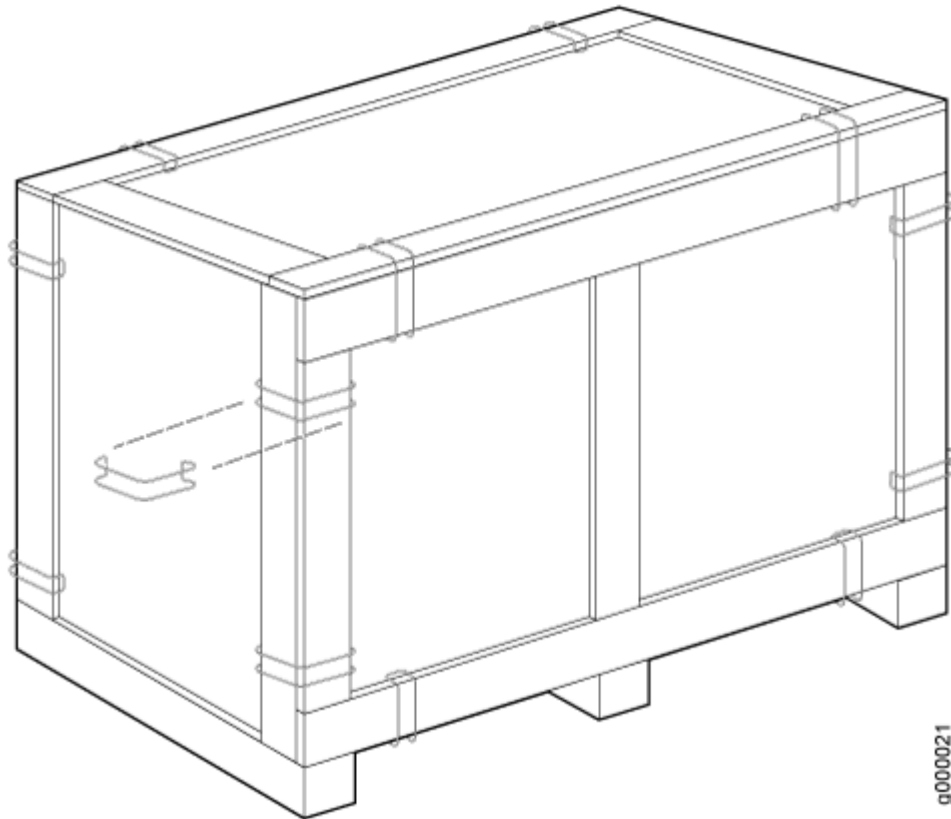


NOTE: The router transport kit is maximally protected inside the shipping crate. Do not unpack it until you are ready to begin installation.

To unpack the router transport kit:

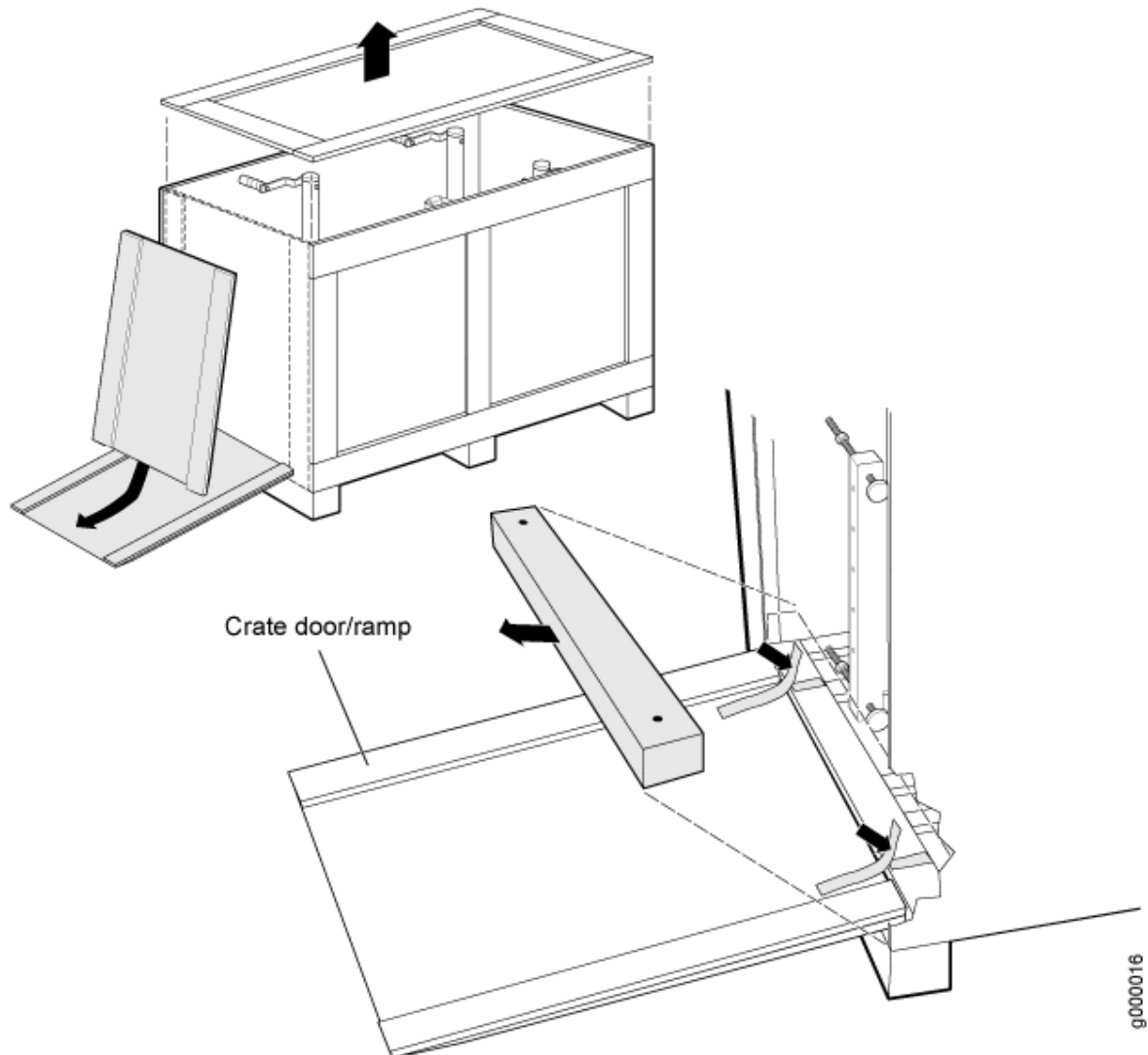
1. Move the router transport kit shipping crate to an ESD-approved staging area, where you have enough room to remove the kit for assembly.
2. Position the shipping crate with the arrows pointing up.
3. Remove the metal clips on the shipping crate that secure the top and front to the crate (see [Figure 18 on page 32](#)).

Figure 18: Open Router Transport Kit Shipping Crate



4. Remove the top and front of the shipping crate, and set them aside.
5. Remove the two wing nuts that secure the wooden brace to the shipping crate platform, and set them aside.
6. Align the crate door with the shipping crate platform, and secure the door to the platform using the attached velcro straps (see [Figure 19 on page 33](#)).

Figure 19: Router Transport Kit Shipping Crate Door



7. Remove the router transport kit from the shipping container.
8. Remove the vapor corrosion inhibitor (VCI) packs attached to the pallet, being careful not to break the VCI packs open.
9. Save the shipping crate cover, pallet, and packing materials in case you need to move or ship the router transport kit at a later time.

Install the Router Transport Kit onto the Router

The router transport kit includes the following components:

- Router transport platform

- Router transport left and right mounting plates with adjustable wheel assembly
- Router winch mount with winch strap plate

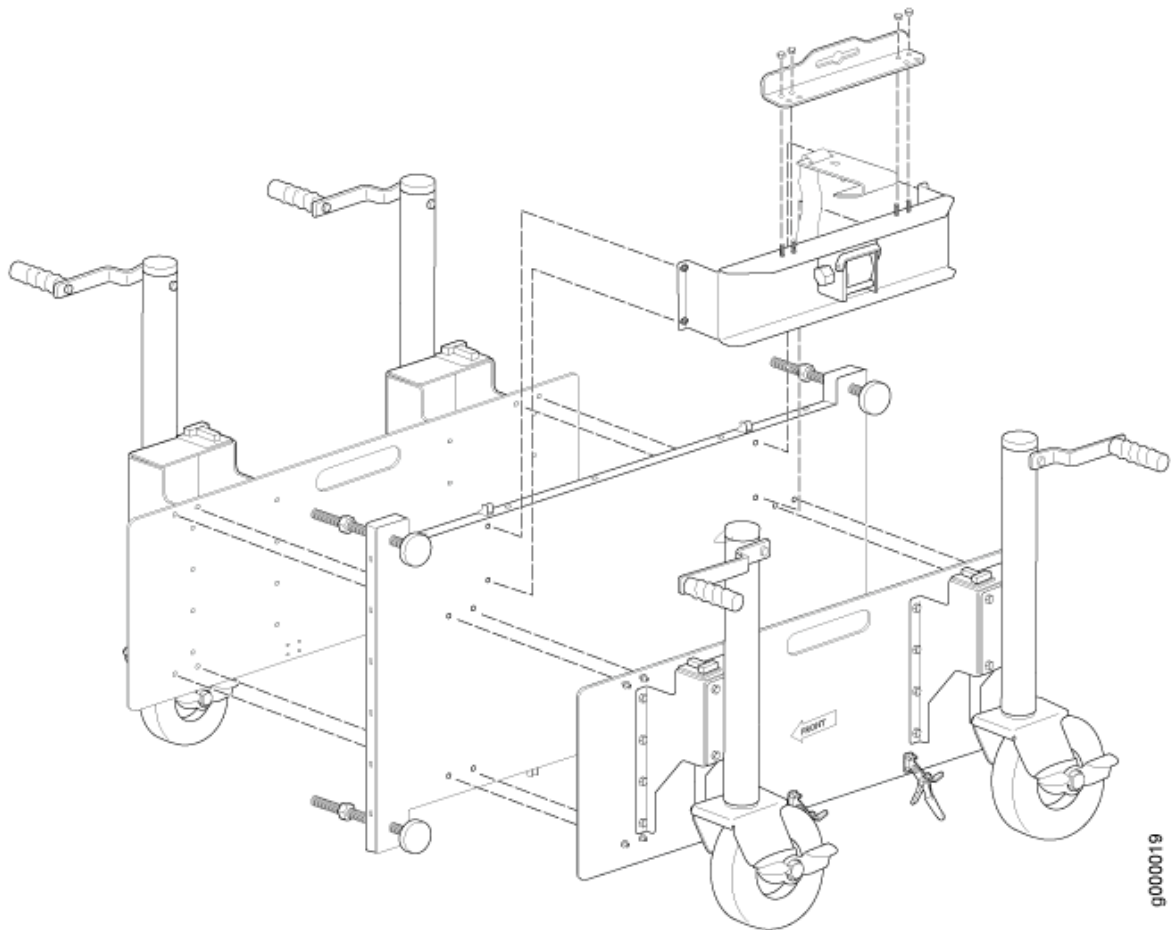
To install the router transport kit:

1. Remove the router transport kit from the shipping crate (see ["Unpack the Router Transport Kit" on page 30](#)).

NOTE: The router transport kit weighs approximately 138.5 lb (62.82 kg).

