Lenovo 5U Tower-to-Rack Conversion Kit

Installation Instructions

Note:

Before using this information and the product it supports, read the general information in the *Notices*, the *Safety Information* and *Environmental Notices* and *User Guide* documents on the *Documentation* CD, and the *Warranty Information* document.

The most recent version of this document is available at http://www.lenovo.com/support.

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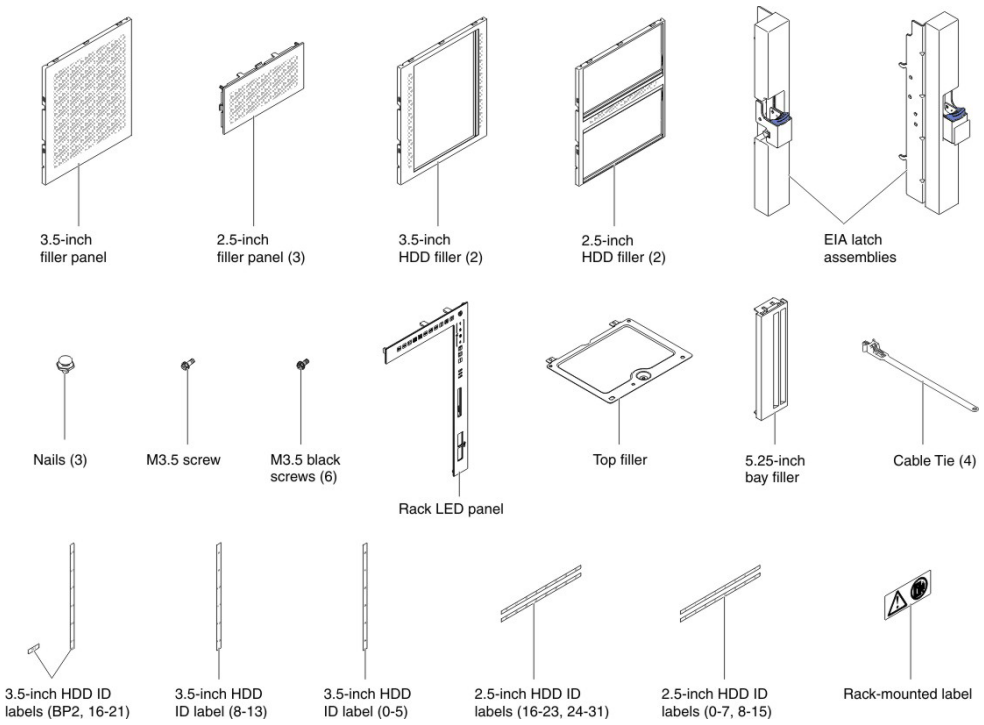
Chapter 1. The 5U Tower-to-Rack conversion kit

The 5U Tower-to-Rack Conversion Kit contains the parts that you need to convert a 5U server that is 70.2 cm (27.6 in.) deep from a tower model to a rack model. You can then install the server into a rack cabinet that is at least 70.2 cm (27.6 in.) deep.

The following parts come with the Tower-to-rack conversion kit:

- One chassis conversion package



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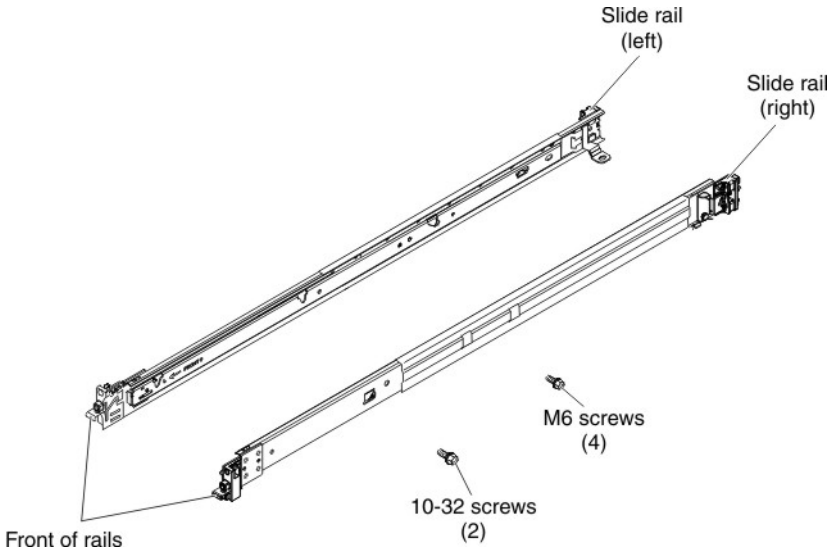
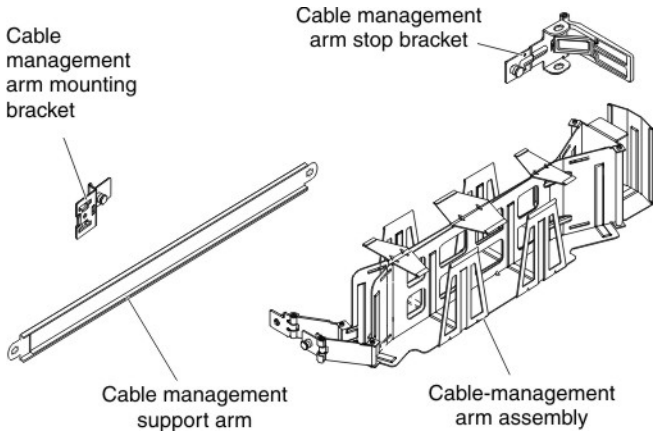
- One rack-mounting kit (includes rack-mounting instructions, template, and the following hardware)



Note: The illustration of the rack-mounting kit in this document might be slightly different from your hardware.

- One cable management arm (CMA) kit



- Lenovo warranty information document
- Important notices document
- This document

What you will need

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

- A small flat-blade screwdriver
- A medium Phillips screwdriver
- An 8 mm open-end or box wrench
- A 12 mm nut driver or a 12 mm open-end or box wrench
- Pliers

Installation guidelines

Before you install the Tower-to-Rack Conversion Kit, read the following information:

- Read the safety information that comes with your server.
- Read these instructions and the rack installation instructions to familiarize yourself with the installation procedures.
- Inventory the kit items as listed in the parts list that begins on page 1.
- Remove all media (diskettes, CDs, optical discs, or tapes) from the drives of your server.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices and your server. To avoid damage, keep static-sensitive devices in their static-protective packages until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.
- Wear an electrostatic-discharge wrist strap, if one is available.
- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of the server for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the server without setting down the device. If it is necessary to set down the device, put it back into its static-protective package. Do not place the device on the server cover or on a metal surface.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Chapter 2. Installing the Tower-to-Rack conversion kit

This section provides the information for converting your tower model server to a rack-mounted server.

Note: This kit is designed for converting several different server models. Your server might look different from the servers that are illustrated, and some parts of the kit might not be used.

Preparing the server

To prepare the server, complete the following steps:

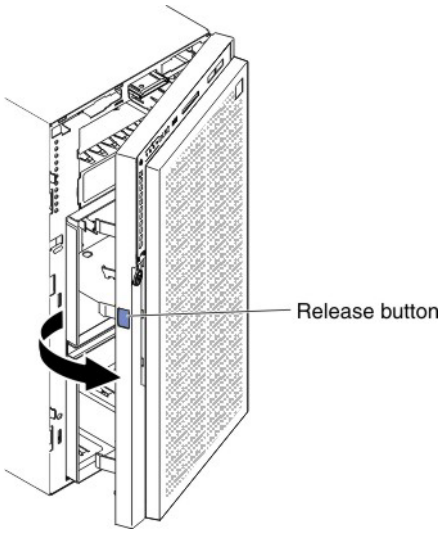
1. Read the safety information that begins on page v, "Installation guidelines" on page 3, and "Handling static-sensitive devices" on page 3.
2. Shut down the server operating system.
3. Turn off the server and disconnect all cables.
4. Remove all drives and drive bay filler panels from the server.

Note: For instructions for turning off the server, see the documentation that comes with the server.

Removing the covers and bezel filler

To remove the covers and the bezel filler from the server, complete the following steps:

1. Use the key that comes with the server to unlock the bezel. Open the bezel by pressing the release button on the left edge of the bezel, and rotate the left side of the bezel away from the server.



