



ThinkSystem 4U Tower-to-Rack Conversion Kit Installation Instructions



Second Edition (September 2017)

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Safety

Each caution and danger statement in this document is labeled with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Data Center Group Safety Information* book.

Be sure to read all caution and danger statements in this document before you perform the procedures. Read any additional safety information that comes with the server or optional device before you install the device.

R001



CAUTION:

To ensure safety, all configurations of the rack cabinet must be certified by a nationally recognized testing laboratory to verify compliance with country-specific safety regulations. This process ensures that the end product remains safe for the operator and service personnel under normal and foreseeable misuse conditions.

R002



 **DANGER**

- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- Always install servers and optional devices starting from the bottom of the rack cabinet.
- Always install the heaviest devices in the bottom of the rack cabinet.

R003



 **DANGER**

- Do not extend more than one sliding device at a time.
- The maximum allowable weight for a device on slide rails is 80 kg (176 lb). Do not install a sliding device that exceeds this weight.

R004



CAUTION:

See the instructions in the rack documentation before you install devices, remove devices, or relocate the rack.

R005



 **DANGER**

When you populate a rack cabinet, adhere to the following guidelines:

- Always lower the leveling pads on the rack cabinet.
- Always install the stabilizer brackets on the rack cabinet.
- Always install the heaviest devices in the bottom of the rack cabinet.
- Always install devices starting from the bottom of the rack cabinet.
- Do not extend multiple devices from the rack cabinet simultaneously, unless the rack-mounting instructions direction you to do so. Multiple devices extended into the service position can cause your rack cabinet to tip.
- Be sure to securely anchor the rack cabinet to ensure its stability.

R006



CAUTION:

Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf.

R007



 **DANGER**

- Connect power cords from devices in the rack cabinet to electrical outlets that are near the rack cabinet and are easily accessible.
- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet before you service any device in the rack cabinet.
- Install an emergency-power-off switch if more than one power device (power distribution unit or uninterruptible power supply) is installed in the same rack cabinet.
- Connect all devices that are installed in a rack cabinet to power devices that are installed in the same rack cabinet. Do not connect a power cord from a device that is installed in one rack cabinet to a power device that is installed in a different rack cabinet.

R008



 **DANGER**

Overloading a branch circuit is a potential fire hazard and shock hazard under certain conditions. To avoid these hazards, make sure that your system electrical requirements do not exceed branch circuit protection requirements. See the information that is provided with your device for electrical specifications.

R009



CAUTION:

Removing components from the upper positions in the Enterprise Rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building:

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must do the following:
 - Remove all devices in the 32 U position and above.
 - Make sure that the heaviest devices are installed in the bottom of the rack cabinet.
 - Make sure that there are no empty U positions between devices installed in the rack cabinet below the 32 U position.
- If the rack cabinet that you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- Inspect the route that you plan to take, to eliminate potential hazards.
- Make sure that the route that you choose can support the weight of the loaded rack cabinet. See the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Make sure that all door openings are at least 760 x 2030 mm (30 x 80 in.)

- Make sure that all devices, shelves, drawers, doors, and cables are secure.
- Make sure that the four leveling pads are raised to their highest positions.
- Make sure that no stabilizer bracket is installed on the rack cabinet.
- Do not use a ramp that is inclined more than 10 degrees.
- When the rack cabinet is in the new location, do the following:
 - Lower the four leveling pads.
 - Install stabilizer brackets on the rack cabinet.
 - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.

If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also, lower the leveling pads to raise the casters off the pallet and bolt the rack cabinet to the pallet.

S015



CAUTION:

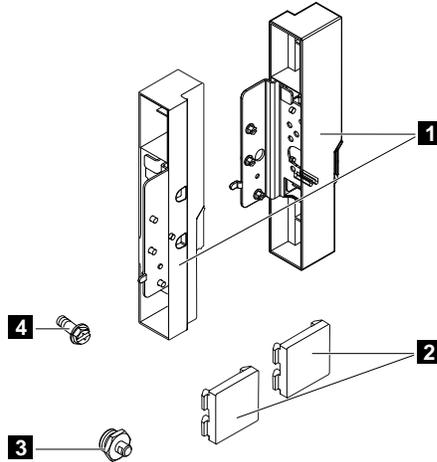
Make sure that the rack is secured properly to avoid tipping when the server unit is extended.

Chapter 1. About the Tower-to-Rack Conversion Kit

The ThinkSystem 4U Tower-to-Rack Conversion Kit (hereafter called the Tower-to-Rack Conversion Kit) enables you to convert a ThinkSystem server from tower model to rack model. You can then install the server into a rack that is at least 67.0 cm (26.4 inches) deep.