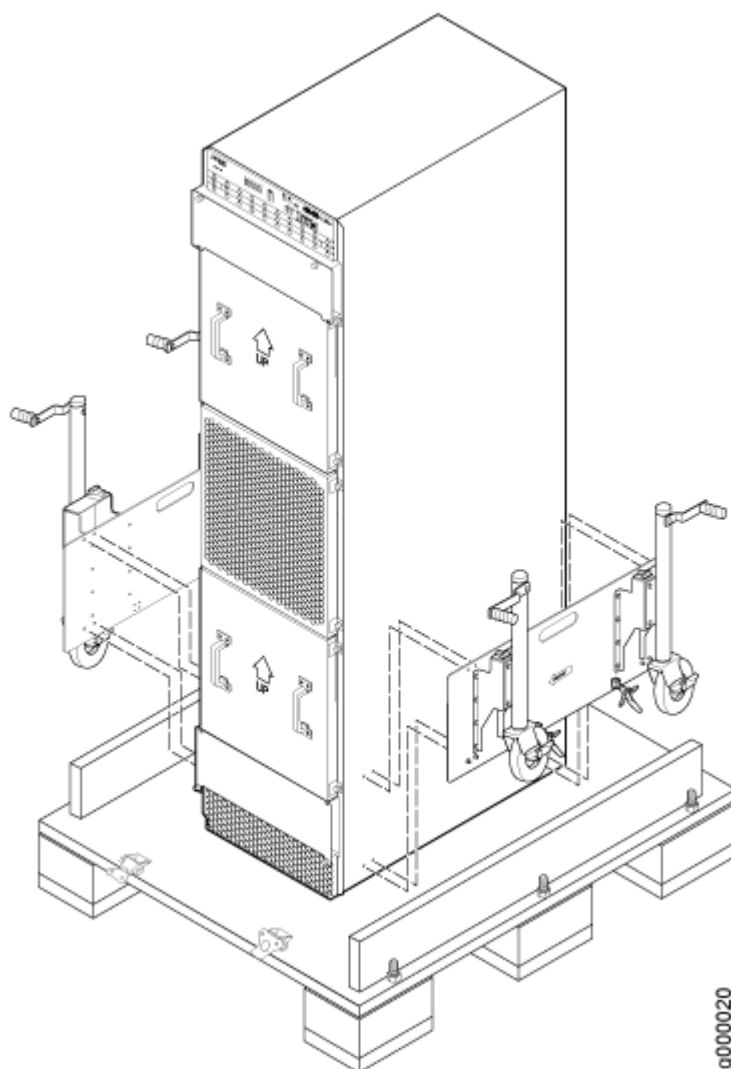
2. Remove the winch strap plate that is secured to the winch mount by using a 9/16-in. (14 mm) socket wrench, and set the plate aside.
3. Using a number 3 Phillips screwdriver, loosen the captive screws that secure the winch mount to the router transport kit, and set the mount aside.
4. Using a number 3 Phillips screwdriver, loosen the captive screws that secure the router transport mounting plate and wheel assembly (left and right) to the router transport platform, and set them aside (see [Figure 20 on page 35](#)).

Figure 20: Preparing the Router Transport Kit for Installation



5. Remove the four shipping brackets that secure the router to the shipping crate platform by using a 9/16-in. (14 mm) socket wrench, and a number 2 Phillips screwdriver, and set the brackets aside.
6. Align the left router transport mounting plate and wheel assembly (indicated by left arrow) with the holes on the left side of the chassis (see [Figure 21 on page 36](#)).
7. Using a number 3 Phillips screwdriver, tighten the captive screws to secure the router transport mounting plate and wheel assembly to the chassis.
8. Align the right router transport mounting plate and wheel assembly (indicated by right arrow) with the holes on the right side of the chassis (see [Figure 21 on page 36](#)).
9. Using a number 3 Phillips screwdriver, tighten the captive screws to secure the router transport mounting plate and wheel assembly to the chassis.

Figure 21: Installing the Router Transport Kit onto the MX2020 Router



Use the Transport Kit to Install the Router in the Rack

Because of the router's size and weight—up to 1515 lb (687.2 kg) depending on the configuration—you must use a router transport kit to install the router.

NOTE: We recommend that you purchase the router transport kit from Juniper Networks.

NOTE: Four persons are needed to install the router into a rack.

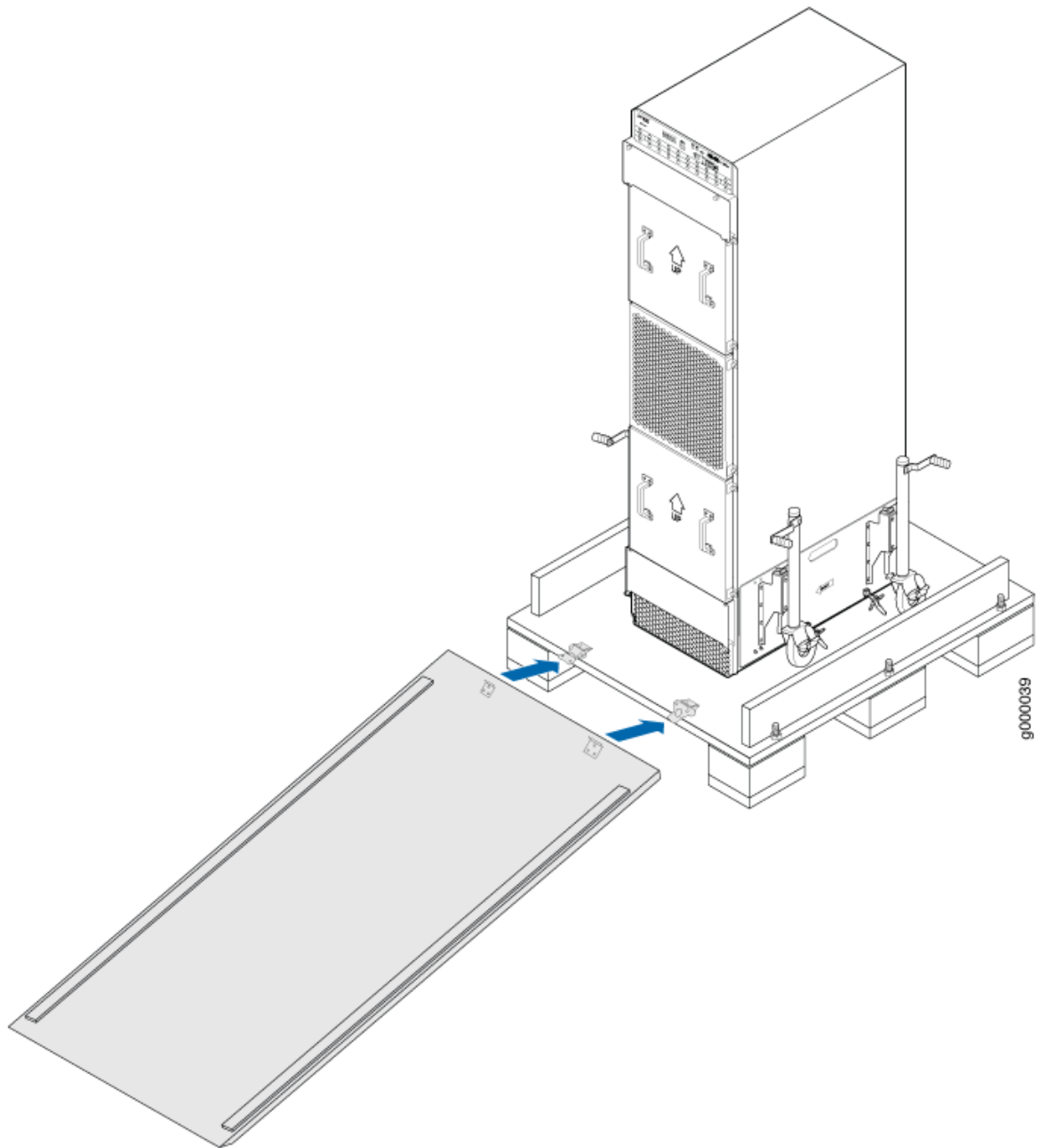


CAUTION: Before front-mounting the router in a rack, have a qualified technician verify that the rack is strong enough to support the router's weight and is adequately supported at the installation site.

To install the MX2020 by using a router transport kit:

1. Ensure that the rack is in its permanent location and is secured to the building. Ensure that the installation site allows adequate clearance for router transport kit turn ratios, airflow, and maintenance.
2. Reinstall the front and rear shipping covers to help guide the chassis during installation.
3. Using the shipping crate door as a ramp, secure the door to the crate platform by using the two metal latches (see [Figure 22 on page 38](#)).

Figure 22: Securing the Crate Door to the Shipping Crate Platform



NOTE: An empty MX2020 weighs approximately 330 lb (149.68 kg).

4. Using a two-person team on either side of the chassis, turn the handles on the router transport 4–5 times until the chassis is raised approximately 1 in. (2.54 cm), making sure that the chassis is level.

NOTE: The router transport kit is equipped with four T-shaped levels on top of each of the four router transport mounting brackets. Make sure that the bubbles within the T-shaped levels are between the lines, indicating that the chassis is level.



CAUTION: Do not raise the chassis above 1 in. (2.54 cm). This ensures the router will not tilt during transportation, which can result in injury or damage to the router.

5. Turn the four wheels on the router transport kit toward the rear of the chassis.
6. Grasping the handles on the shipping covers, carefully guide the chassis down the crate ramp to the rack location.



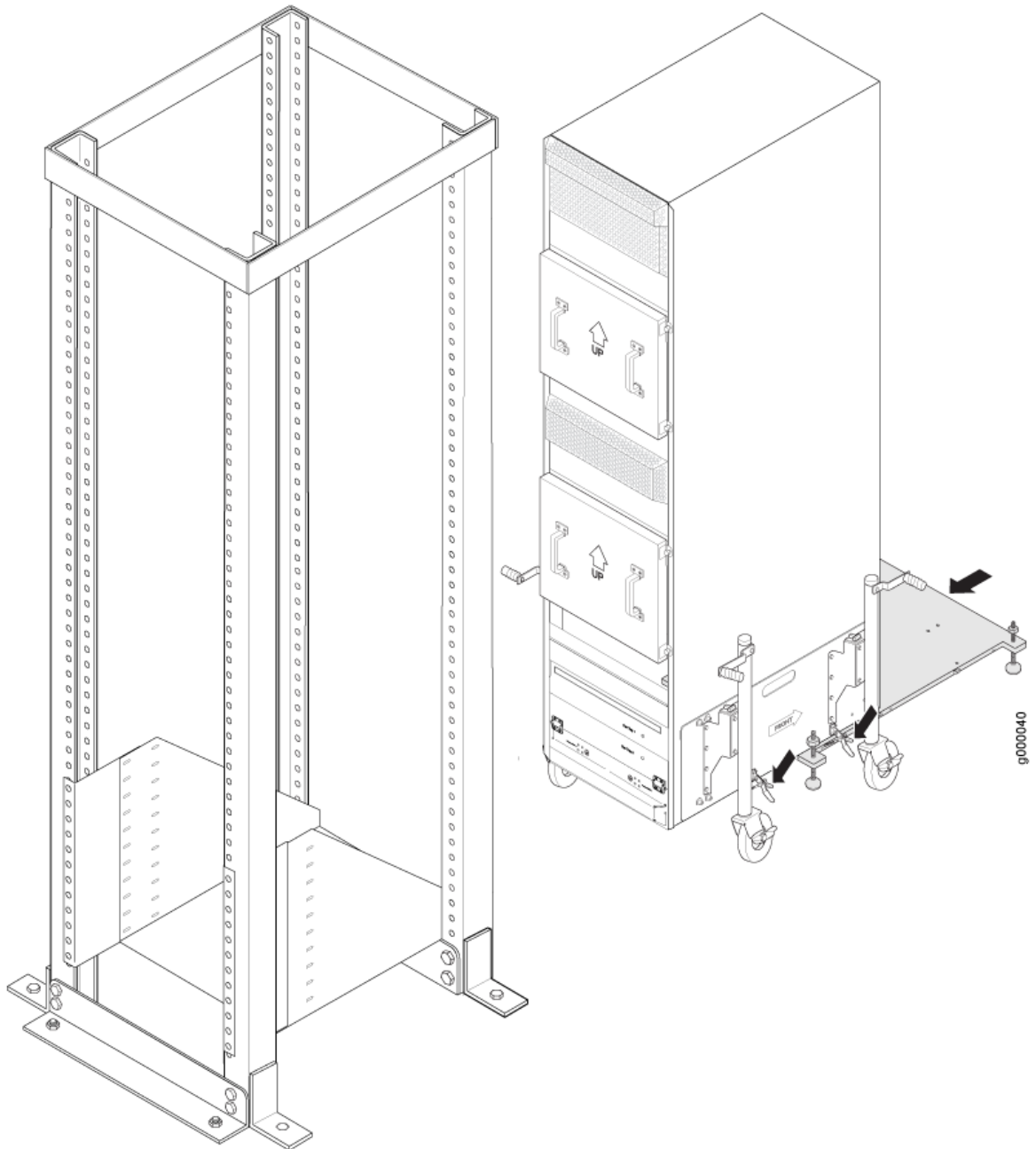
WARNING: Do not push or pull the router fast during transporting. Doing so can cause the wheels to turn abruptly and tilt the router over.

7. Position the router transport platform directly under the router, aligning the router transport platform with the bottom of the chassis by adjusting the four leveling mounts.

NOTE: The router transport platform height can be adjusted from 0.25 in. (0.6 cm) to a maximum of 4 in. (10.16 cm).