2. Remove the bezel filler out of the server.

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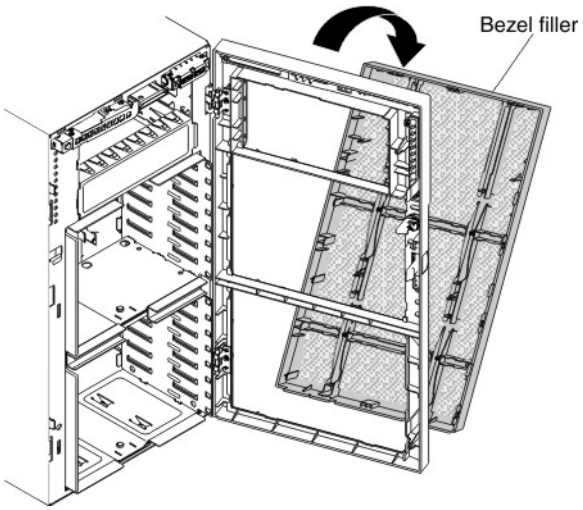
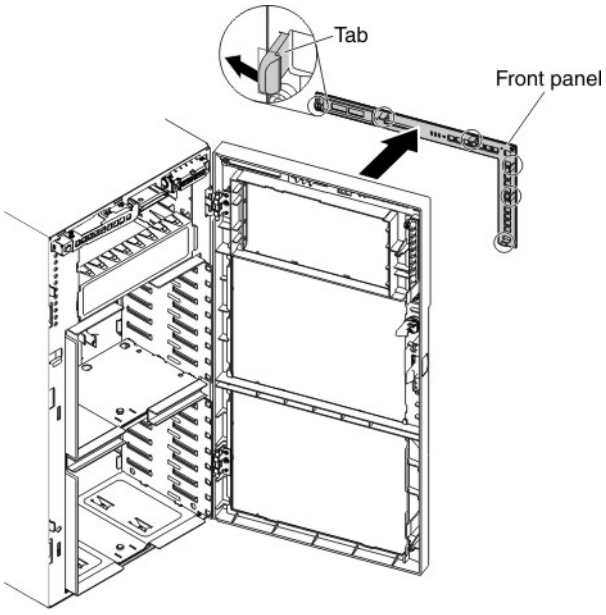
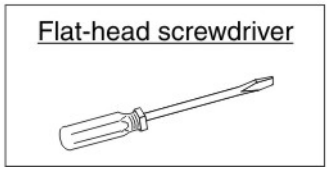


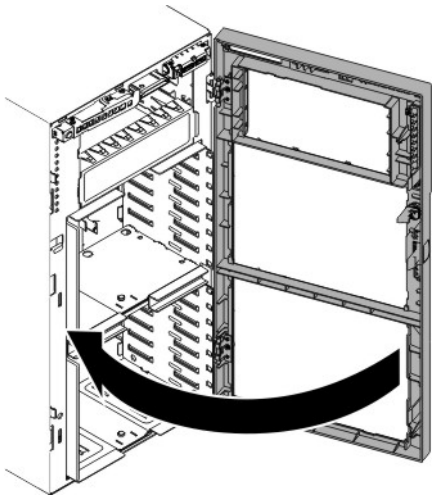
3. Pull the tabs slightly to release the front panel.

   Note: You can use flat-head screwdriver to pull the tabs if necessary.

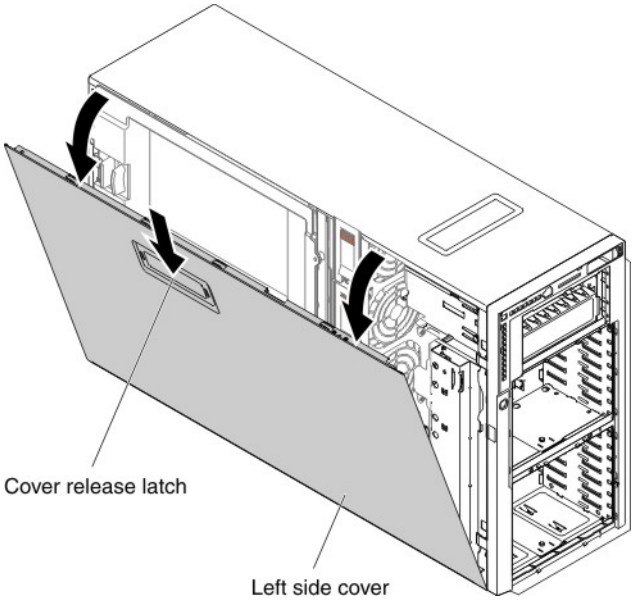




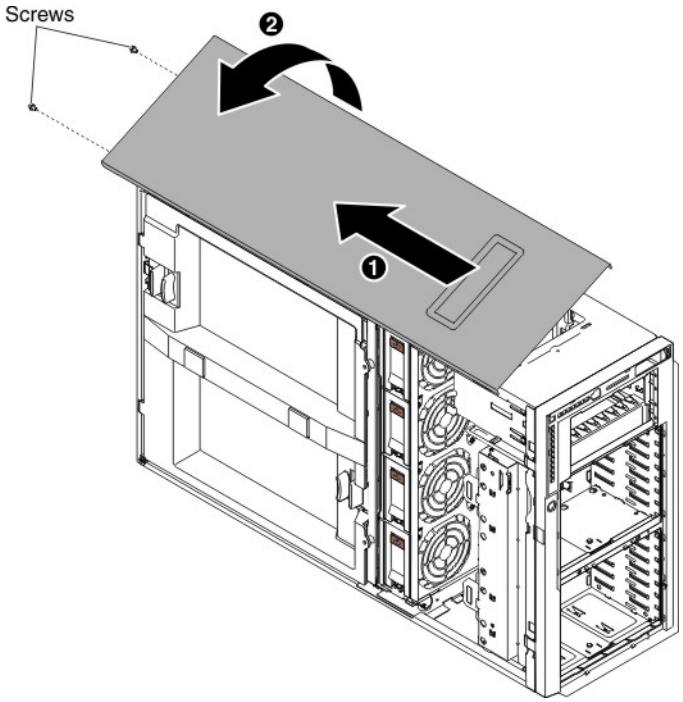
4. Close the front bezel.



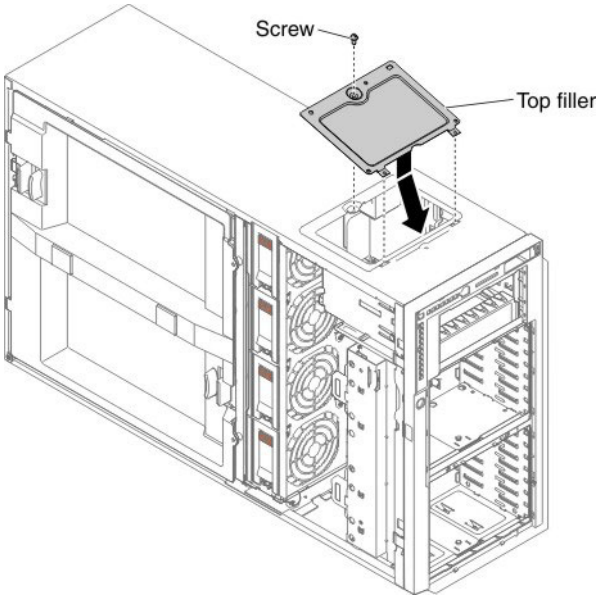
5. Pull the cover-release latch down while you rotate the top edge of the cover away from the server; then, lift the cover off the server. Save the cover for use as the top cover in the rack configuration.



6. Remove the top cover:
   a. From the rear of the server, remove the two screws that hold the top cover in place.
   b. Lift the top cover away from the server and set it aside.



   c. Store the top cover and the screws for potential future use.
7. Align the tabs on the top filler with the slots and push the top filler into the place; then, fasten the screw.



8. If you have not done so already, remove the hard disk drives and all the filler panels from the server bays and set them aside.

   Important: Make a note of which drives are in which bays before you remove the drives.
9. Carefully turn the server on its side so that it is lying flat.

Statement 4:

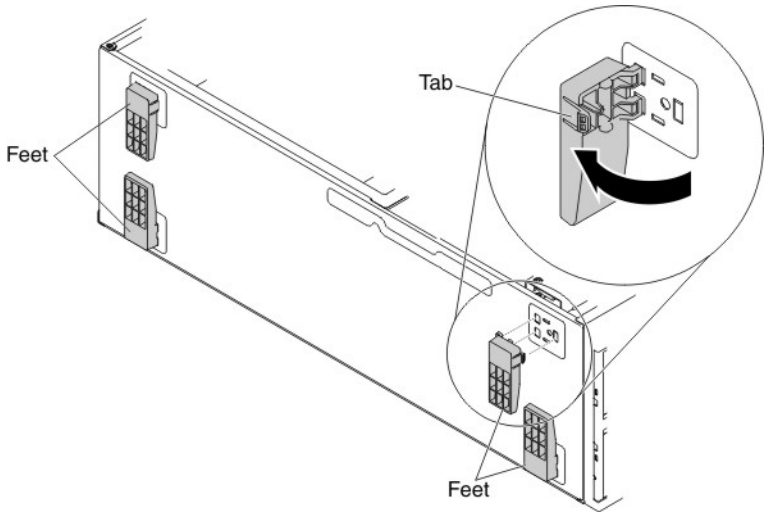
≥ 18 kg (39.7 lb)

≥ 32 kg (70.5 lb)

≥ 55 kg (121.2 lb)

CAUTION:
Use safe practices when lifting.