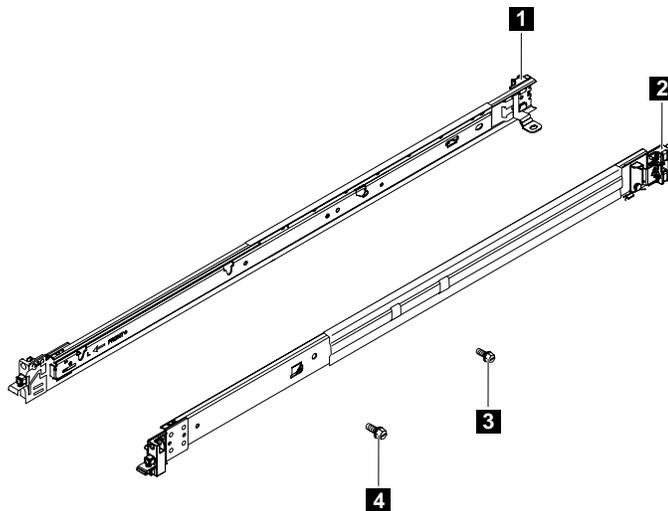
The Tower-to-Rack Conversion Kit package contains the following items:

- One chassis conversion kit



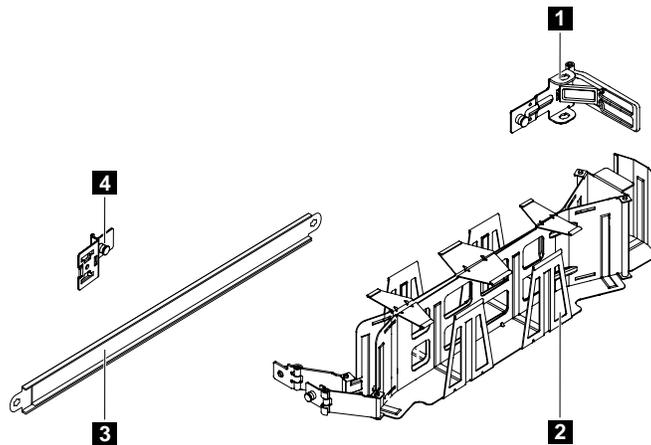
1 Rack latch brackets (2)	2 Rubber safety covers (2)
3 Nail-head screws for rail mounting (3)	4 Combi-head screws (6)

- One slide rail kit



1 Slide rail (left)	2 Slide rail (right)
3 M6 screws (2) for front	4 10-32 screws (2) for rear

- One cable management arm (CMA) kit



1 CMA stop bracket	2 CMA assembly
3 CMA support bar	4 CMA mounting bracket

- Documentation

Installation tools

You will need the following tools to install the Tower-to-Rack Conversion Kit:

- A flat-blade screwdriver
- A #1 Phillips screwdriver for installing the chassis conversion kit
- A #3 Phillips screwdriver for installing the slide rail kit
- An 8 mm open-end or box wrench
- A 12 mm (1/2-inch) nut driver or a 12 mm (1/2-inch) open-end or box wrench
- A pair of pliers

Chapter 2. Installing the Tower-to-Rack Conversion Kit

This section provides instructions on how to convert your ThinkSystem server from tower model to rack model.

Read this first

Review the documentation that comes with the rack for safety and cabling information. Before you install the server in a rack, review the following guidelines:

- Two or more people are required to install devices 2U or larger in a rack.
- Make sure that the room air temperature is below 35°C (95°F).
- Do not block any air vents; usually 15 cm (6 inches) of space provides proper airflow.
- Do not leave open spaces above or below an installed server in your rack. To help prevent damage to server components, always install a blank filler panel to cover the open space and to help ensure proper air circulation.
- Install the server only in a rack with perforated doors.
- Plan the device installation starting from the bottom of the rack.
- Install the heaviest device in the bottom of the rack.
- Always install the tip plates on the rack.
- Do not extend more than one device out of the rack at the same time.
- Remove the rack doors and side panels to provide easier access during installation.
- Connect the server to a properly grounded outlet.
- Do not overload the power outlet when you install multiple devices in the rack.
- Install the server in a rack that meets the following requirements:
 - Minimum depth of 70 mm (2.76 inches) between the front mounting flange and inside of the front door
 - Minimum depth of 157 mm (6.18 inches) between the rear mounting flange and inside of the rear door
 - Minimum depth of 718 mm (28.27 inches) and maximum depth of 762 mm (30 inches) between the front and rear mounting flanges to support the use of the cable management arm
 - Maximum thickness of 4.65 mm (0.18 inches) of the rack mounting flanges
 - Nominal square hole dimension of 9.5 mm (0.375 inches) for racks with square mounting holes
 - Nominal round hole diameter of 7.1 mm (0.28 inches) for racks with round mounting holes
- Racks with threaded mounting holes are not supported with these slide rails.

S036



CAUTION:
Use safe practices when lifting.



R006



CAUTION:
Do not place any object on top of a rack-mounted device unless that rack-mounted device is intended for use as a shelf.

S034



CAUTION:
Always install the slide retention screw.

Preparing the server

To prepare the server, complete the following steps:

1. Read the safety information. See “Safety” on page iii.
2. Shut down the server operating system.
3. Turn off the server and disconnect all cables.