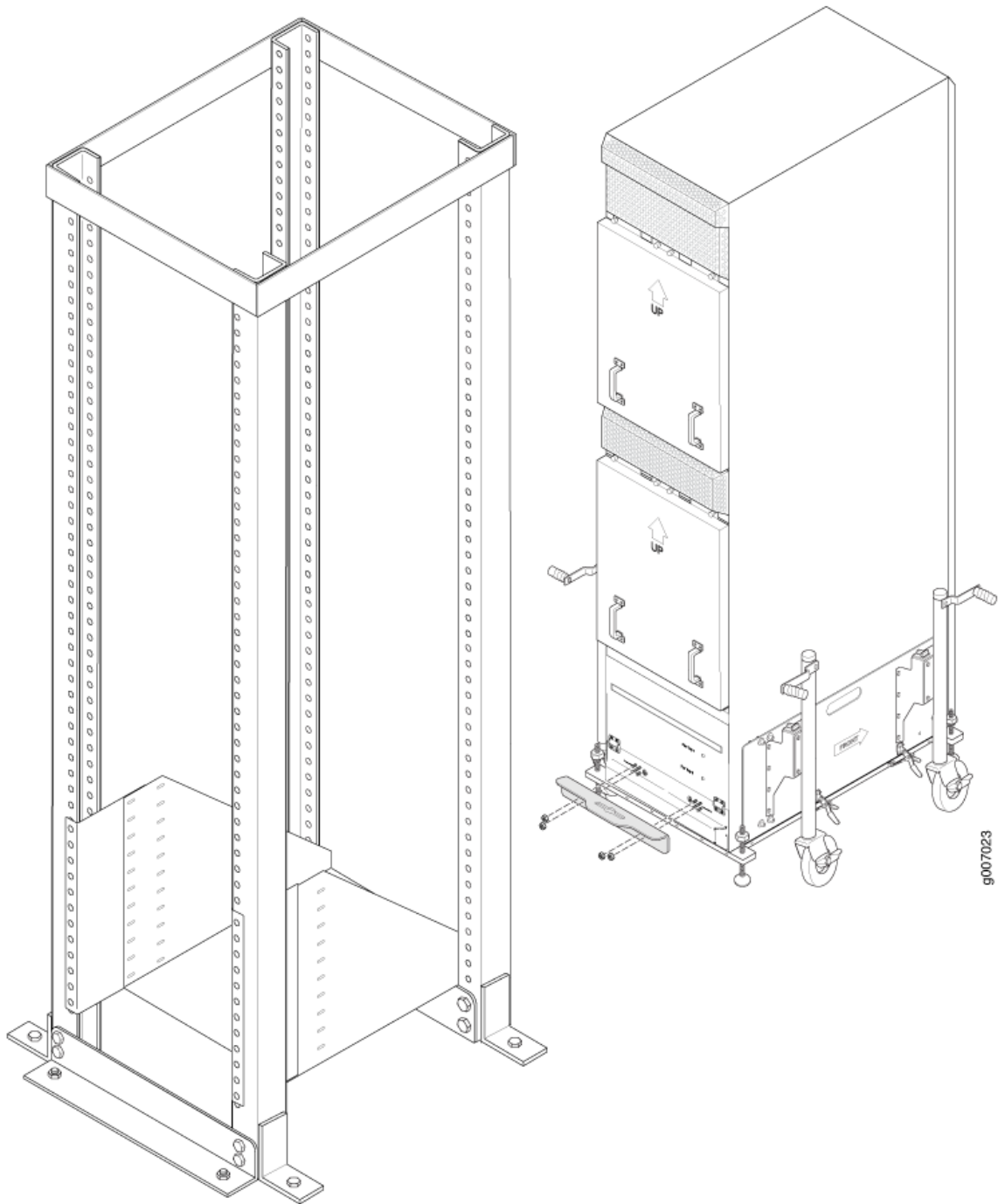
8. Secure the router transport platform to the router transport mounting plates by using the four latch locks (see [Figure 23 on page 40](#)).

Figure 23: Securing the Router Transport Platform



9. Install the winch strap plate to the rear of the router by using the four captive screws, and tighten the screws (see [Figure 24 on page 42](#)).

Figure 24: Installing Winch Strap Plate



10. Using a four-person team, transport the router to the rack installation location and center it in front of the mounting shelf.

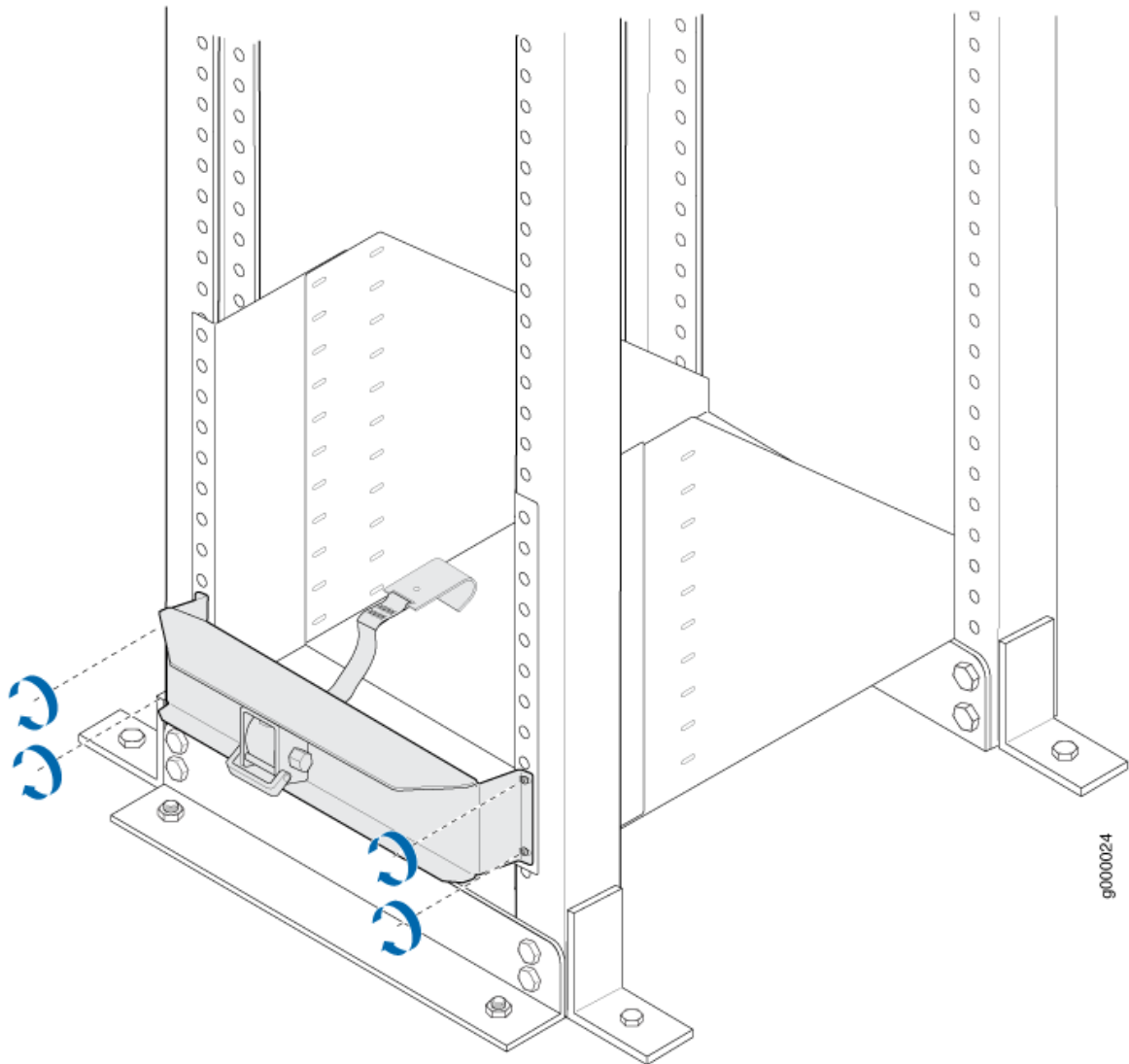
NOTE: A minimum of 38 in. (96.5 cm) of clearance is required to roll the chassis sideways.

NOTE: A minimum of 42 in. (106.7 cm) of circular space is required to rotate the chassis.

NOTE: The router transport kit handles can be removed to accommodate aisle width.

11. Install the winch mount bracket to the rear rack rails by using the six captive screws, and tighten the screws (see [Figure 25 on page 44](#)).

Figure 25: Installing Winch Mount Bracket to Rack Rails

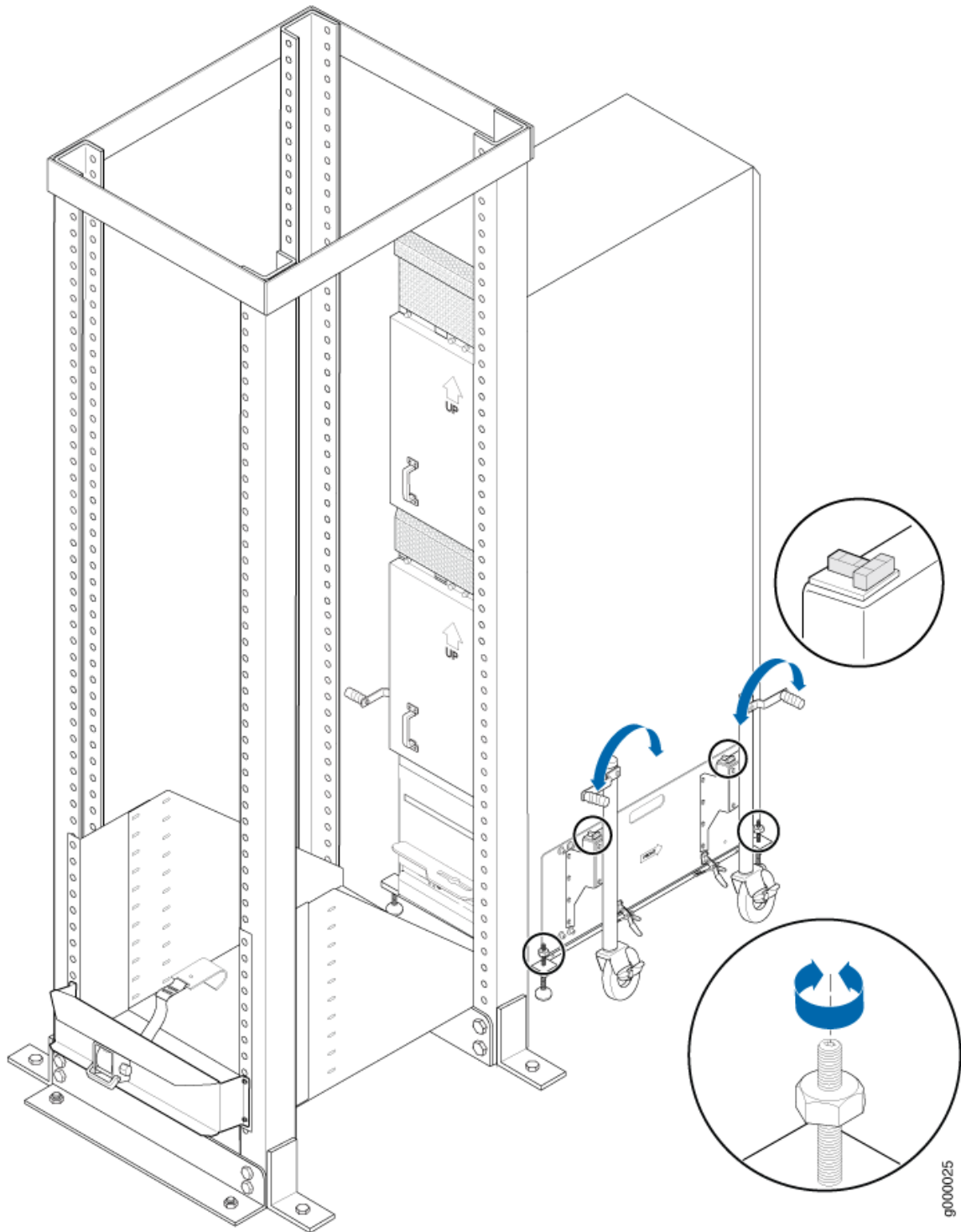


12. Adjust the height of the router by turning the handles clockwise until the router transport platform is aligned with the surface of the mounting shelf and slightly higher than the mounting shelf (see [Figure 26 on page 45](#)).

NOTE: Make sure the bubbles within the T-shaped levels are between the lines, indicating the router is level.