10. Remove the four feet from the bottom of the server.
    a. Carefully position the server on a flat surface as shown in the following illustration. The feet should hang over the edge of the flat surface to ease removal.
    b. Press in on the tabs that hold the feet in place; then, pry the feet away from the server. In some cases, you might need a screwdriver to press in on the tabs.

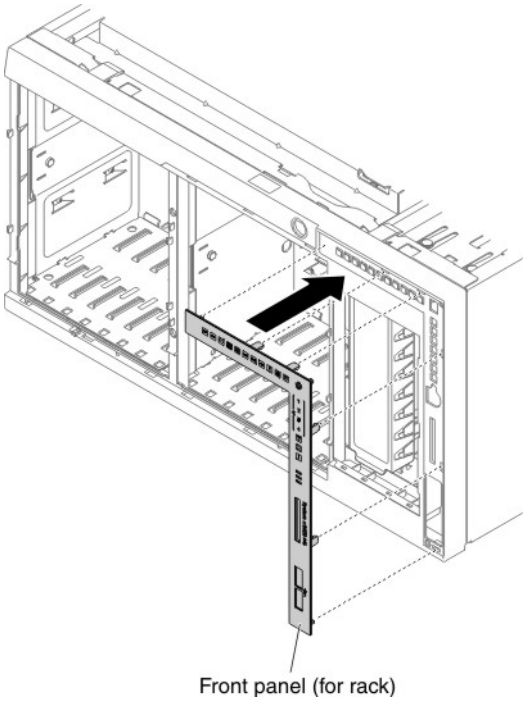


Relocating and installing hardware and the covers

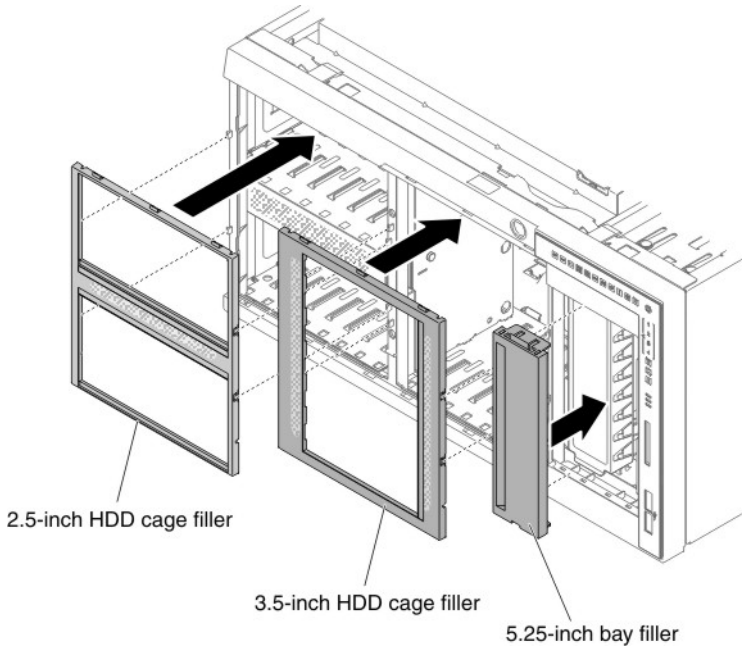
Complete the steps in this section to:

- Install the front panel
- Install HDD cage filler and 5.25- inch bay filler
- Attach the ID labels
- Install the left-side cover
- Install the nailheads
- Install the EIA assemblies

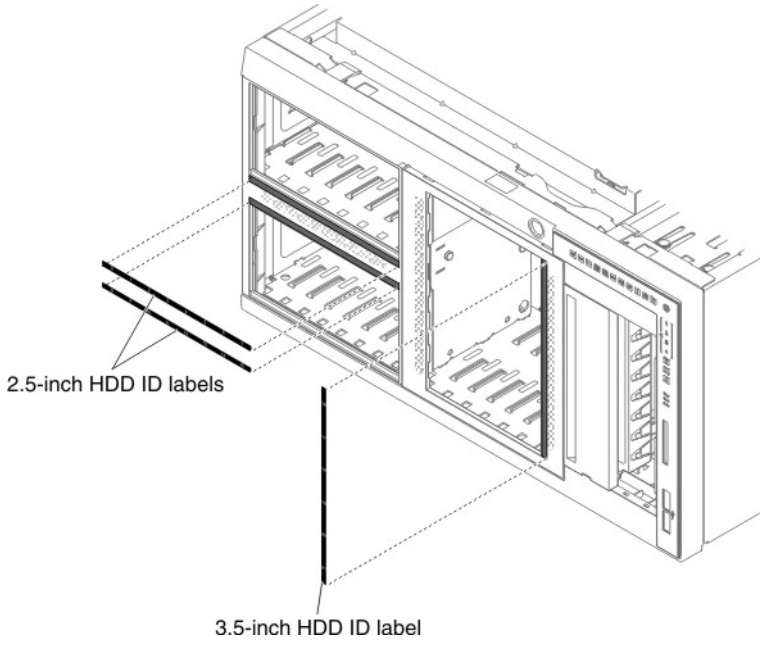
1. Align the tabs with slots and push the front panel (for rack) into the place.



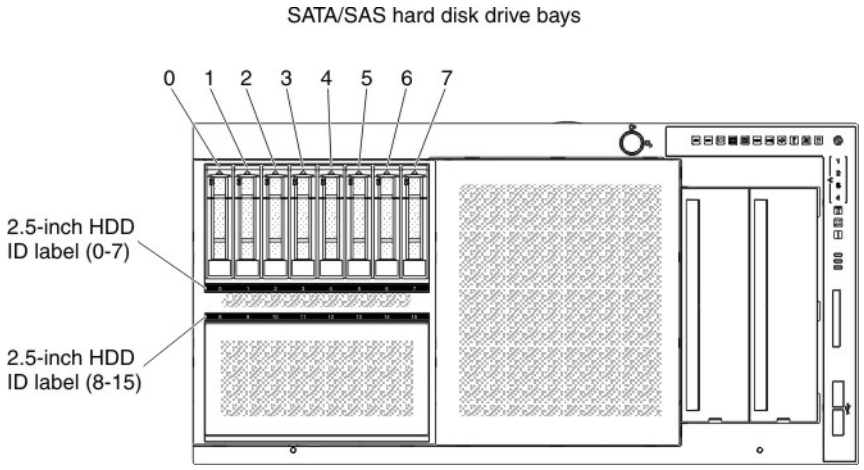
2. Install the 2.5-inch HDD cage fillers or the 3.5-inch HDD cage fillers according to your server model. Please refer to 4 on page 11 for detailed configurations. Next, install the 5.25-inch bay filler.



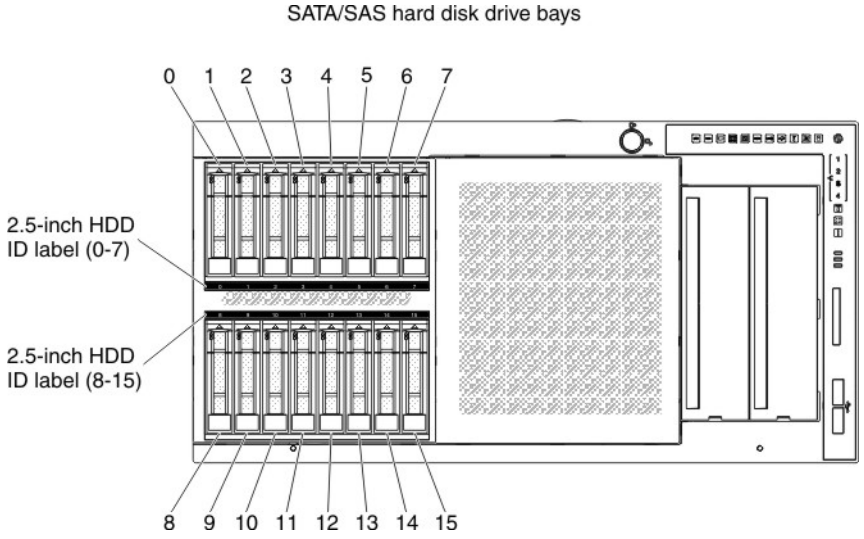
3. Attach the 2.5-inch HDD or 3.5-inch HDD ID labels on the bezesl according to your server model. Please refer to 4 for detailed configurations.