Installing the chassis conversion kit

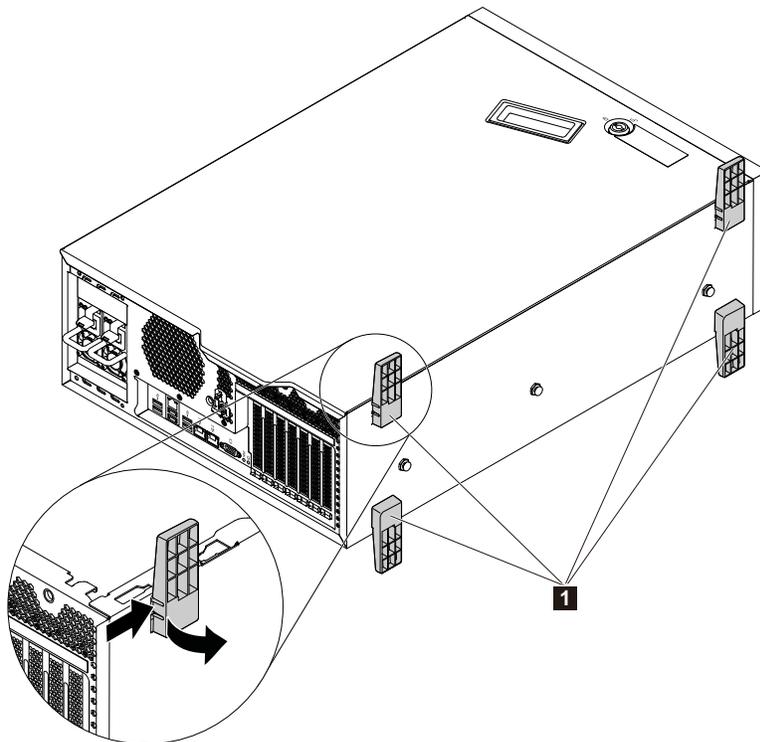
To install the chassis conversion kit, complete the following steps:

Note: The illustrations in this document might be slightly different from your hardware.

1. Remove the four foot stands from the bottom of the server.

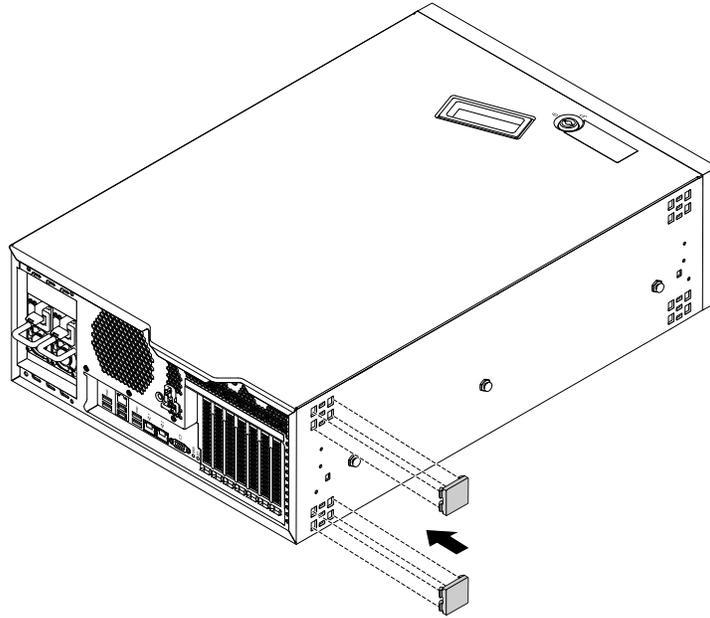
- a. Carefully lay the server on its side so that its foot stands hang over the edge of a flat surface for easier operation.
- b. Press the release tabs that hold the foot stands in place, and then pivot the foot stands away from the server.

Note: In some cases, you might need a screwdriver to press the release tabs.



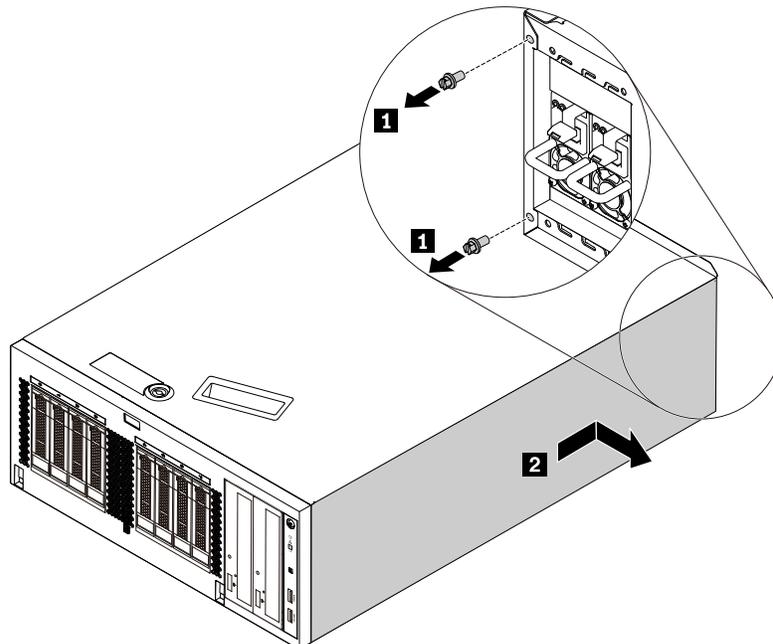
2. Install the two rubber safety covers.