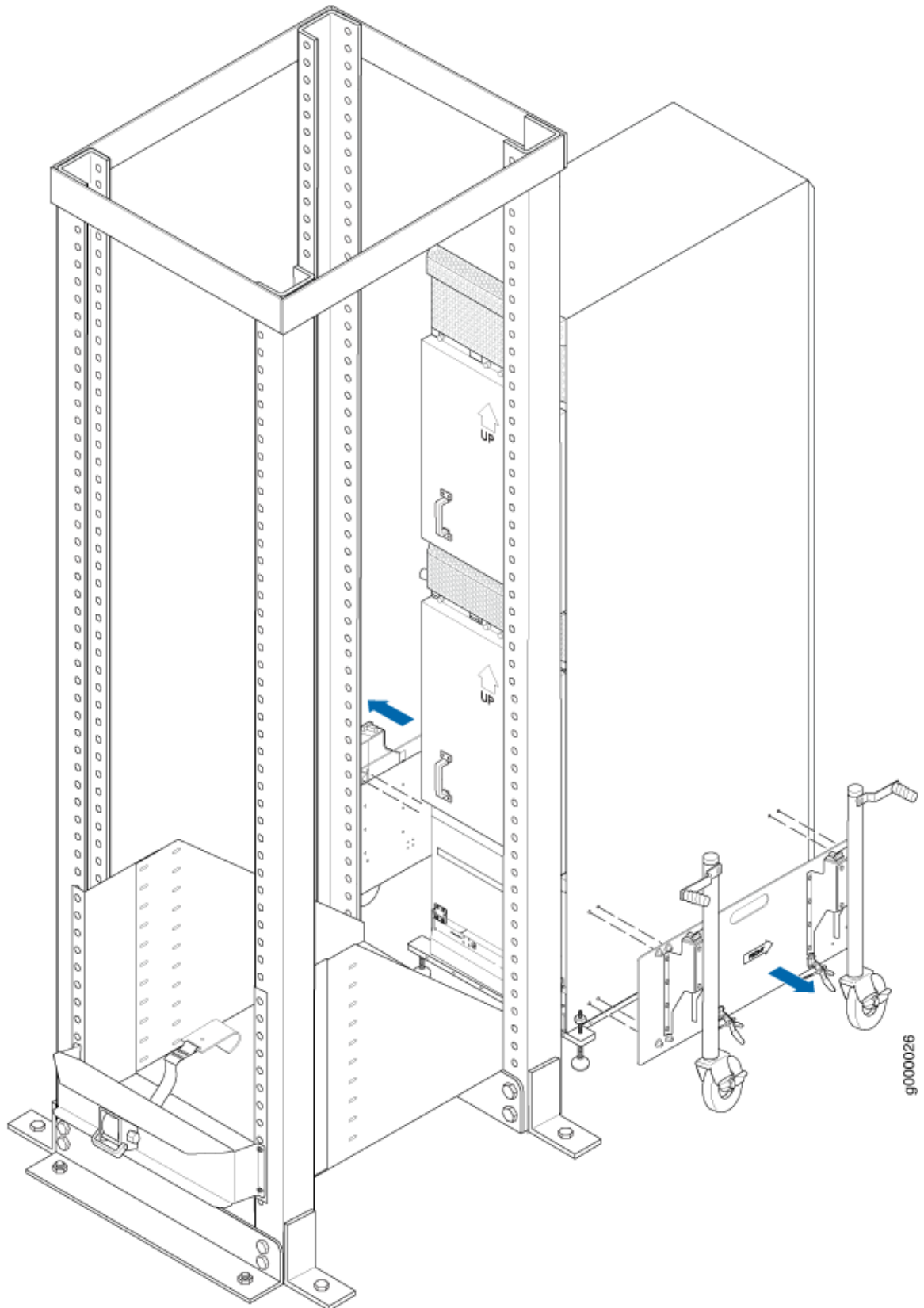
13. Adjust the four leveling mounts on the router transport platform until all four leveling mounts rest firmly on the ground (see [Figure 26 on page 45](#)).

Figure 26: Aligning the MX2020 Router with Rack Mounting Shelf



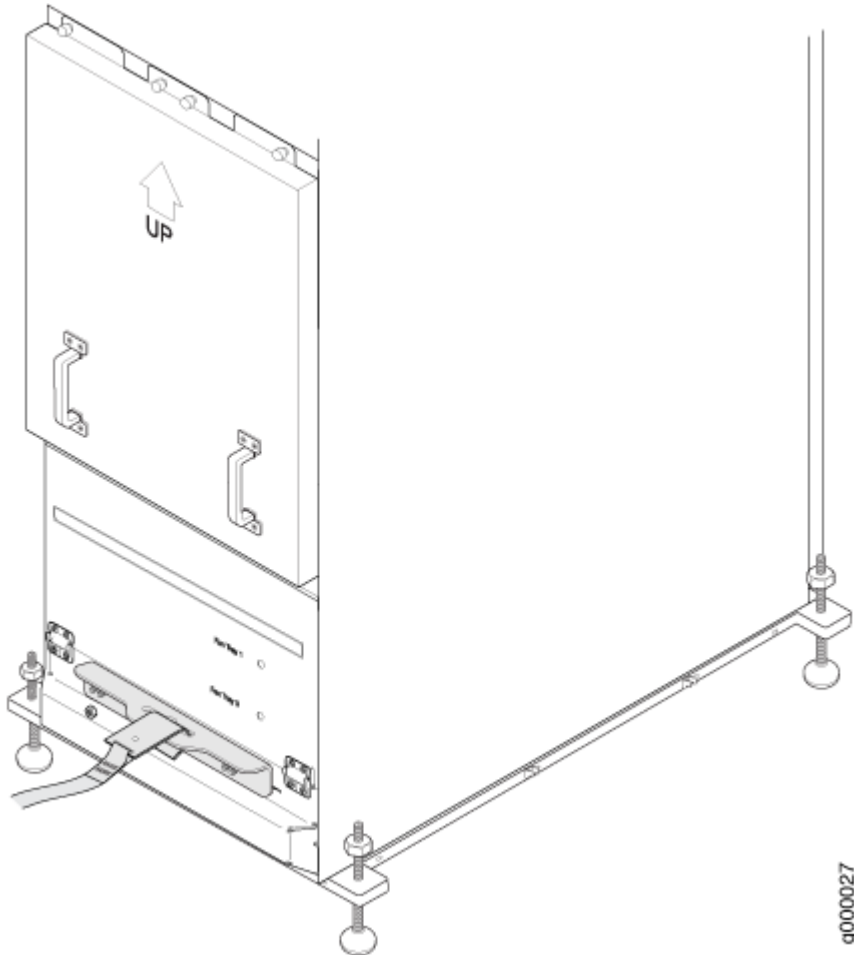
14. Unlock the four toggle latches that secure the router transport platform to the router transport mounting plate and wheel assembly.
15. Lift the wheels up by turning the handles counterclockwise so that the weight of the router is on the router transport platform.
16. Using a number 3 Phillips screwdriver, loosen the captive screws that secure the router transport mounting plates and wheel assembly to the chassis, and set them aside (see [Figure 27 on page 47](#)).

Figure 27: Removing Router Transport Mounting Plate and Wheel Assembly



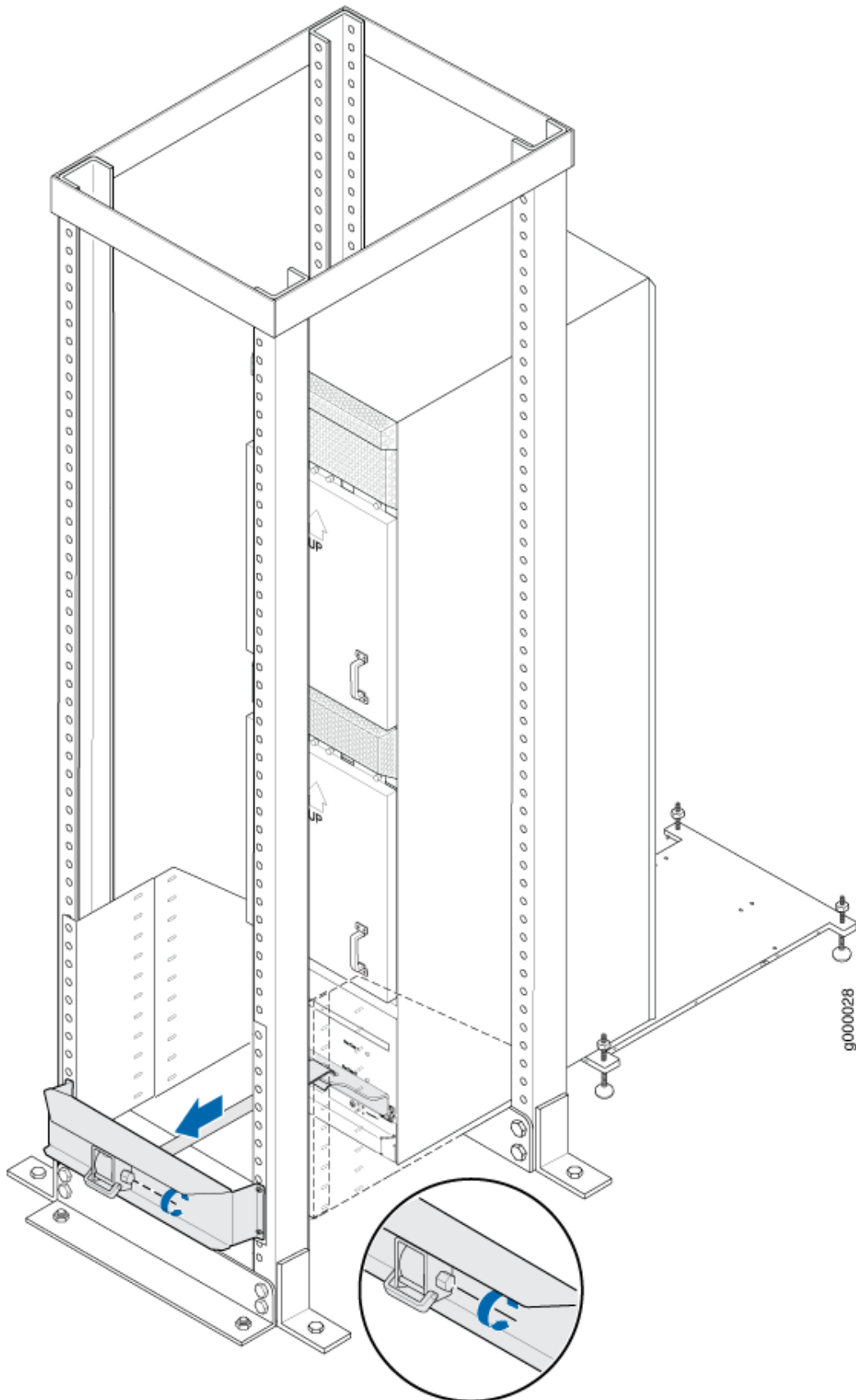
17. Attach the winch strap to the winch strap plate at the rear of the router (see [Figure 28 on page 48](#)).

Figure 28: Attaching Winch Strap to Winch Strap Plate



18. Attach a 1-1/8 in. (28.57 mm) socket wrench to the winch mechanism and turn clockwise to start pulling the chassis into the rack (see [Figure 29 on page 49](#)).

Figure 29: Pulling the MX2020 into the Rack



NOTE: A four-person team is needed to carefully guide the router into the rack while operating the winch.

NOTE: If the router is not pulled all the way into the rack by the winch mechanism, grasp the handles on the shipping covers and carefully slide the router onto the mounting shelf until the front-mounting flanges contact the rack rails. You must remove the winch bracket to perform this procedure.

NOTE: There must be a minimum of 45-U of usable rack space when installing the MX2020 into a 45-U rack.

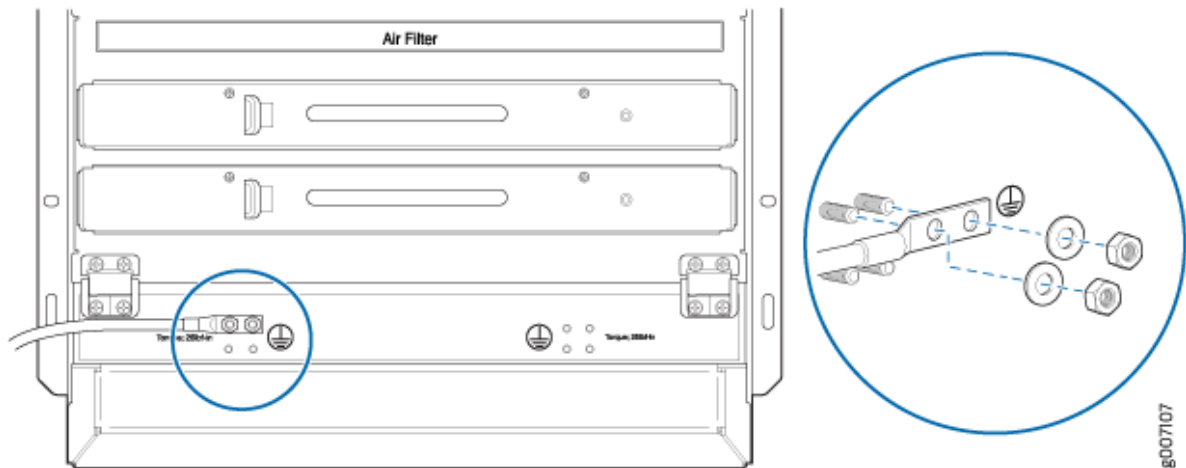
19. Remove the router transport platform, and set the platform aside.
20. Remove the winch mount and winch strap plate, and set them aside.
21. Insert sixteen mounting screws (eight on each side) into the mounting holes to secure the router to the rack.
22. Visually inspect the alignment of the router. To verify that the router is installed properly in the rack, see that all the mounting screws on one side of the rack are aligned with the mounting screws on the opposite side and the router is level.
23. Reassemble the router transport kit, and set aside.