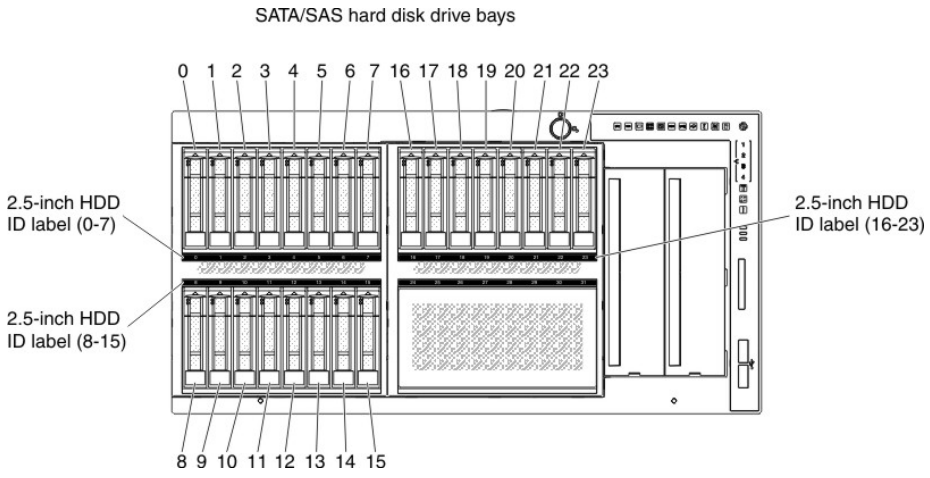
4. The following illustrations show the ID label locations for the HDDs and the backplanes.
   - 8x2.5-inch hard disk drive model