Align the rubber safety covers with the corresponding holes in the bottom of the server, and then install them into the place.



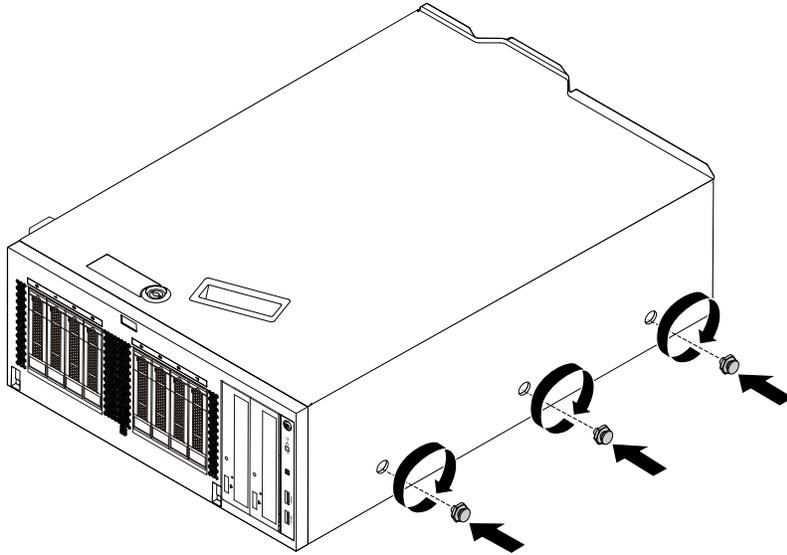
3. Remove the top panel.

- a. From the rear of the server, use a #1 Philips screwdriver to remove the two screws **1** that hold the top panel in place.
- b. Remove the top panel **2** away from the server and set it aside. Store the top panel and the screws for potential future use.



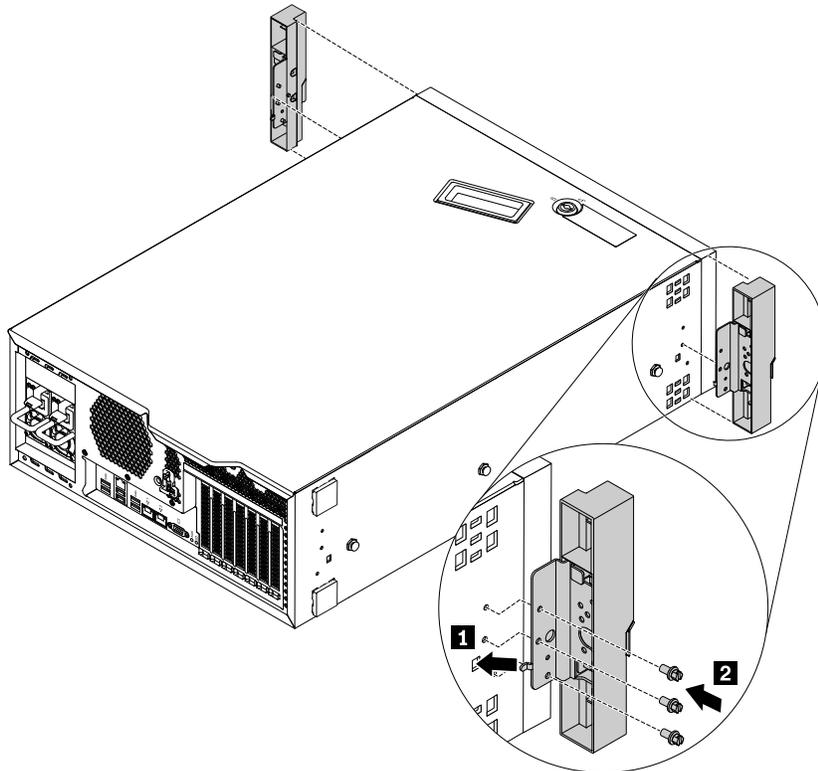
4. Install the three nail-head screws onto the top of server.

Align the nail-head screws with the corresponding holes in the top of the server, and then install them into the place using a 12 mm (1/2-inch) nut driver.