Step 4: Connect the Grounding Cable

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an approved site ESD grounding point. See the instructions for your site.
2. Connect the grounding cable to a proper earth ground.
3. Verify that a licensed electrician has attached the cable lug provided with the router to the grounding cable.
4. Make sure that grounding surfaces are clean and brought to a bright finish before you make grounding connections.
5. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis. For more information about ESD, see the [MX2020 Universal Routing Platform Hardware Guide](#).

6. Place the grounding cable lug over the grounding points. The upper pair is sized for UNC 1/4-20 bolts, and the lower pair is sized for M6 bolts.
7. Secure the grounding cable lug to the grounding points, first with the washers, and then with the nuts (see [Figure 30 on page 51](#)).

Figure 30: Grounding Points on the MX2020 Router



8. Verify that the grounding cabling is correct, that the grounding cable does not touch or block access to router components, and that it does not drape where people could trip on it.

Step 5: Reinstall Components

To reinstall the components in the router:

1. Take each component out of its electrostatic bag, and identify the slot on the component where it will be connected.

NOTE: Remove the shipping covers before installing router components.

2. Slide each component into the chassis evenly so that it does not become stuck or damaged.

NOTE: We recommend reinstalling the rear components first.

3. Tighten the captive screws, and secure all levers for each component.

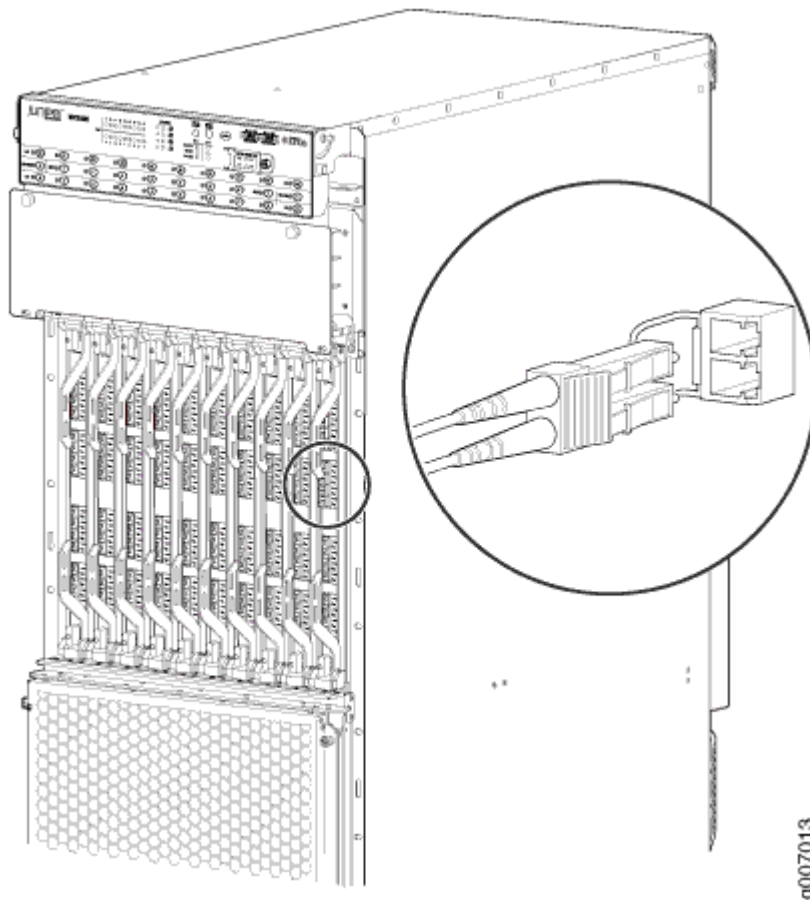
NOTE: Make sure that all empty slots are covered with a blank panel before operating the router.

Step 6: Connect External Devices and Line Card Cables

IN THIS SECTION

- [Connect to a Network for Out-of-Band Management | 53](#)
- [Connect a Management Console | 53](#)
- [Connect the Line Card Cables | 54](#)

Figure 31: Connecting External Devices and MPC Cables



Connect to a Network for Out-of-Band Management

1. Turn off the power to the management device.
2. Plug one end of an RJ-45 Ethernet cable into the **ETHERNET** port on the CB-RE.
3. Plug the other end of the cable into the network device.

Connect a Management Console

1. Turn off the power to the management device.
2. Plug one end of an RJ-45 Ethernet cable into the **CONSOLE** or **AUX** port on the CB-RE.
3. Plug the female DB-9 adapter end of the cable into the device's serial port.

NOTE: We no longer include the RJ-45 console cable with the DB-9 adapter as part of the device package. If the console cable and adapter are not included in your device package, or if you need a different type of adapter, you can order the following separately:

- RJ-45 to DB-9 adapter (JNP-CBL-RJ45-DB9)
- RJ-45 to USB-A adapter (JNP-CBL-RJ45-USBA)
- RJ-45 to USB-C adapter (JNP-CBL-RJ45-USBC)

If you want to use RJ-45 to USB-A or RJ-45 to USB-C adapter you must have X64 (64-Bit) Virtual COM port (VCP) driver installed on your PC. See, <https://ftdichip.com/drivers/vcp-drivers/> to download the driver.

Connect the Line Card Cables

1. Have ready a length of the type of cable used by the MPCs or MICs. For cable specifications, see the [MX Series Interface Module Reference](#).
2. If the cable connector port is covered by a rubber safety plug, remove the plug.



LASER WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cables connected to a transceiver emit laser light that can damage your eyes.



CAUTION: Do not leave a fiber-optic transceiver uncovered except when inserting or removing cable. The safety cap keeps the port clean and prevents accidental exposure to laser light.

3. Insert the cable connector into the cable connector port on the faceplate.
4. Arrange the cable in the cable management system to prevent it from dislodging or developing stress points. Secure the cable so that it does not support its own weight as it hangs to the floor. Place excess cable out of the way in a neatly coiled loop in the cable management system. Placing fasteners on the loop helps to maintain its shape.



CAUTION: Avoid bending fiber-optic cable beyond its minimum bend radius. An arc smaller than a few inches in diameter can damage the cable and cause problems that are difficult to diagnose.



CAUTION: Do not let fiber-optic cable hang free from the connector. Do not allow fastened loops of cable to dangle, which stresses the cable at the fastening point.

Step 7: Connect Power Cables

IN THIS SECTION

- [Connect Power to a Three-Phase Delta AC Power Distribution Module | 55](#)
- [Connect Power to a Three-Phase Wye AC Power Distribution Module | 60](#)
- [Connect Power to a DC Power Distribution Module | 66](#)
- [Connect DC Power Supply Modules | 68](#)

Depending on your configuration, your router uses either AC or DC power distribution modules (PDMs). Perform the appropriate procedures for each PDM in your router. For more information about PDMs, see the [MX2020 Universal Routing Platform Hardware Guide](#).



CAUTION: Do not mix AC and DC power modules within the same router.

Connect Power to a Three-Phase Delta AC Power Distribution Module

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an approved site ESD grounding point. See the instructions for your site.

2. Switch off the dedicated customer-site circuit breakers. Ensure that the voltage across the AC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.
3. Detach the ESD grounding strap from the approved site ESD grounding point, and connect the strap to one of the ESD points on the chassis.
4. Switch off (O) the AC power supply modules (PSMs) and disengage all AC PSMs.
5. Verify that the correct three-phase delta AC PDMs are installed and secured in the chassis before connecting power cables.

NOTE: The power cables must be uninstalled and removed from the PDM before the PDM is removed from the chassis.

6. Using a number 2 Phillips (+) screwdriver, unscrew the four captive screws located on the either side of the metal AC wiring compartment (four screws total per PDM).
7. Remove the cover of the metal AC wiring compartment.
8. Unscrew the retaining nut from the AC power cord.
9. Put the wires of the AC power cord through the hole of the retaining nut and rubber grommet.
10. Put the wires of the AC power cord through the hole of the metal wiring compartment.
11. Connect the wires to the AC terminal block on the three-phase delta AC PDM (see [Figure 32 on page 57](#)). [Figure 33 on page 58](#) shows the three-phase delta AC power cord and connector. Loosen the input terminal or grounding point screw, insert each wire into the grounding point or input terminal, and tighten the screw (see [Table 5 on page 59](#) for approved AC wire gauge).

NOTE: The terminal connections have either slotted screws or hex screws. Use a 1/4-in. slotted screwdriver for the slotted screws. Use a 5/32-in. (4 mm) Allen wrench for the 5/16-in. hex screws.

NOTE: The three-phase delta AC PDM must be installed and secured in the chassis before connecting the power input cables. If the PDM must be removed, both input power cables must be uninstalled and removed from the PDM before the PDM can be removed from the chassis. The MX2020 chassis is not sensitive to phase rotation sequence—either clockwise or counterclockwise will operate correctly.

To connect wires to the terminal block that serves six PSMs:

- a. Insert the grounding wire into the grounding point labeled **GND**.
- b. Insert the wire labeled **L1** into the input terminal labeled **A1**.

- c. Insert the wire labeled **L2** into the input terminal labeled **B1**.
- d. Insert the wire labeled **L3** into the input terminal labeled **C1**.

Figure 32: Connecting Power to a Three-Phase Delta AC Power Distribution Module

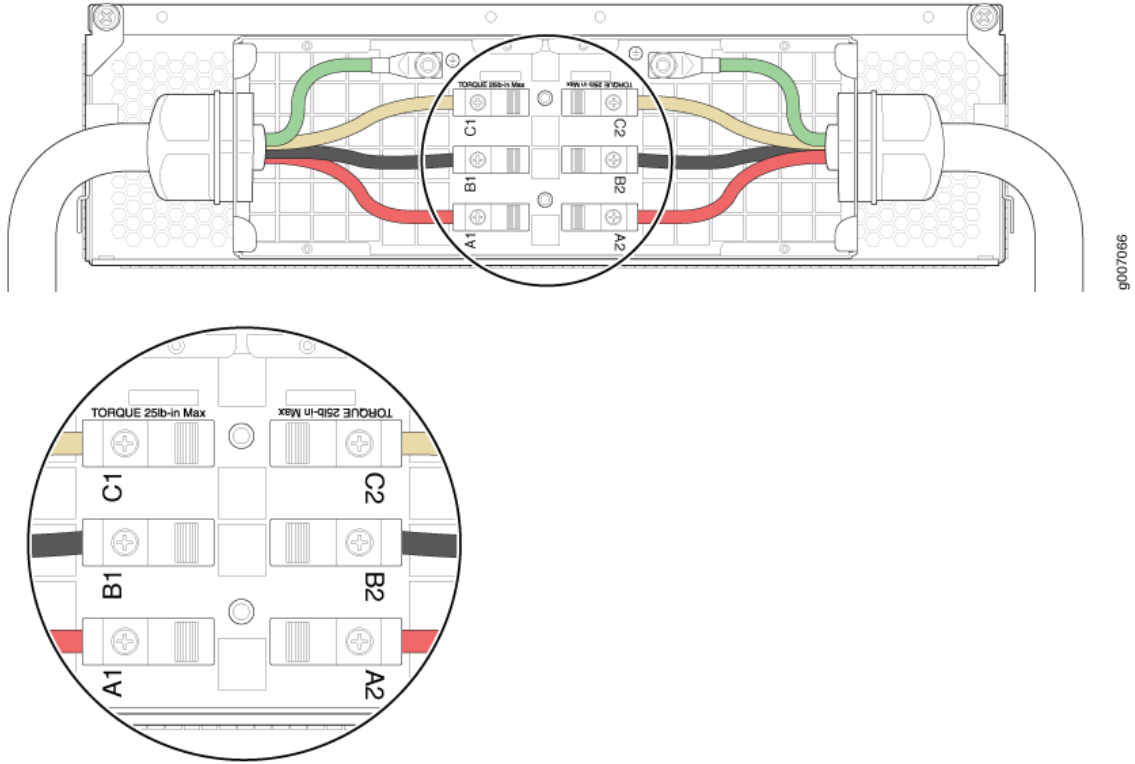
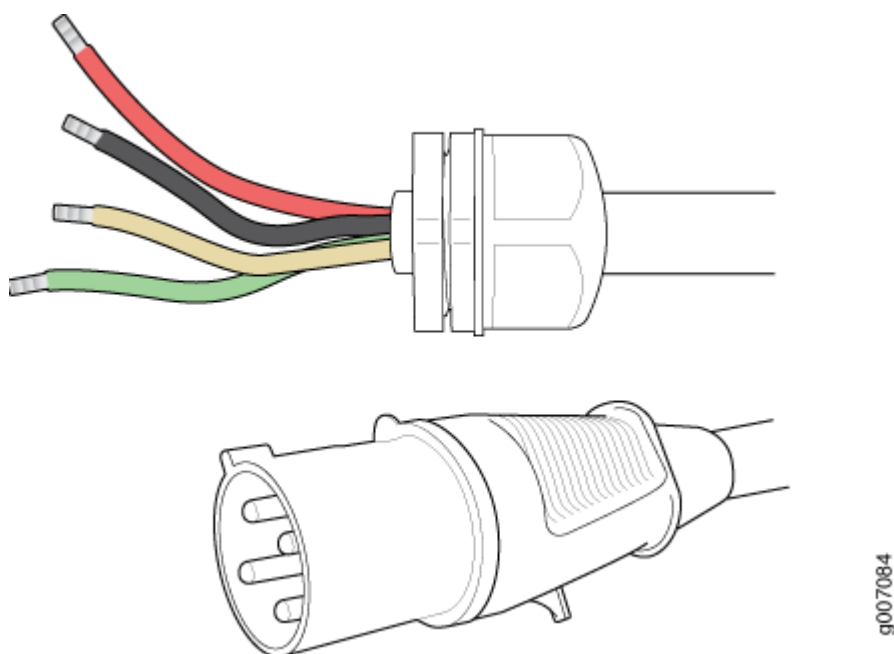