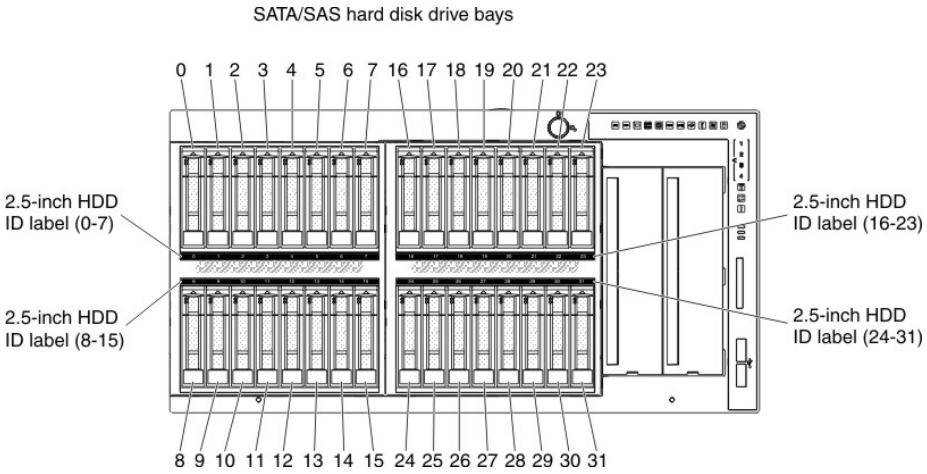
- 16x2.5-inch hard disk drive model



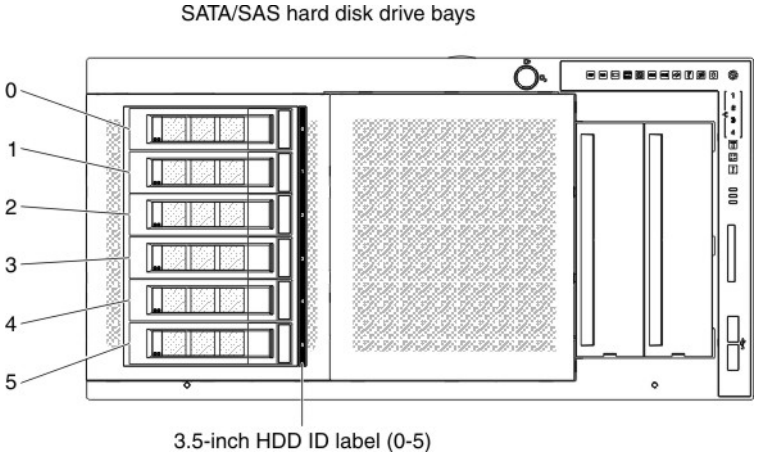
- 24x2.5-inch hard disk drive model



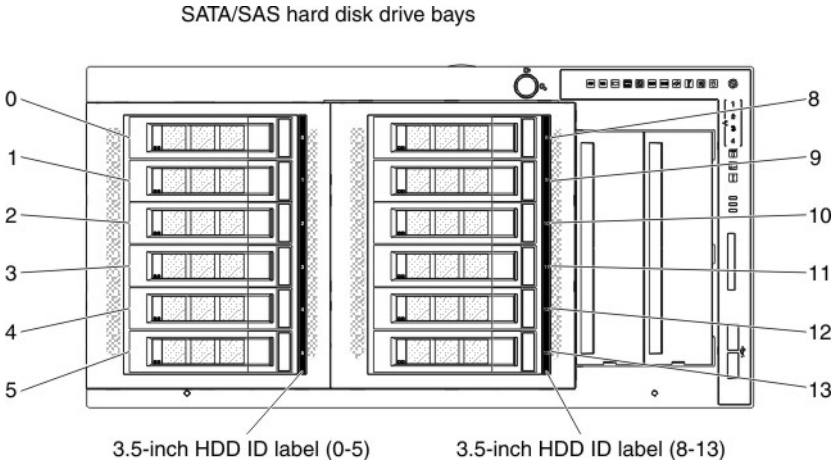
- 32x2.5-inch hard disk drive model



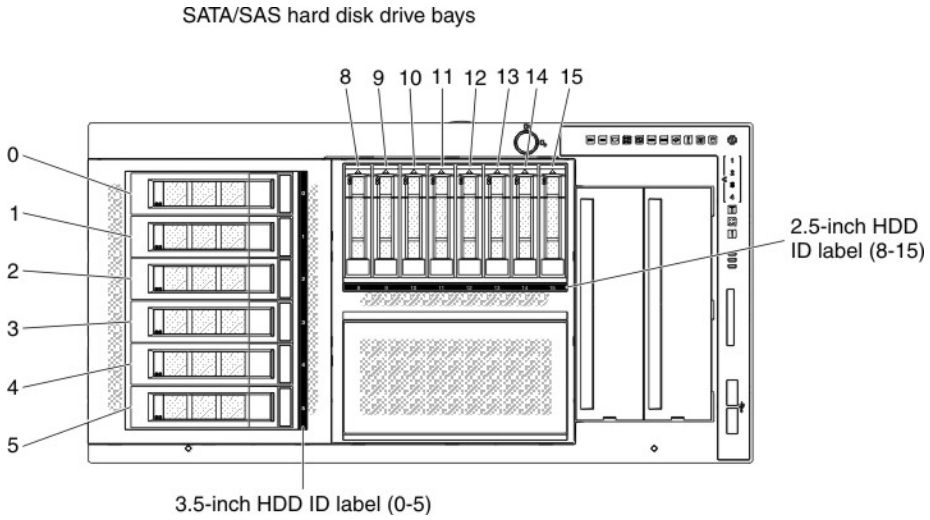
- 6x3.5-inch hard disk drive model



- 12x3.5-inch hard disk drive model

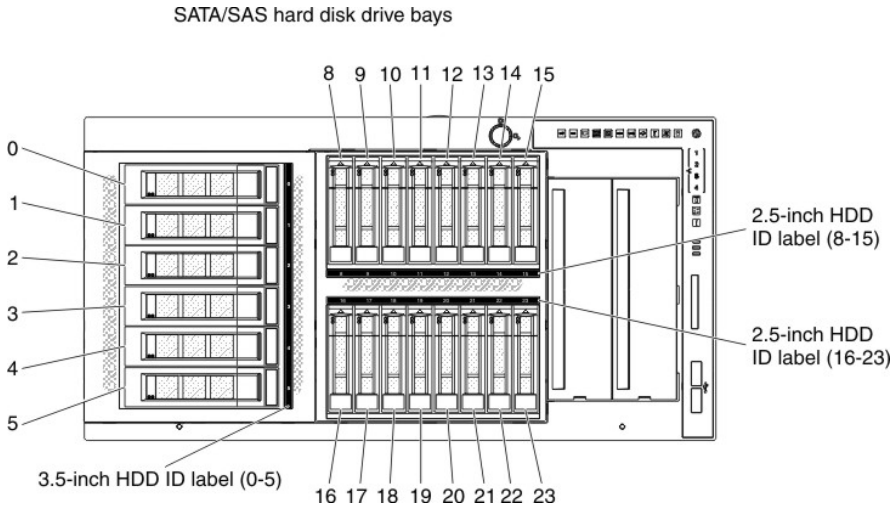


- 8x2.5-inch + 6x3.5-inch hard disk drive model



- 16x2.5-inch + 6x3.5-inch hard disk drive model

  –



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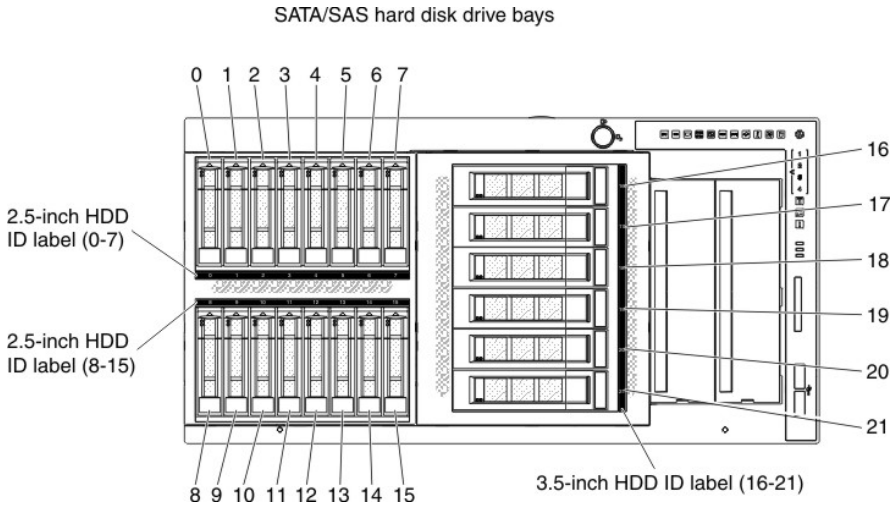


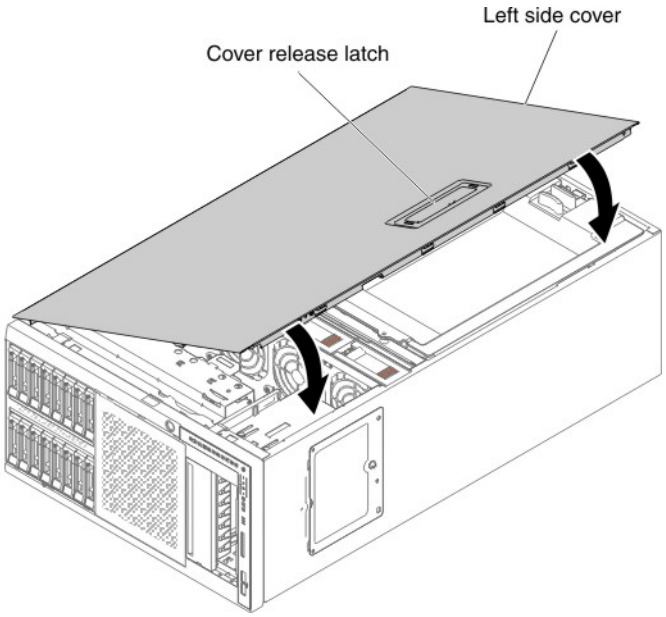
5. Reinstall the hard disk drives that you removed in step 8 on page 8.

Note: Install the 2.5-inch HDD fillers and 3.5-inch HDD fillers if necessary.

6. Install the left-side cover:

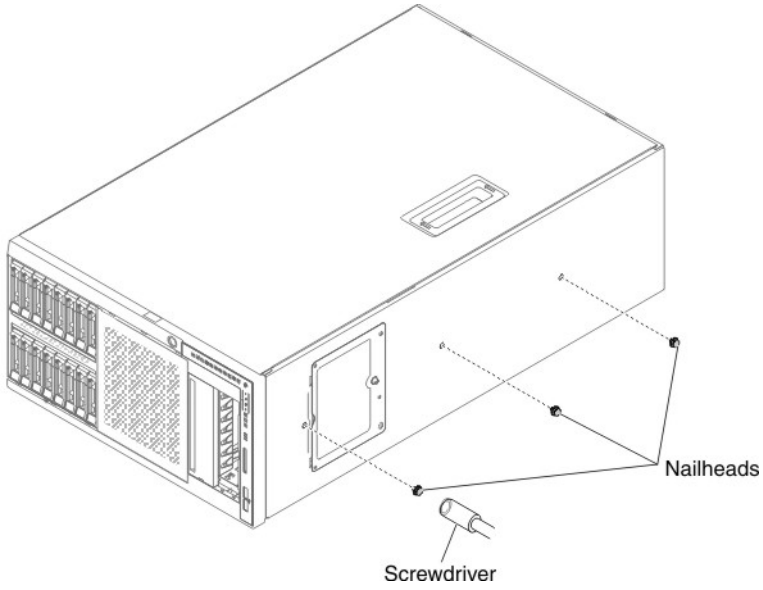
   Note: The cover that you removed in step 5 on page 7 is now the top cover. The cover-release latch must be in the unlocked (opened) position before you install the top cover.

a. Set the bottom edge of the left-side cover on the bottom ledge of the server.



b. Rotate the top edge of the cover toward the server and press inward on the cover until it clicks into place.

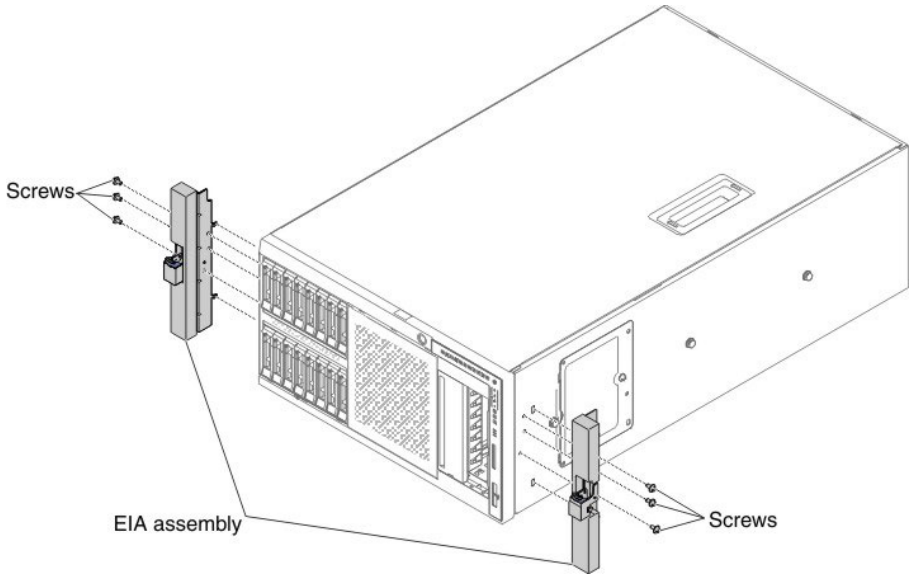
7. Install the three nailheads on the right side of the server.



Note: You might need a screwdriver to fasten the nailheads.

8. Install the EIA assemblies:
   a. Align the left EIA assembly tab with the side of the server.

      Note: The left EIA assembly is marked "L," and the right EIA assembly is marked "R."



   b. Secure the EIA assembly with three M3.5 screws that come with this kit.

      Note: The self-threading screws might require some effort to install.

   c. Repeat steps 8a and 8b to install the right-side EIA assembly.
9. Store the parts that you removed during the conversion in a safe place for potential future use.
10. Attach the rack-mounted label on the chassis.
11. Follow the instructions in Chapter 3, "Rack installation instructions," on page 19 and use the template that comes with this kit to install the server into a rack cabinet.

Chapter 3. Rack installation instructions

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

- Two or more people are required to install devices 2U or larger in a rack cabinet.
- Make sure that the room air temperature is below 35°C (95°F).
- Do not block any air vents; usually 15 cm (6 in.) of space provides proper airflow.
- Do not leave open spaces above or below an installed server in your rack cabinet. 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 cabinet with perforated doors.
- Plan the device installation starting from the bottom of the rack cabinet.
- Install the heaviest device in the bottom of the rack cabinet.
- Always install the tip plates on the rack.
- Do not extend more than one device out of the rack cabinet 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 cabinet.
- Install the server in a rack that meets the following requirements:
  - Minimum depth of 70 mm (2.76 in.) between the front mounting flange and inside of the front door.
  - Minimum depth of 157 mm (6.18 in.) between the rear mounting flange and inside of the rear door.
  - Minimum depth of 718 mm (28.27 in.) and maximum depth of 762 mm (30 in.) between the front and rear mounting flanges to support the use of the cable-management arm.
  - Maximum thickness of 4.65 mm (0.18 in.) of the rack mounting flanges
  - Nominal square hole dimension of 9.5 mm (0.375 in.) for racks with square mounting holes
  - Nominal round hole diameter of 7.1 mm (0.28 in.) for racks with round mounting holes
- Racks with threaded mounting holes are not supported with these slide rails.