5. Install the two rack latch brackets.

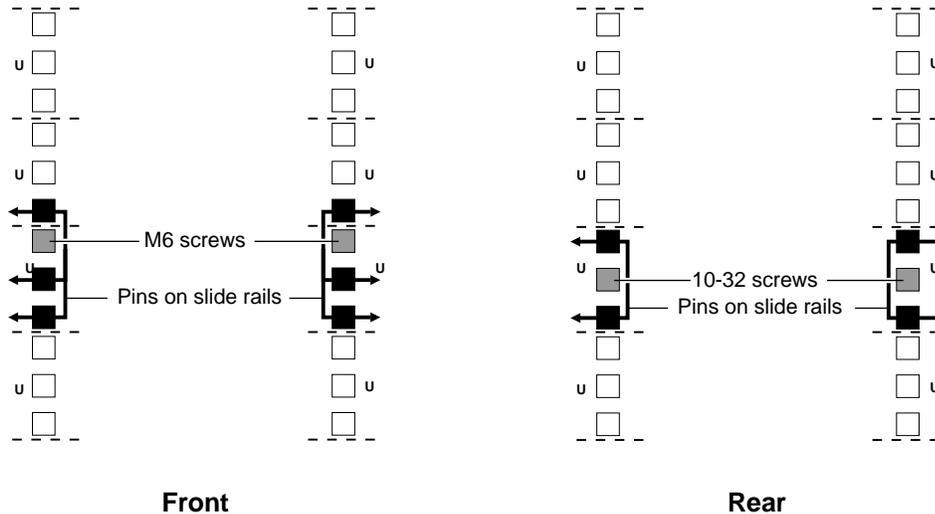
- Insert the small pin **1** on each rack latch bracket into the corresponding hole as shown.
- Install the combi-head screws **2** using a #1 Philips screwdriver to secure the rack latch brackets into place.



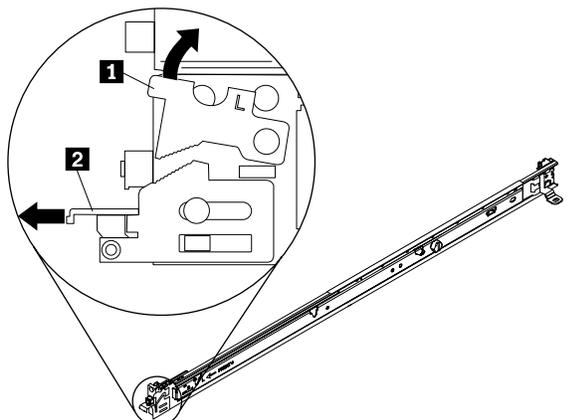
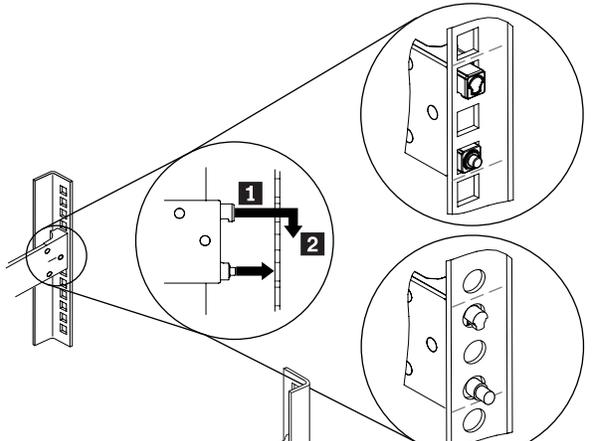
Installing the slide rail kit

Note: If you are scaling this server as part of a multi-node system, see the rack installation instructions that come with the option kit for instructions on installing the extra hardware required in the multi-node setup.

Use the following illustration of the front and rear rack-mounting flanges to determine the appropriate rack-mounting holes for installing the slide rails.

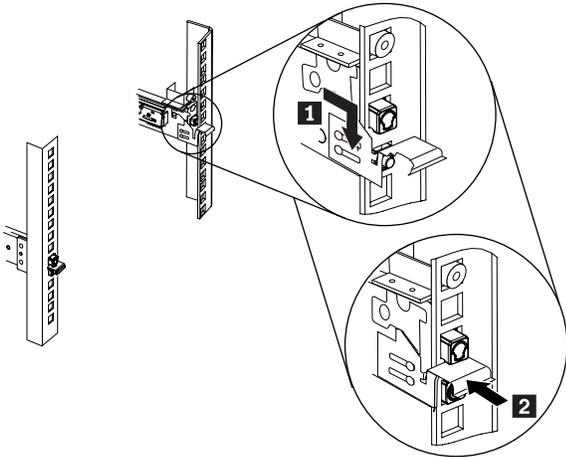


To install the slide rail kit, complete the following steps:

<p>1. Open the front slide rail latches.</p> <p>Each slide rail is marked with either an R (right) or an L (left). You can start with either one of the slide rails.</p> <ol style="list-style-type: none"> Push up the front moveable tab 1. Pull out the front latch 2. 	<p>2. Install the rear end of the slide rails.</p> <p>If there is a 10-32 screw installed in the middle hole in the rear bracket of the slide rail, remove the screw first and keep the screw for a later step.</p> <ol style="list-style-type: none"> From the front of the rack, line up the pins on the rear of the slide rail with the corresponding holes in the selected U on the rear of the rack. Push the slide rails so that the pins go into the holes 1, and drop the slide rail down 2 until it latches into place. 
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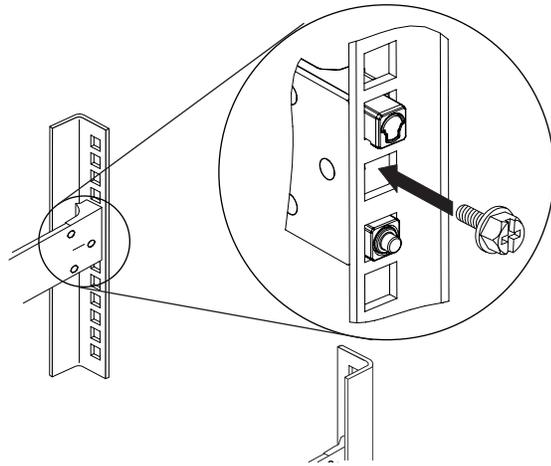
3. Install the front end of the slide rails.

- Pull the slide rail forward and insert the two lower pins **1** on the front of the slide rail into the two lower holes in the U on the front of the rack.
- Push the front latch **2** in all the way with one hand while you pull on the rail assembly with your other hand. Ensure that the front of the slide rail is in contact with the back side of the mounting flange.



4. Secure the slide rail to the rack.

Mandatory: Install the 10-32 screw that you removed into the middle hole in the rear of the rack.

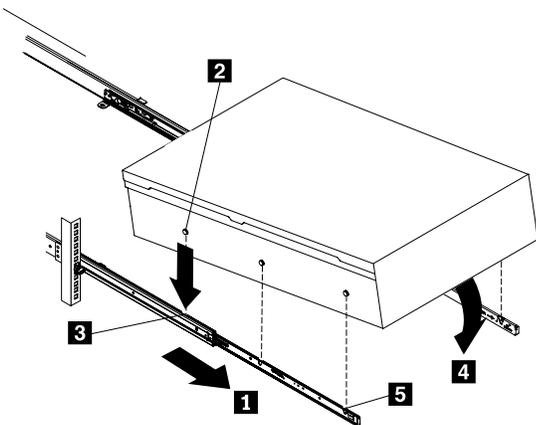


Optional: Install one of the M6 screws that come with your rail kit into the top hole of the U in the front of the slide rail.

Repeat steps 1 through 4 to install the other slide rail into the rack. Ensure sure that each front latch is fully engaged.

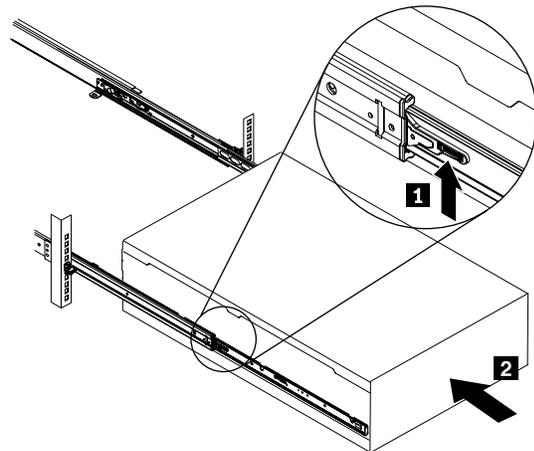
5. Install the server on the slide rails.

- Pull the slide rails forward **1** until they click two times into place.
- Carefully lift the server and tilt it into position over the slide rails so that the rear nail heads **2** on the server line up with the rear slots **3** in the slide rails.
- Lower the server down until the rear nail heads slip into the two rear slots, and then slowly lower the front of the server **4** until the other nail heads slip into the other slots in the slide rails. Ensure that the front latches **5** slides over the nail heads.



6. Slide the server into the rack.

- Lift the locking levers **1** on the slide rails.
- Push the server **2** all the way into the rack until it clicks into place.



Installing the CMA kit

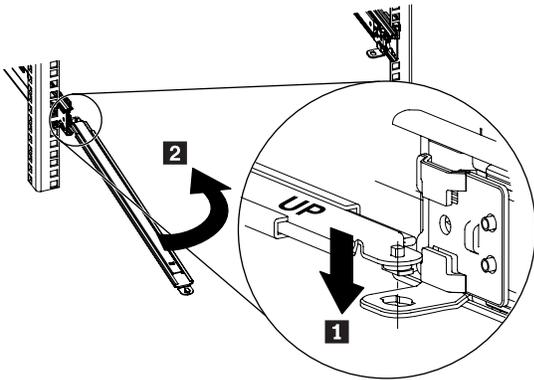
Note: You can install the cable management arm (CMA) on either side of the server. This document shows it being installed on the left side. The installation instructions in this document can be reversed if you are installing the CMA on opposite side of the server.