Figure 33: Three-Phase Delta AC Power Cord



NOTE: The three-phase delta AC PDM terminal blocks will be flipped depending on which slot the PDM gets plugged into.



CAUTION: Wire label configuration is for Juniper Networks supplied cable only. If you are using your own cable, make sure that you use the proper connections.

To connect wires to the terminal block that serves three PSMs:

- a. Insert the grounding wire into the grounding point labeled **GND**.
- b. Insert the wire labeled **L1** into the input terminal labeled **A2**.
- c. Insert the wire labeled **L2** into the input terminal labeled **B2**.
- d. Insert the wire labeled **L3** into the input terminal labeled **C2**.



WARNING: To protect power supplies from input voltage that might be caused by miswired PDMs, before reinstalling the metal cover to the wiring compartment apply AC voltage to the PDM (with disengaged PSM) to make sure that two LEDs

on the PDM are lit green and that the AC voltage between AC terminal blocks A1-B1, B1-C1, C1-A1, A2-B2, B2-C2, and C2-A2 for three-phase delta PDM is not more than 264VAC when measured with a digital voltage meter (DVM). Then turn off the AC breaker, de-energizing the PDM, and install the metal cover and engage all AC PSMs.

NOTE: The color of each AC power wire might vary.

NOTE: Three-phase delta AC wire assembly kits can be purchased from Juniper Networks.

Table 5: Supported Three-Phase Delta AC Wire Gauge

Wire Gauge	Description
4 x 6-AWG or equivalent	4 conductor wires, each wire is 6-AWG

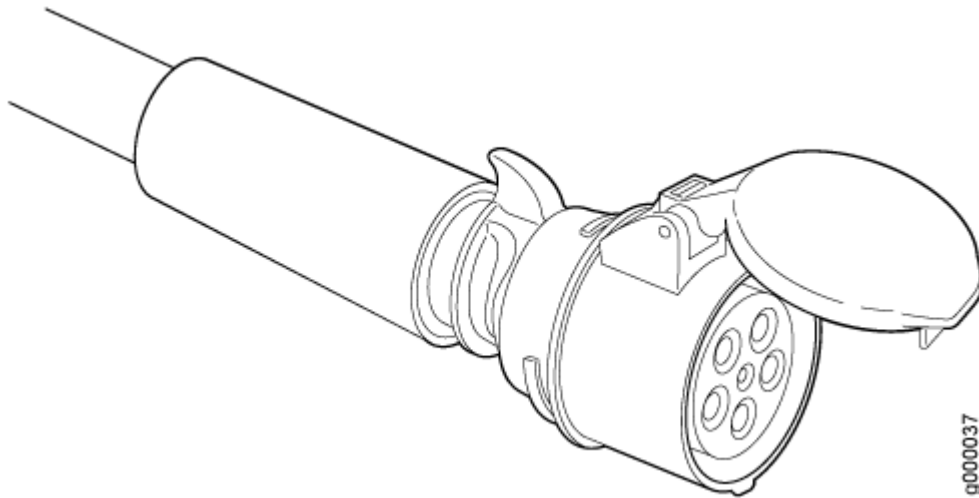
NOTE: We recommend that you use the proper gauge wire in order for the cable clamps to hold the AC cables. Using smaller gauge wiring will result in the cable clamps not tightening properly.



WARNING: Power connections must be performed by a licensed electrician only.

12. Verify that the power cable connections are correct.
13. Screw the retaining nut onto the AC power cord to secure it to the metal wiring compartment.
14. Using a number 2 Phillips (+) screwdriver, tighten the four captive screws on the metal AC wiring compartment.
15. Use the provided plastic cable tie to fasten the AC power cord to the PDM.
16. Verify that the AC power cord does not touch or block access to router components, and that it does not drape where people could trip on it.
17. Repeat the procedure for the other three-phase delta AC PDMs.
18. Connect the three-phase delta AC power cord mating connector to the AC power cord connector (see [Figure 34 on page 60](#)). [Table 6 on page 60](#) shows the approved three-phase delta AC power cord mating connector specifications.

Figure 34: Three-Phase Delta AC Power Cord Mating Connector



NOTE: The three-phase delta AC power cord mating connector is not supplied by Juniper Networks.

Table 6: Three-Phase Delta AC Power Cord Mating Cable Connector Specifications

Cable	Manufacturer Part Number	Description
Three-phase delta	460C9W	60-amp, 250 volt 3-phase, 3-pole, 4-wire, North American pin and sleeve connector, industrial grade, IP67, watertight (blue)



WARNING: Do not touch the power connectors on the PDM. They can contain dangerous voltages.

Connect Power to a Three-Phase Wye AC Power Distribution Module

1. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to an approved site ESD grounding point. See the instructions for your site.

2. Switch off the dedicated customer-site circuit breakers. Ensure that the voltage across the AC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.
3. Detach the ESD grounding strap from the approved site ESD grounding point, and connect the strap to one of the ESD points on the chassis.
4. Switch off (O) the AC PSMs and disengage all AC PSMs.
5. Using a number 2 Phillips (+) screwdriver, unscrew the four captive screws located on the either side of the metal AC wiring compartment (four screws total per PDM).
6. Remove the cover of the metal AC wiring compartment.
7. Unscrew the retaining nut from the AC power cord.
8. Put the wires of the AC power cord through the hole of the retaining nut and rubber grommet.
9. Put the wires of the AC power cord through the hole of the metal wiring compartment.
10. Connect the wires to the AC terminal block on the three-phase wye AC PDM (see [Figure 35 on page 62](#)). [Figure 36 on page 63](#) shows the three-phase wye AC power cord and connector. Loosen the input terminal or grounding point screw, insert each wire into the grounding point or input terminal, and tighten the screw (see [Table 7 on page 64](#) for approved AC wire gauge).

NOTE: The terminal connections have either slotted screws or hex screws. Use a 1/4-in. slotted screwdriver for the slotted screws. Use a 5/32-in. (4 mm) Allen wrench for the 5/16-in. hex screws.

NOTE: The three-phase wye AC PDM must be installed and secured in the chassis before connecting the power input cables. If the PDM must be removed, both input power cables must be uninstalled and removed from the PDM before the PDM can be removed from the chassis. The MX2020 chassis is not sensitive to phase rotation sequence—either clockwise or counterclockwise will operate correctly.

To connect wires to the terminal block that serves six PSMs:

- a. Insert the grounding wire into the grounding point labeled **GND**.
- b. Insert the wire labeled **L1** into the input terminal labeled **A1**.
- c. Insert the wire labeled **L2** into the input terminal labeled **B1**.
- d. Insert the wire labeled **L3** into the input terminal labeled **C1**.
- e. Insert the wire labeled **N** into the input terminal labeled **N1**.

Figure 35: Connecting Power to a Three-Phase Wye AC Power Distribution Module

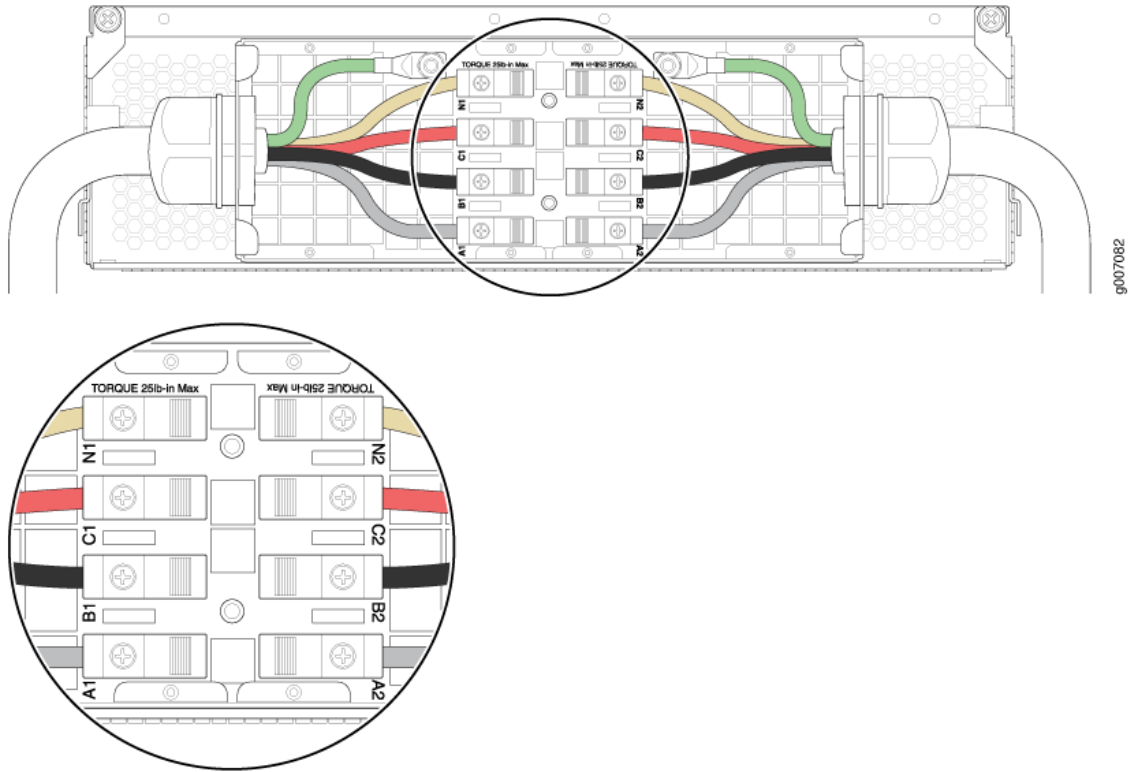
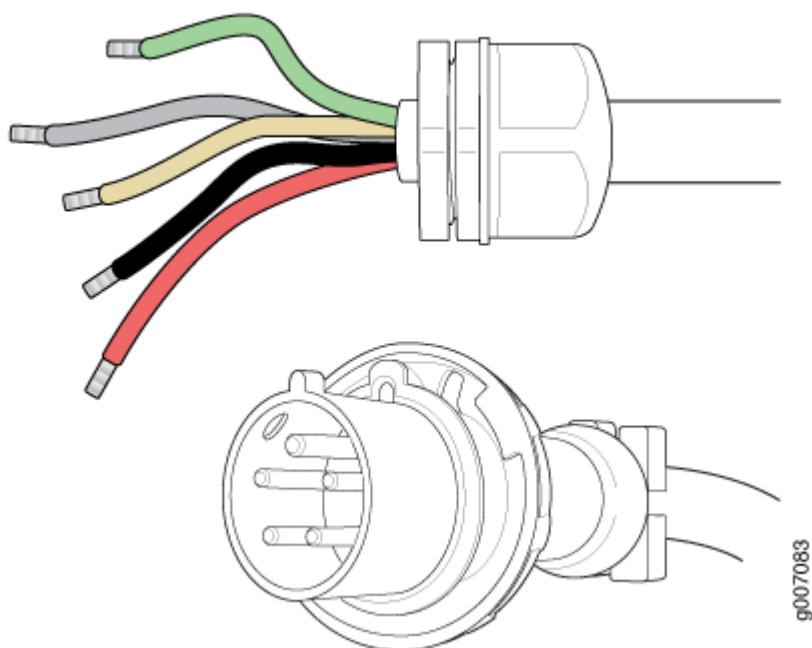


Figure 36: Three-Phase Wye AC Power Cord



NOTE: The three-phase wye AC PDM terminal blocks will be flipped depending on which slot the PDM gets plugged into.