Statement 4:

Caution: Use safe practices when lifting.

≥18 kg (39.7 lb)

≥32 kg (70.5 lb)

≥55 kg (121.2 lb)

Statement 26:

Caution: Do not place any objects on top of rack-mounted devices.

Statement 36:

Caution: Always install the slide retention screw.

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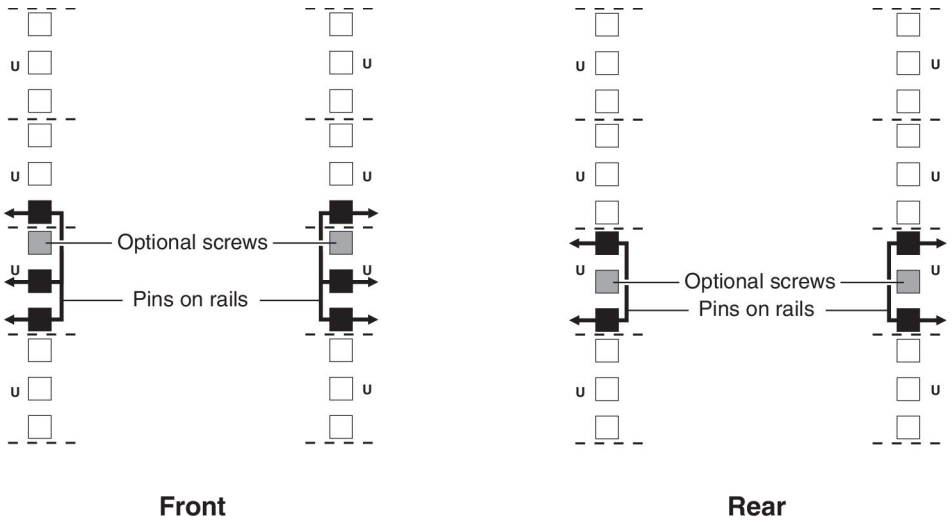
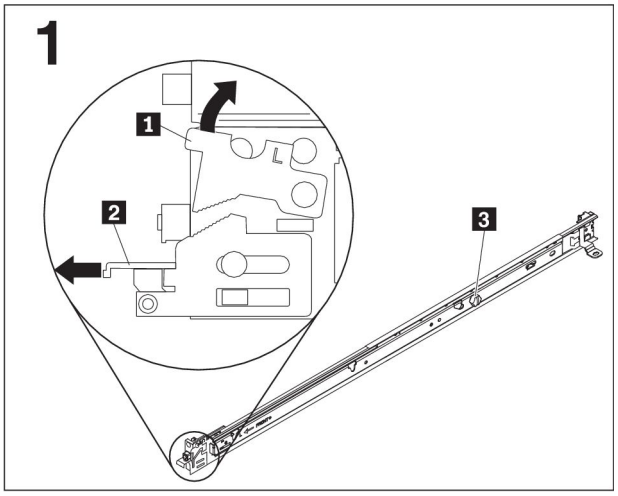
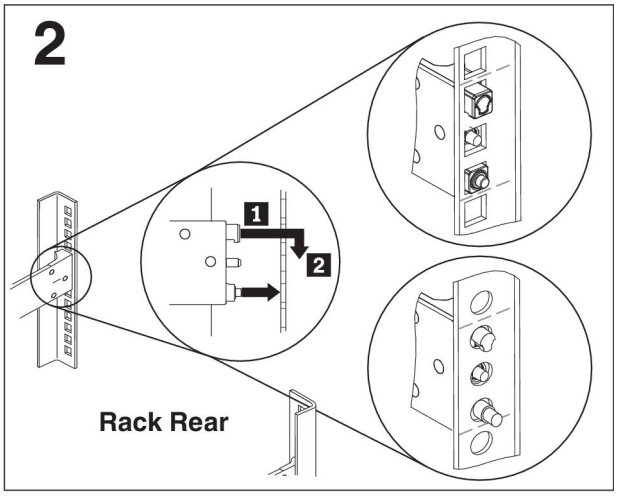
Notes:

1. If you are scaling this server as part of a multinode system, see the rack installation instructions that come with the option kit for instructions on installing the extra hardware required in the multinode setup.
2. You can install the cable-management arm on either side of the server. The installation instructions in this document can be reversed if you are installing the cable-management arm on the side of the server that is not shown.

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







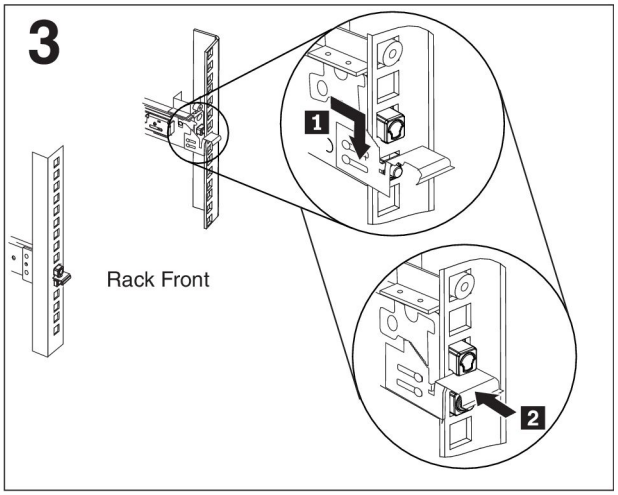
Open the front slide rail latches.

Each slide rail is marked with either an R (right) or an L (left). Select one of the slide rails and push up on the front moveable tab 1 ; then, pull out the front latch 2 . If a thumbscrew is installed in the slide rail 3 , remove it.

Install the rear end of the slide rails.
Note: When you install a 5U server, be sure to install the slide rails in the third U from the bottom of the 5U area in the rack.

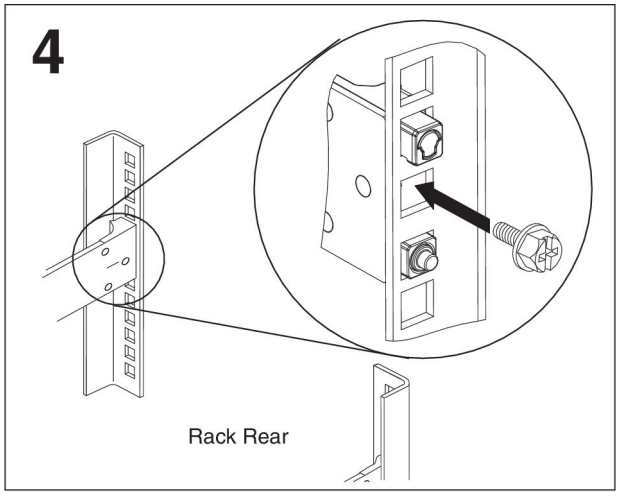
From the front of the rack, line up the three pins on the rear of the slide rail with the three holes in the selected U on the rear of the rack. Push the rails so that the pins go into the holes 1 , and drop the slide rail down 2 until it latches into place.

If there is a screw with a tag attached installed in the middle hole in the rear bracket, remove the tag and screw and keep the screw for a later step.



Install the front end of the slide rails.

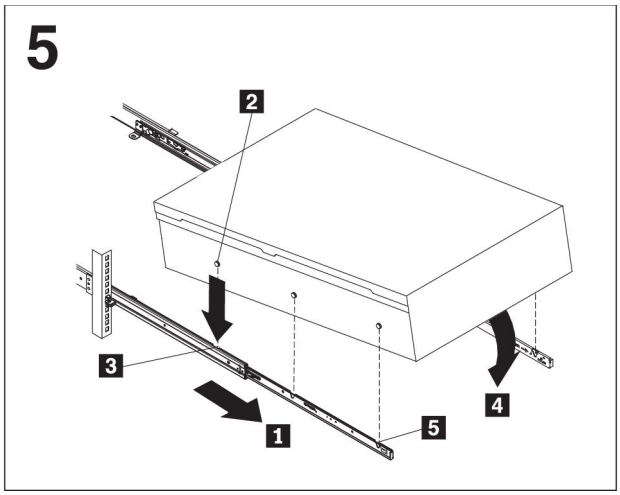
Pull the slide rail forward and insert the two lower pins **1** on the front of the rail into the two lower holes in the U on the front of the rack. Drop the rail into place until it clicks. Push the front latch **2** in all the way with one hand while you pull on the rail assembly with your other hand. Make sure that the front of the rail flange is in contact with the EIA flange.



Secure the server in the rear of the rack.

Install the screws you removed in step two in the middle hole in the rear of the rack.