To install the CMA kit, complete the following steps:

1. Install the CMA support bar.

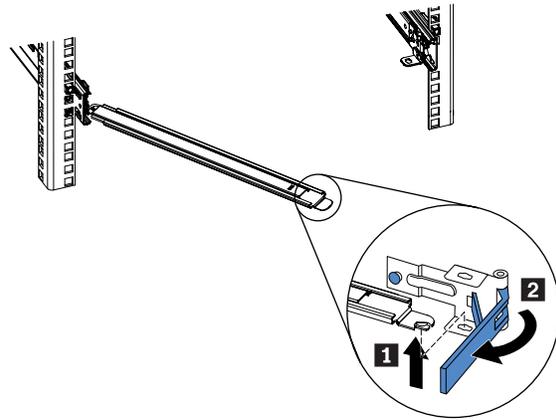
- Place the pin on the CMA support bar down into the slot **1** in the rear end of the slide rail.
- Rotate the other end of the CMA support bar **2** toward the slide rail on the opposite side.

Note: Ensure that the inner shiny bar is on top, as shown in the illustration.



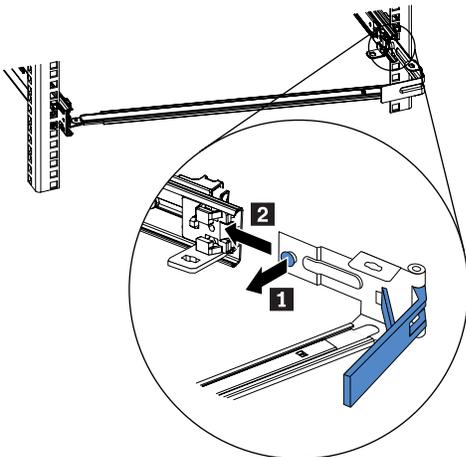
2. Install the CMA stop bracket.

- Install the L-shaped CMA stop bracket **1** on the unattached end of the support bar.
- Turn the bracket **2** to secure it to the support bar.



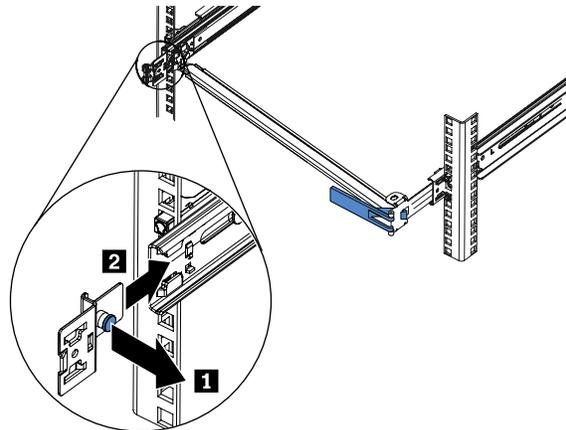
3. Connect the stop bracket to the slide rail.

- Pull out the pin **1** on the stop bracket.
- Slide and push the bracket **2** into the slide rail until it snaps into place.



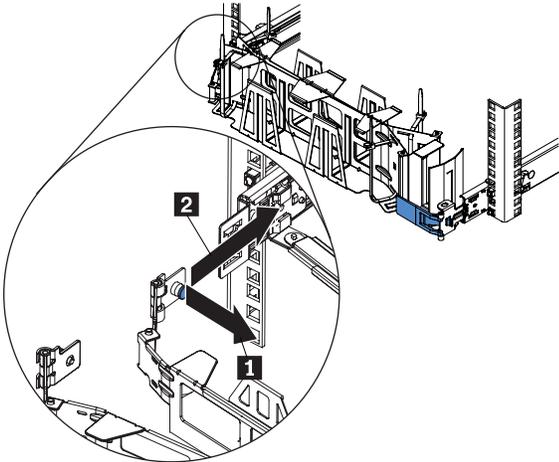
4. Install the CMA mounting bracket into the slide rail.

- Pull out the mounting bracket pin **1** and slide the mounting bracket **2** into the slide rail onto which you are installing the CMA.
- Push the bracket into the slide rail until the spring-loaded pin snaps into place.



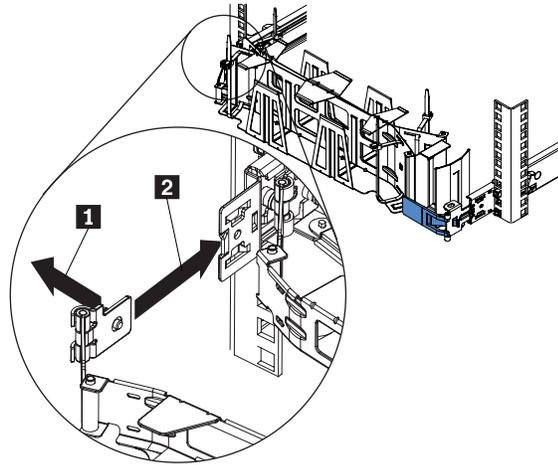
5. Attach the CMA inner mounting tab.

- a. Place the CMA on the support bar.
- b. Pull out the pin **1** on the inner mounting tab, and push the mounting tab into the slot **2** on the inside of the slide rail.