CAUTION: Wire label configuration is for Juniper Networks supplied cable only. If using your own cable, make sure you use the proper connections.

To connect wires to the terminal block that serves three PSMs:

- a. Insert the grounding wire into the grounding point labeled **GND**.
- b. Insert the wire labeled **L1** into the input terminal labeled **A2**.
- c. Insert the wire labeled **L2** into the input terminal labeled **B2**.
- d. Insert the wire labeled **L3** into the input terminal labeled **C2**.
- e. Insert the wire labeled **N** into the input terminal labeled **N2**.



WARNING: To protect power supplies from input voltage that might be caused by miswired PDMs, before reinstalling the metal cover to the wiring compartment apply AC voltage to the PDM (with disengaged PSM) to make sure that two LEDs on the PDM are lit green and that the AC voltage between AC terminal blocks A1-N1, B1-N1, C1-N1, A2-N2, B2-N2, and C2-N2 for three-phase wye PDM is not more than 264VAC when measured with a DVM. Then turn off the AC breaker, de-energizing the PDM, and install the metal cover and engage all AC PSMs.

NOTE: The color of each AC power wire might vary.

NOTE: Three-phase wye AC wire assembly kits can be purchased from Juniper Networks.

Table 7: Supported Three-Phase Wye AC Wire Gauge

Wire Gauge	Description
5 x 10-AWG or equivalent	5 conductor wires, each wire is 10-AWG

NOTE: We recommend that you use the proper gauge wire in order for the cable clamps to hold the AC cables. Using smaller gauge wiring results in the cable clamps not tightening properly.



WARNING: Power connections must be performed by a licensed electrician only.

11. Verify that the power cable connections are correct.
12. Screw the retaining nut onto the AC power cord to secure it to the metal wiring compartment.
13. Reinstall the metal PDM wiring cover, and using a number 2 Phillips (+) screwdriver, tighten the four captive screws on the metal AC wiring compartment.
14. Use the provided plastic cable tie to fasten the AC power cord to the PDM.
15. Verify that the AC power cord does not touch or block access to router components, and that it does not drape where people could trip on it.
16. Repeat the procedure for the other three-phase wye AC PDMs.

17. Connect the three-phase wye AC power cord mating connector to the AC power cord connector (see [Figure 37 on page 65](#)). [Table 8 on page 65](#) shows the approved three-phase wye AC power cord mating connector specifications.

Figure 37: Three-Phase Wye AC Power Cord Mating Connector

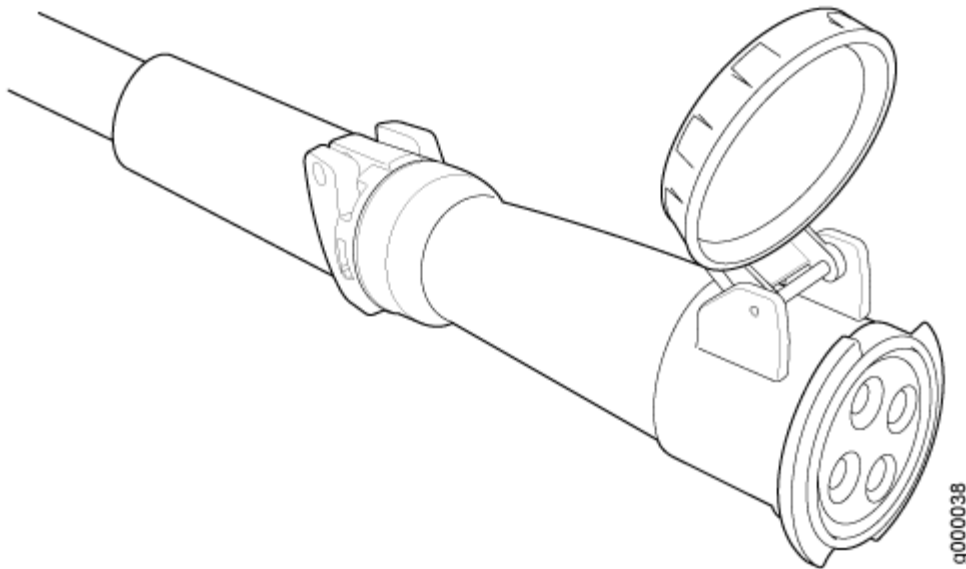


Table 8: Three-Phase Wye AC Power Cord Mating Cable Connector Specifications

Cable	Manufacturer Part Number	Description
Three-phase wye	PCE 225-6	32-amp, 400 volt IP44 3 pole, 5 wire with brass contacts (red)

NOTE: The three-phase wye AC power cord mating connector is not supplied by Juniper Networks.



WARNING: Do not touch the power connectors on the PDM. They can contain dangerous voltages.

Connect Power to a DC Power Distribution Module

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. For more information about ESD, see the [MX2020 Universal Routing Platform Hardware Guide](#).

NOTE: If the DC PSMs are installed in the router, make sure that the power switch is turned to the off (O) position.

2. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.
3. Remove the DC PDM from the electrostatic bag.
4. Using both hands, slide the PDM part way into the chassis.
5. Open the two locking levers on either side of the PDM, and align them with the openings in the chassis.
6. Using both hands, push firmly on both spring-loaded levers until the PDM is fully seated in the chassis slot. The PDM faceplate should be flush. Tighten both captive screws.

NOTE: Make sure that the DC circuit feed switch on the PDM faceplate matches the current rating amperage, (60 A) or (80 A). This switch applies to all inputs of this PDM, and that selecting 60 A reduces the available power output capacity of the PSMs supplied by this PDM.

7. Loosen the captive screws on the clear plastic cable restraint protecting the terminal studs on the faceplate of the PDM.
8. Secure each power cable lug to the terminal studs, first with the flat washer, then the split washer, and finally with the nut. Apply between 23 lb-in. (2.6 Nm) and 25 lb-in. (2.8 Nm) torque to each nut (see [Figure 38 on page 67](#)). Do not overtighten the nut. (Use a 7/16-in. [11 mm] torque-controlled driver or socket wrench).

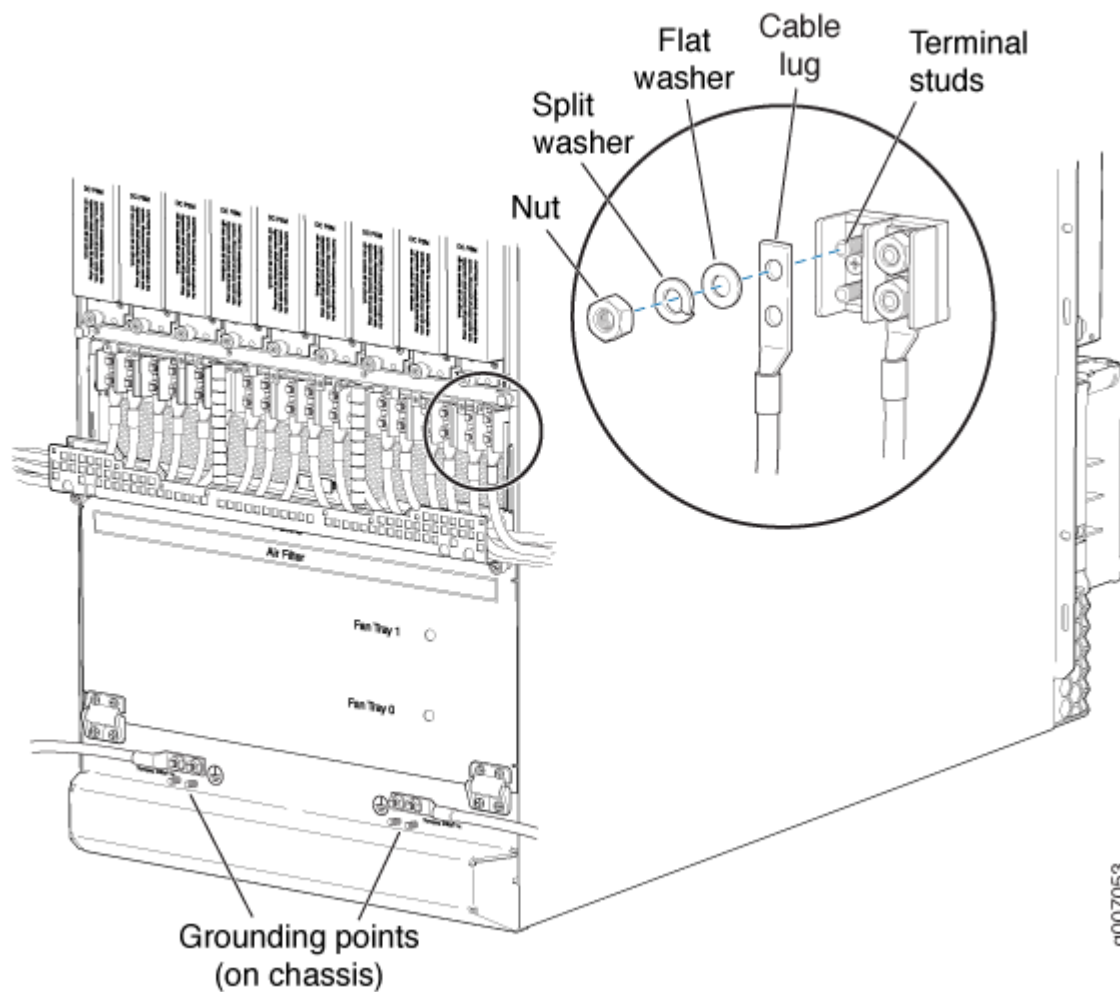
[Table 9 on page 67](#) describes the DC operating range specifications.

- a. Attach the positive (+) DC source power cable lug to the **RTN** (return) terminal.
- b. Attach the negative (-) DC source power cable lug to the **-48V** (input) terminal.

Table 9: MX2020 DC Power System Input Voltage

Item	Specification
DC input voltage	Operating range: -40 to -72 VDC

Figure 38: Connecting Ground and DC Power Cables



g007053



CAUTION: Ensure that each power cable lug seats flush against the surface of the terminal block as you are tightening the nuts. Ensure that each nut is properly

threaded onto the terminal stud. The nut should be able to spin freely with your fingers when it is first placed onto the terminal stud. Applying installation torque to the nut when the nut is improperly threaded might result in damage to the terminal stud.



CAUTION: The maximum torque rating of the terminal studs on the DC PDM is 25 lb-in. (33.89 Nm). The terminal studs might be damaged if excessive torque is applied. Use only a torque-controlled driver or socket wrench to tighten nuts on the DC PDM terminal studs.

NOTE: For information about connecting to DC power sources, see the [MX2020 Universal Routing Platform Hardware Guide](#).

9. Connect each DC power cable to the appropriate external DC power source.

NOTE: For information about connecting to external DC power sources, see the [MX2020 Universal Routing Platform Hardware Guide](#).

10. Switch on the external circuit breakers to provide voltage to the DC power source cable leads.

NOTE: Each PDM must be connected to a dedicated **60 A** or **80 A** DC circuit breaker for the DC power source. The PDM has a switch to accommodate DC circuit breaker amperage.

11. Verify that the power cabling is correct, that the cables are not touching, and that they do not block access to router components or drape where people could trip on them.
12. Close the cable restraint cover over the terminal studs, and tighten the captive screws.