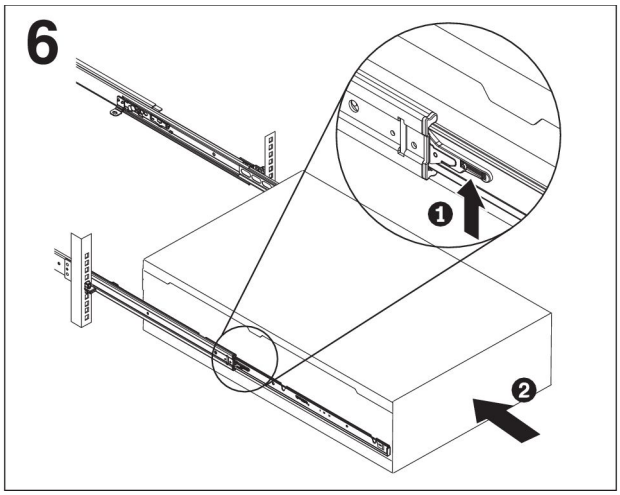
Repeat steps 1 through 4 to install the other rail into the rack. Make sure that each front latch is fully engaged.



Install the server on the slide rails.

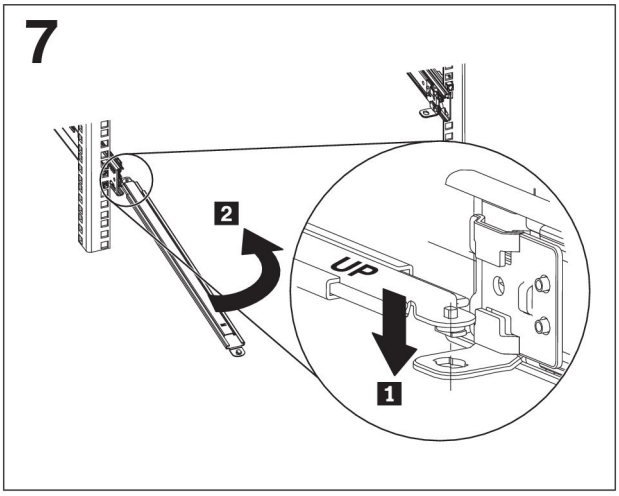
Pull the slide rails forward **1** until they click, two times, into place. Carefully lift the server and tilt it into position over the slide rails so that the rear nail heads **2** on the server line up with the rear slots **3** on the slide rails. Slide the server down until the rear nail heads slip 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 on the slide rails. Make sure that the front latch **5** slides over the nail heads.

It is possible to install the server horizontally, but it is easier to install when the server is tilted.



Slide the server into the rack.

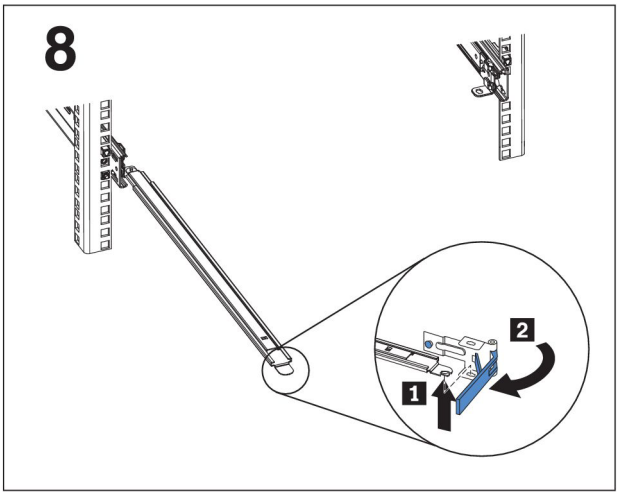
Lift the locking levers **1** on the slide rails and push the server **2** all the way into the rack until it clicks into place.



Install the cable management support arm.

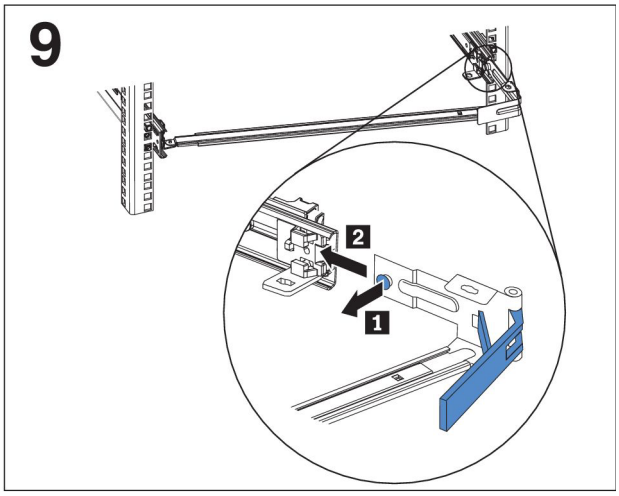
The cable-management arm can be installed on either side of the server. This document shows it being installed on the left side. To install the cable-management arm on the right side, follow the instructions and install the hardware on the opposite side.

Connect one end of the support arm **1** to the same slide rail to which you plan to attach the cable-management arm so that you can swing the other end of the support arm **2** toward the rack. Make sure the shiny bar is on top, as shown in the illustration.



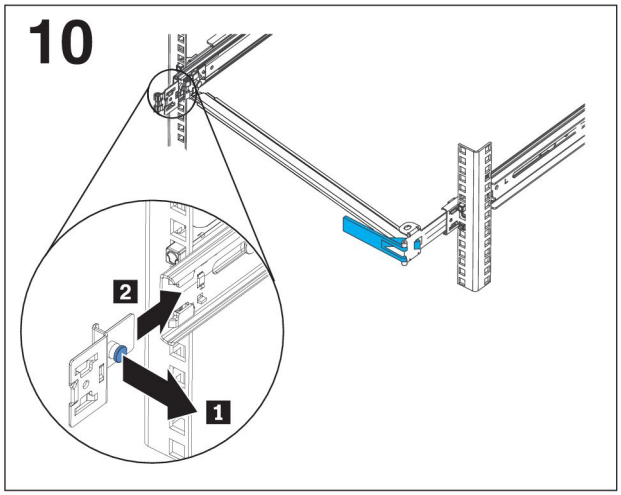
Install the cable management arm stop bracket.

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



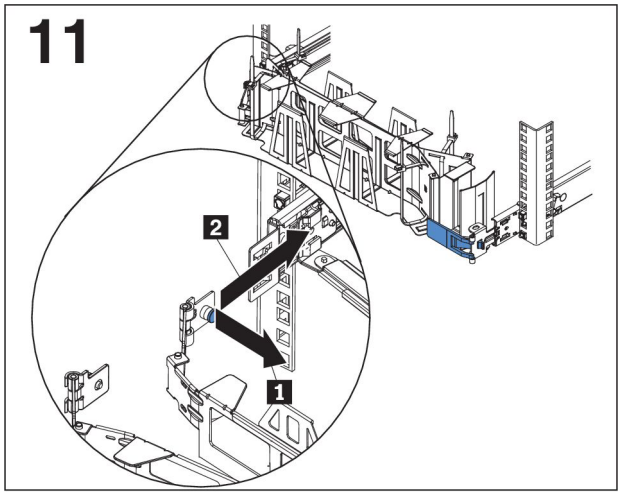
Connect the stop bracket to the slide rail.

To attach the other side of the support arm to the rear of the slide rail, pull the pin out 1, and then slide the bracket 2 into the slide rail.



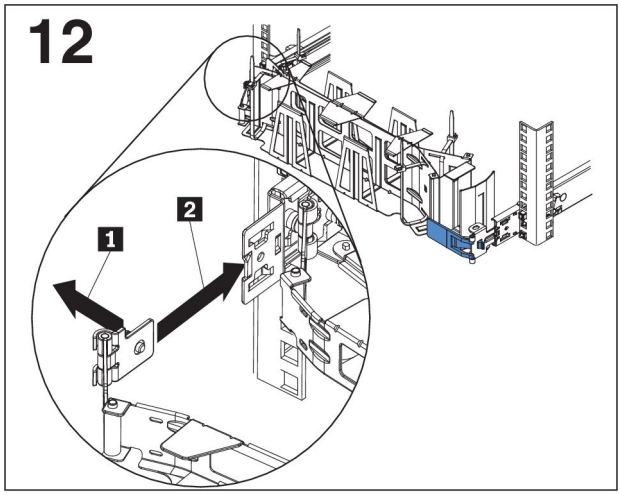
Install the cable management arm mounting bracket.