6. Attach the CMA outer mounting tab.

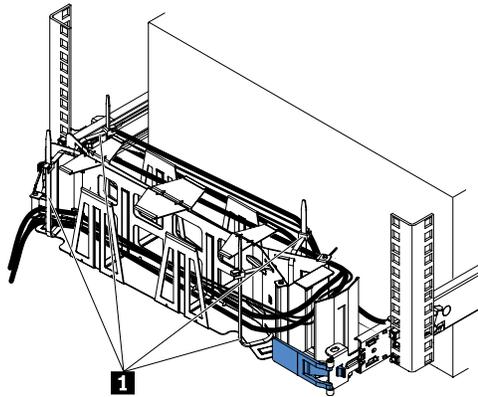
- Pull out the pin **1** on the outer mounting tab, and push mounting tab into the slot **2** on the outside of the slide rail.



7. Connect and route the cables.

- a. Lift the CMA above the stop bracket and rotate the CMA out of the way. Then, attach power cords and other cables to the rear of the server.
- b. Route the cables and power cords in the CMA and secure them with cable ties or hook-and-loop fasteners **1**. Thread a cable tie through the loop on the rear of the server and secure the cables in place so that they do not drop below the CMA.

Note: Allow slack in all cables to avoid tension in the cables as the CMA moves in the extended position.



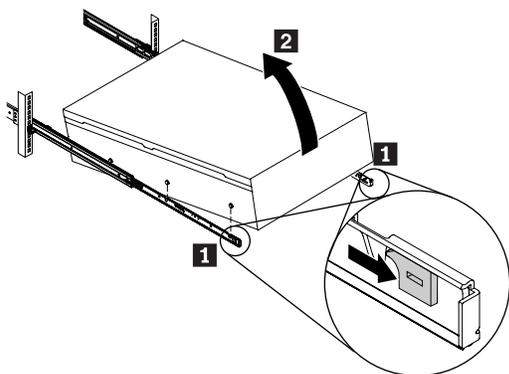
Appendix A. Removing the server from the rack

Note: Before removing the server from the rack, disconnect the cables from the rear of the server.

If you want to remove the server from the rack, complete the following steps:

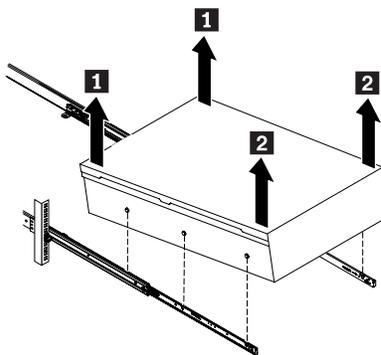
1. Unlatch and rotate the front of the server.

- Slide the server out of the rack.
- Pull the locking levers **1** forward, while supporting the rear of the server, and lift the front of the server up slightly **2** to clear the nail heads from the mounting slots in the slide rails.



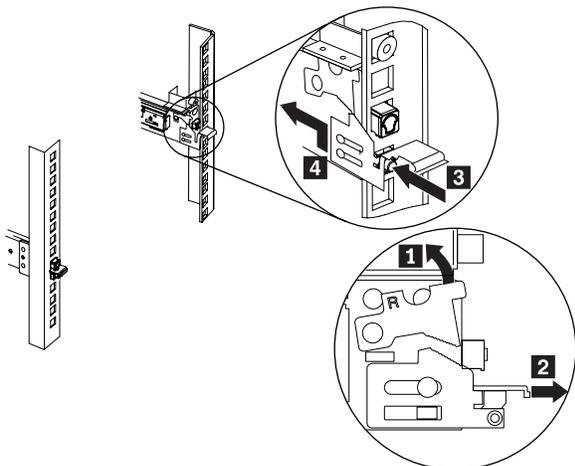
2. Lift the server off of the slide rails.

- After the front nail heads are released from the mounting slots, lift up on the rear **1** of the server to level the server.
- Lift the server out of the rack **2** and place it on a sturdy surface.



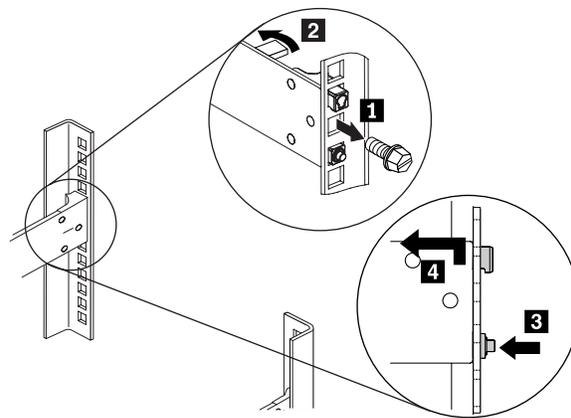
3. Remove the front end of the slide rails.

- Push up the front moveable tab **1** and slide out the front latch **2**.
- Push in the lower pin **3** and lift up slightly on the front of the slide rail **4**.



4. Remove the rear end of the slide rails.

- Remove the 10-32 screw **1**.
- Rotate the latch **2** toward the front of the rack.
- Push the pin **3** in toward the front of the rack.
- Lift and push the end of the rail **4** toward the front of the rack.



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