Connect DC Power Supply Modules

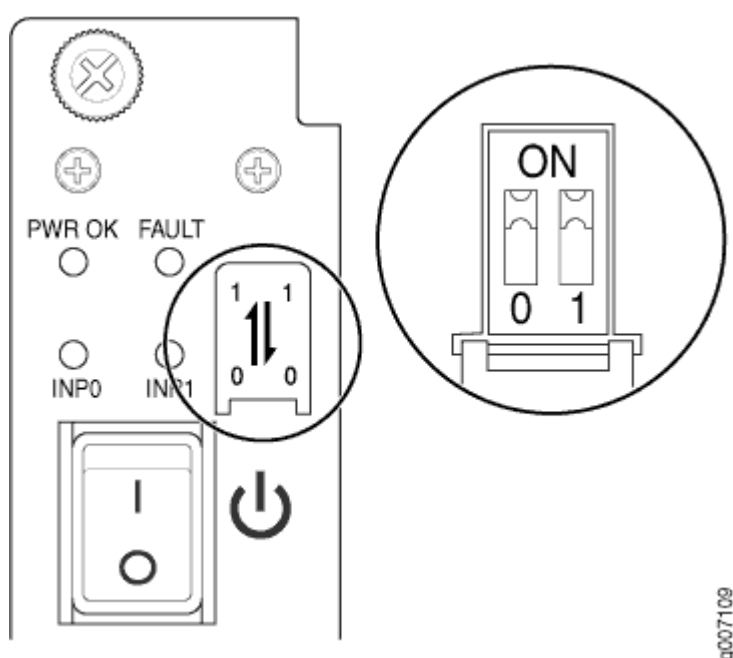
1. Verify that the power switches on the PSM is in the off (**O**) position (see [Figure 39 on page 69](#)).
2. On the PSM, slide the plastic cover away from the input mode switch to expose the dual DIP switches. Move the input mode DIP switch **0** (left switch) to the **ON** position for the bottom feed **INP0** (expected to be connected), and DIP switch **1** (right switch) to the **ON** position for the top feed

INP1 (expected to be connected). If both DIP switches **0** and **1** are turned to the **ON** position, then both top and bottom feeds are expected to be connected (see [Figure 39 on page 69](#)).

In addition, a PSM failure triggers the alarm LED on the craft interface.

NOTE: The DIP switches are used only to indicate presence of a feed. If both feeds are present, power is always drawn from feed **0**. Only if feed **0** fails will power be drawn from feed **1**.

Figure 39: Selecting DC Power Subsystem Feed Redundancy



3. Ensure that the voltage across the DC power source cable leads is 0 V and that there is no chance that the cable leads might become active during installation.
4. Using both hands, slide the PSM straight into the chassis until the PSM is fully seated in the chassis slot. Tighten the two captive screws to secure the PSM to the chassis.

NOTE: The MX2020 router configured for DC input power must use only DC PDMs and DC PSMs. AC and DC PSMs or PDMs must not be mixed within a single router.

5. Verify that the **INP0** or **INP1** LEDs on the PSM are lit green steadily. The **INP0** or **INP1** LEDs will be lit yellow if that input's voltage is in reverse polarity. Check the polarity of the power cables to fix the condition (see [Figure 40 on page 71](#) and [Table 10 on page 70](#)).

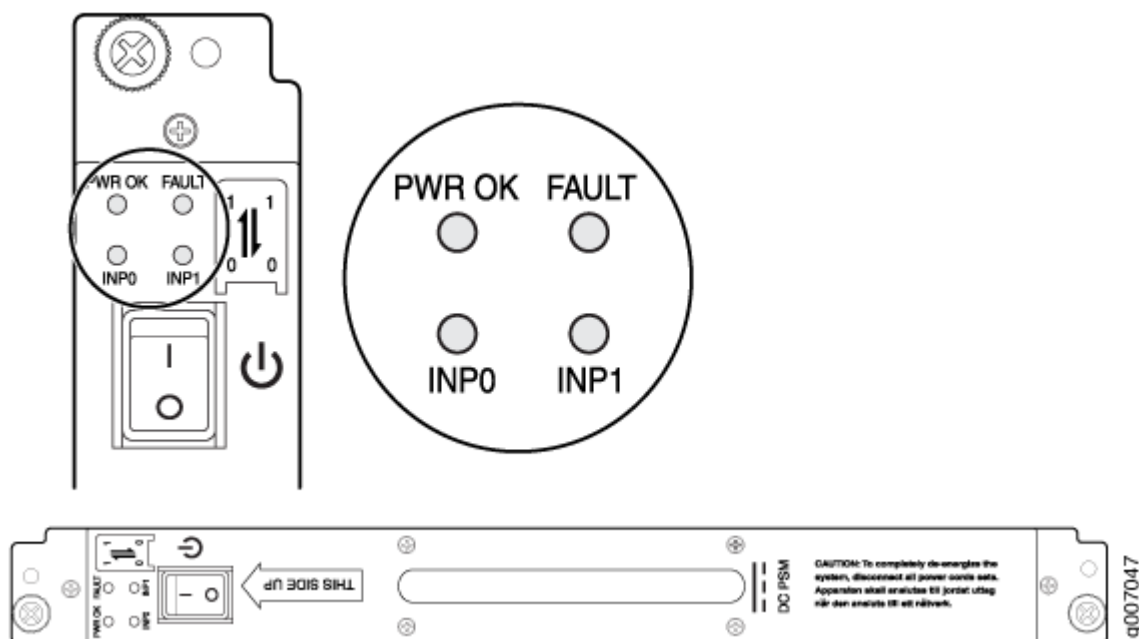
6. Attach an electrostatic discharge (ESD) grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
7. Move the switch to the on (I) position.
8. Verify that the **PWR OK** LED is lit green steadily. See [Table 10 on page 70](#) for information about MX2020 DC PSM LEDs.

Table 10: MX2020 DC Power Supply Module LEDs

Label	Color	State	Description
PWR OK	Green	On	PSM is functioning normally with no alarms.
	Yellow	On	PSM controller is functioning normally.
	–	Off	PSM is not functioning normally or the PSM controller is off.
FAULT	Red	On	PSM is not functioning normally or the DC input voltage of one or more feeds is out of range.
	–	Off	PSM is functioning normally or both the DIP switches are set to off.
INP0	Green	On	DC input is within the required voltage range and the DIP switch is set to on.
	Yellow	On	DC input is detected but voltage is out of range.
	–	Off	DC input to the PSM is not present.
INP1	Green	On	DC input is within the required voltage range and the DIP switch is set to on.
	Yellow	On	DC input is detected but voltage is out of range.
	–	Off	DC input to the PSM is not present.

9. Repeat Steps [1](#) through [8](#) for installing PSMs in slots **0**, **1**, and **2**, where required.

Figure 40: MX2020 DC Power Supply Module Front View



NOTE: Each PSM slot not occupied by a DC PSM must be covered by a PSM blank panel.

Step 8: Perform Initial Software Configuration

IN THIS SECTION

- [Enter Configuration Mode | 72](#)
- [Configure User Accounts and Passwords | 72](#)
- [Configure System Attributes | 73](#)
- [Commit the Configuration | 75](#)

This procedure connects the router to the network but does not enable it to forward traffic. For complete information about configuring the router to forward traffic, including examples, see the Junos OS configuration guides.

Check the LEDs on the craft interface to verify the hardware status after reinstalling or powering on the MX2020 router.

For a list of system status verification commands, see the [MX2020 Universal Routing Platform Hardware Guide](https://www.juniper.net/documentation/) at <https://www.juniper.net/documentation/>.

To configure the software:

Enter Configuration Mode

1. Verify that the network device is powered on.
2. Log in as the root user. There is no password.

```
Amnesiac <tttyd0>  
login: root
```

3. Start the CLI.

```
root@% cli  
root>
```

4. Enter configuration mode.

```
root> configure  
Entering configuration mode.  
[edit]  
root#
```

Configure User Accounts and Passwords

For information about using an encrypted password or an SSH public key string (DSA or RSA), see [authentication](#).

1. Add a password to the root administration user account. Enter a clear-text password.

```
[edit]
root# set system root-authentication plain-text-password
New password: password
Retype new password: password
```

2. Create a management console user account.

```
[edit]
root# set system login user user-name authentication plain-text-password
New Password: password
Retype new password: password
```

3. Set the user account class to super-user.

```
[edit]
root@# set system login user user-name class super-user
```

Configure System Attributes

For more information about configuring the backup routing and static routes, see the [Junos OS Administration Library](#).

1. Configure the name of the router. If the name includes spaces, enclose the name in quotation marks (" ").

```
[edit]
root# set system host-name host-name
```

NOTE: The DNS server does not use the hostname to resolve to the correct IP address. This hostname is used to display the name of the Routing Engine in the CLI. For example, the following hostname appears on the command-line prompt when the user is logged in to the CLI:

```
user-name@host-name>
```

2. Configure the IP address of the DNS server.

```
[edit]
root# set system name-server address
```

3. Configure the router's domain name.

```
[edit]
root# set system domain-name domain-name
```

4. Configure the IP address and prefix length for the router's management Ethernet interface.

```
[edit]
root # set interfaces fxp0 unit 0 family inet address address/prefix-length
```

5. Configure the IP address of a backup Routing Engine. The backup Routing Engine is used while the local router is booting and if the routing process fails to start. After the routing process starts, the backup Routing Engine address is removed from the local routing and forwarding tables.

```
[edit]
root# set system backup-router address
```

6. (Optional) Configure the static routes to remote subnets with access to the management Ethernet port. Access to the management Ethernet port is limited to the local subnet. To access the management Ethernet port from a remote subnet, you must add a static route to that subnet within the routing table.

```
[edit]
root# set routing-options static route remote-subnet next-hop destination-IP retain no-  
readvertise
```

7. Configure the telnet service at the [edit system services] hierarchy level.

```
[edit]
root#set system services telnet
```

Commit the Configuration

1. Display the configuration to verify that it is correct.

```
[edit]
root@# show
system {
  host-name host-name;
  domain-name domain-name;
  backup-router address;
  root-authentication {
    authentication-method (password | public-key);
  }
  name-server {
    address;
  }
}
interfaces {
  fxp0 {
    unit 0 {
      family inet {
        address address/prefix-length;
      }
    }
  }
}
```

2. Commit the configuration to activate it on the router.

```
[edit]
root@# commit
```

3. Optionally, configure additional properties by adding the necessary configuration statements. Then commit the changes to activate them on the router.

```
[edit]
root@host# commit
```

4. When you have finished configuring the router, exit configuration mode.

```
[edit]  
root@host# exit  
root@host>
```

Safety Warnings



WARNING: See installation instructions before connecting the router. This is a summary of safety warnings. For a complete list of warnings for this router, including translations, see the [MX2020 Universal Routing Platform Hardware Guide](https://www.juniper.net/documentation/) at <https://www.juniper.net/documentation/>.



WARNING: The intrabuilding port(s) of the router is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding port(s) of the router **MUST NOT** be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.



CAUTION: Before removing or installing components of a router, attach an ESD strap to an ESD point and place the other end of the strap around your bare wrist. Failure to use an ESD strap could result in damage to the router.



CAUTION: Use an external surge protective device (SPD) at the AC input of the router.

- Only trained and qualified personnel should install or replace the router.
- Perform only the procedures described in this Quick Start or in the [MX2020 Universal Routing Platform Hardware Guide](#). Other services should be performed by authorized service personnel only.
- Read the installation instructions before you connect the router to a power source.

- Before installing the router, read the guidelines for site preparation in the [MX2020 Universal Routing Platform Hardware Guide](#) to make sure that the site meets power, environmental, and clearance requirements for the router.
- For the cooling system to function properly, the airflow around the chassis must be unrestricted. Allow at least 36 in. (91.44 cm) of clearance between front to rear-cooled routers. Allow 2.8 in. (7 cm) between the side of the chassis and any non-heat-producing surface such as a wall.
- Four people are required to move the MX2020 router.
- Always remove the front and rear shipping covers before removing the components.
- Always remove all components before moving the router. The empty router weighs 330 lb (149.68 kg).
- When installing the router, do not use a ramp inclined more than 10 degrees.
- Measure the shipping container to make sure there is adequate clearance through doorways and passages to accommodate the dimensions.

NOTE: The shipping container (wooden crate) is 85.1 in. (216.15 cm) high, 48 in. (121.92 cm) deep, and 42 in. (106.68 cm) wide.

- Always reinstall the front and rear shipping covers to help move the router.



CAUTION: The shipping covers help prevent damage to the card cage and backplanes during rack installation.

- When installing components into the router, load the chassis from the bottom to the top.
- After installing components, install the EMI covers over the line and system cards.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the router in the rack.
- When removing or installing an electrical component, always place it component-side up on a flat antistatic surface or in an electrostatic bag.
- When you install the router, always make the ground connection first and disconnect it last.
- Wire the DC PDMs using the appropriate lugs. When you connect power, the proper wiring sequence is ground to ground, +RTN to +RTN, then -48 V to -48 V. When you disconnect power,

the proper wiring sequence is -48 V to -48 V, +RTN to +RTN, then ground to ground. Always connect the ground wire first and disconnect it last.

- Do not work on the system or connect or disconnect cables during electrical storms.
- Before working on equipment that is connected to power lines, remove jewelry, including rings, necklaces, and watches. Metal objects heat up when connected to power and ground and can cause serious burns or become welded to the terminals.
- Failure to observe these safety warnings can result in serious physical injury.
- AC power cable warning (Japan):



WARNING: The attached power cable is only for this product. Do not use the cable for another product.

注意

附属の電源コードセットはこの製品専用です。
他の電気機器には使用しないでください。

96-72933