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



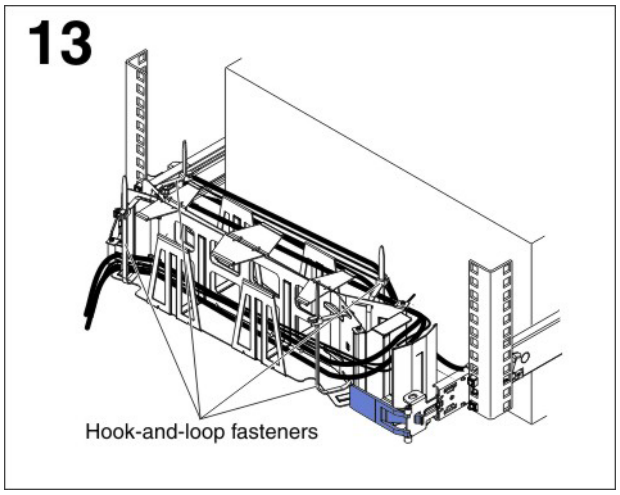
Install the cable management arm.

Place the cable-management arm on the support arm. Pull out the cable-management arm pin 1, and then slide the cable-management arm tab 2 into the slide rail. Push the tab until it snaps into place.



Install the cable management arm.

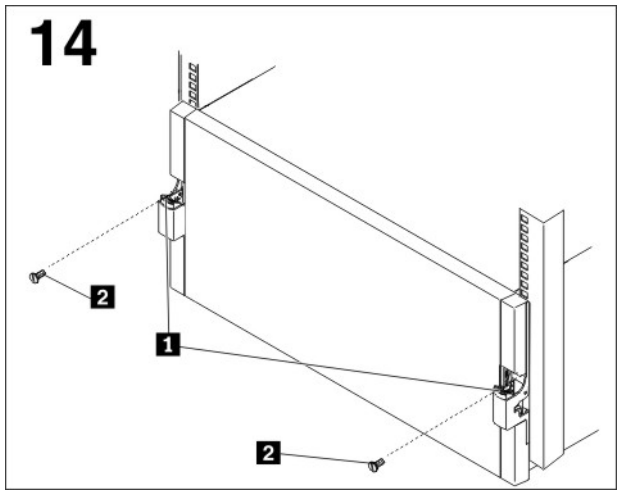
Pull out the other cable-management arm pin 1, and then slide that cable management arm tab into the slot 2 on the outside of the slide rail. Push the tab until it snaps into place.



Connect and route the cables.

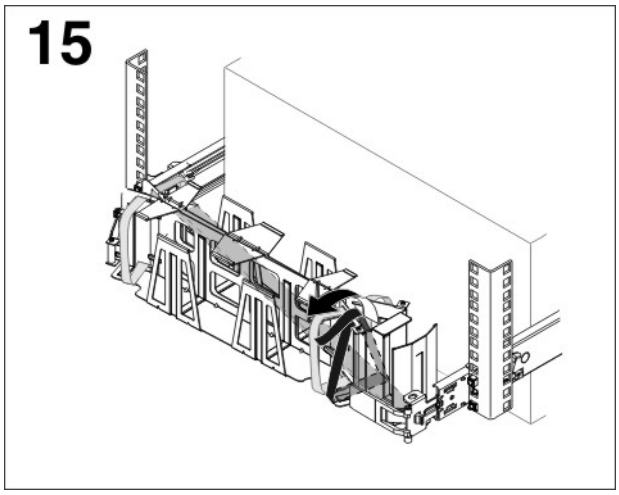
Attach the power cords and other cables to the rear of the server (including keyboard, monitor, and mouse cables, if required). (To access the rear of the server, lift the cable management arm above the stop bracket and rotate it out of the way.)

Route the cables and power cords in the cable-management arm and secure them with cable ties or hook-and-loop fasteners. 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 cable management arm.
Note: Allow slack in all cables to avoid tension in the cables as the cable-management arm moves in the extended position.



Install the front screws, if necessary.

Slide the server into the rack until it snaps into place. To slide the server out of the rack, press on the release latches **1** .
Note: When you move the rack cabinet, or if you install the rack cabinet in a vibration-prone area, insert the optional M6 screws **2** in the front of the server.

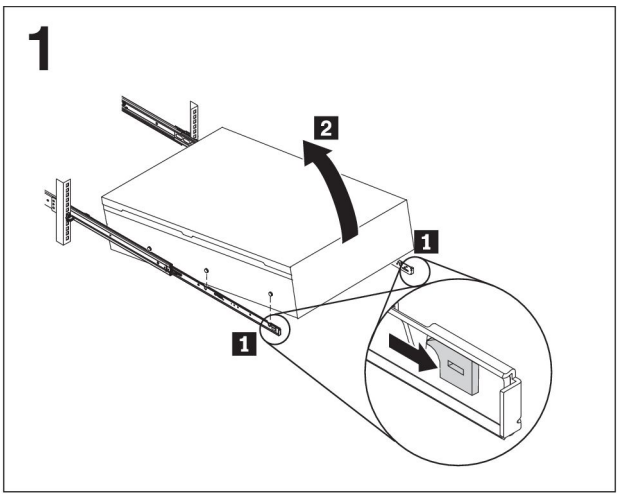


Secure the cable management arm if you are shipping the server in a rack.

If you are moving the server in a rack, you must secure the cable management arm first.

Use a cable tie to secure the free end of the cable management arm to the cable management support arm.

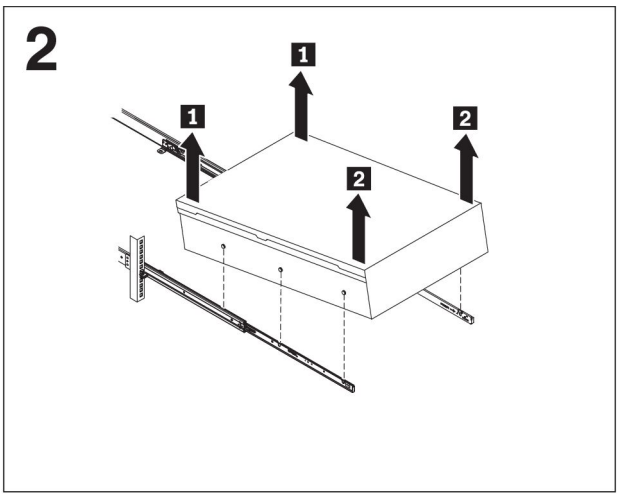
Removing the server from the rack



Unlatch and rotate the front of the server.

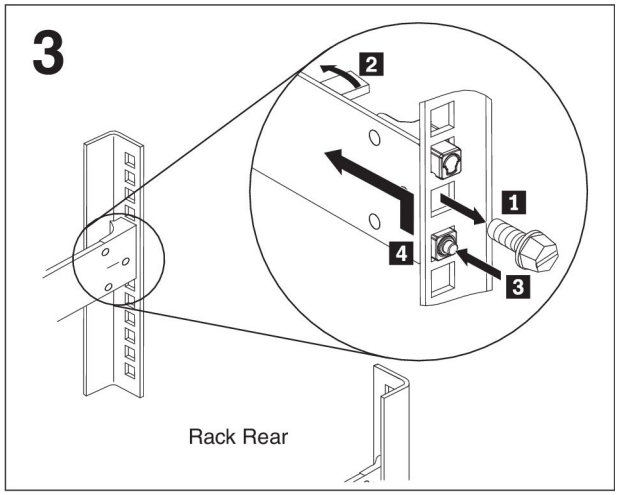
To remove the server from the rack, disconnect the cables from the rear of the server. Remove the cable management arm by pulling the pins out while sliding the tabs out of the mounting location.

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 nailhead from the slot.



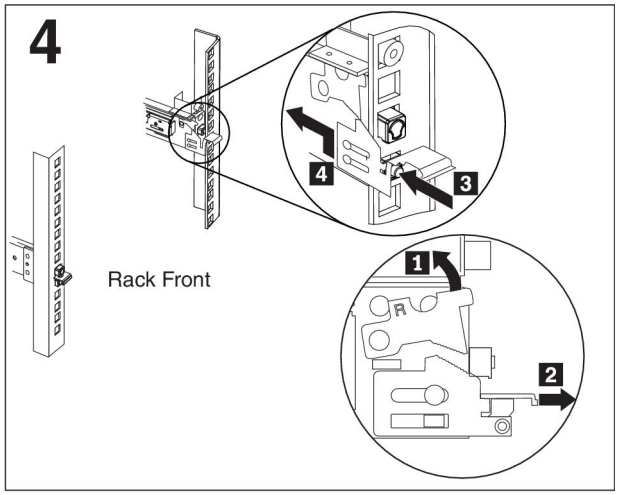
Lift the server off of the slide rails.

After the front nailheads clear the latches, 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.



Remove the rear end of the slide rails.

To disengage the slide rails from the rear of the rack, remove the retention screw 1 if one is installed, then rotate the latch 2 toward the front of the rack. Push the pin 3 in toward the rack, and then lift and push the end of the rail 4 toward the front of the rack.



Remove the front end of the slide rails.

To remove the slide rails from the front of the rack, push up the front 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 . Remove the slide rail from the rack.

Store this information with your server documentation for future use.

Lenovo

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