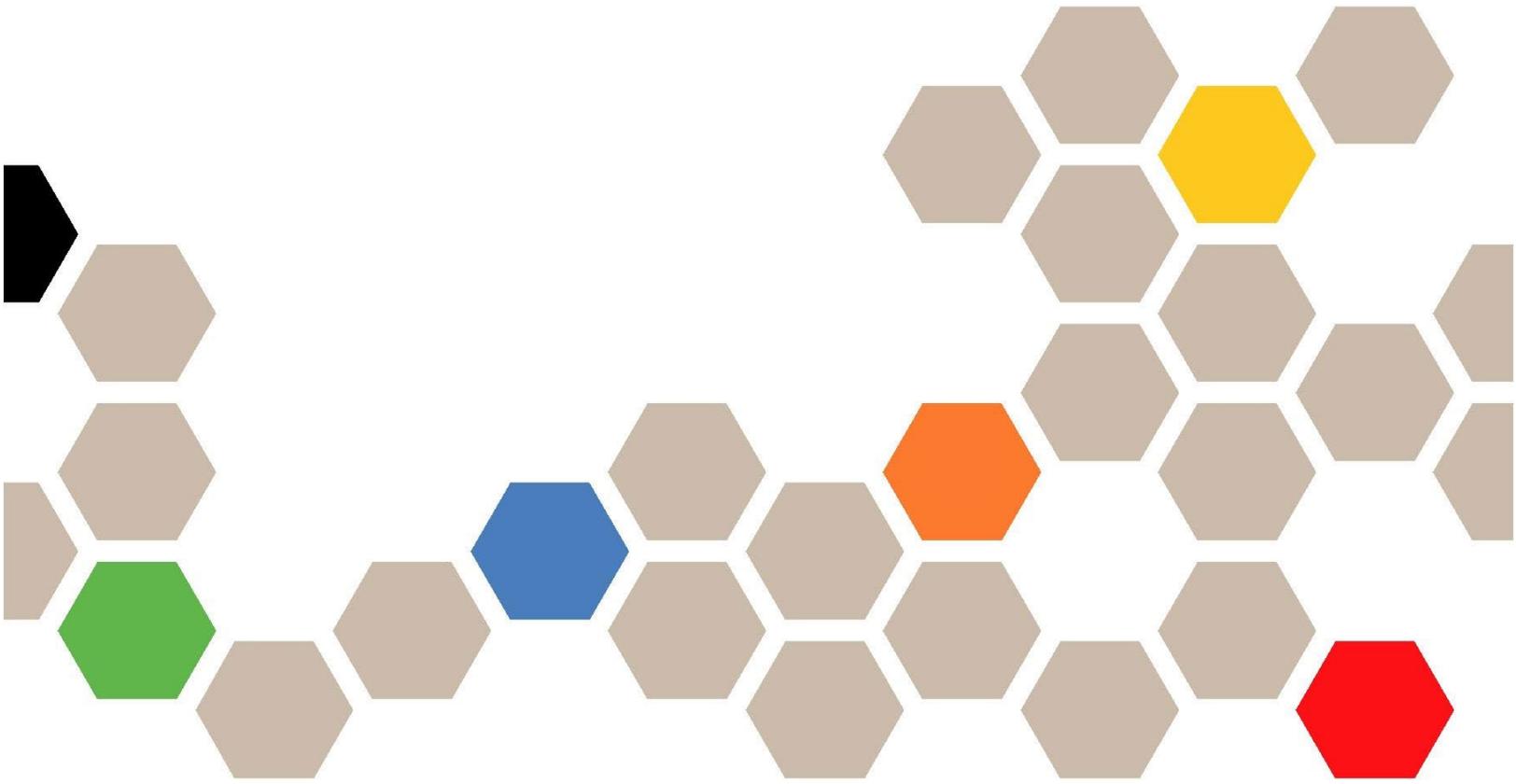




42U 1200 mm Deep Static and Expansion Racks
47U 1200 mm Deep Static and Expansion Racks

Installation Guide



Note: Before using this information and the product it supports, read the general information in the printed document that comes with the product.

Third Edition (September 2020)

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Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 **Safety Information** (安全信息)。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtete příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečitajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

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 *Rack Safety Information* document.

For example, if a caution statement is labeled "Statement 1," translations for that caution statement are in the *Rack Safety Information* document under "Statement 1."

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.

Statement 1:



CAUTION:

To ensure safety, all configurations of the rack cabinet must be certified by a nationally recognized testing laboratory in order 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.

Statement 2:



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.

Statement 3:



DANGER

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

Statement 4:



DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet.
- Connect to properly wired outlets any equipment that will be attached to this product.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.

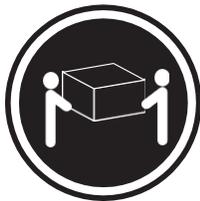
To Connect:

1. Turn everything OFF.
2. First, attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlet.
5. Turn device ON.

To Disconnect:

1. Turn everything OFF.
2. First, remove power cords from outlet.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

Statement 5:



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

CAUTION:
Use safe practices when lifting.

Statement 6:



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.

Statement 8:



DANGER

- Plug power cords from devices in the rack cabinet into electrical outlets that are located 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 servicing 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 installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.

Statement 11:



CAUTION:

Removing components from the upper positions in the 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 22U position and above.
 - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
 - Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 22U level.
- If the rack cabinet 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.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 2083 mm (30 x 82 in.)
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.

- Ensure that there is no stabilizer bracket installed on the rack cabinet.
- Do not use a ramp inclined at more than ten degrees.
- Once 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 of the pallet and strap the rack cabinet to the pallet.

Statement 12:



CAUTION:

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

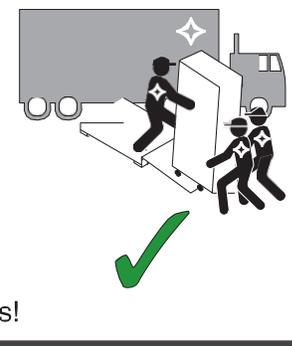
Statement 13:



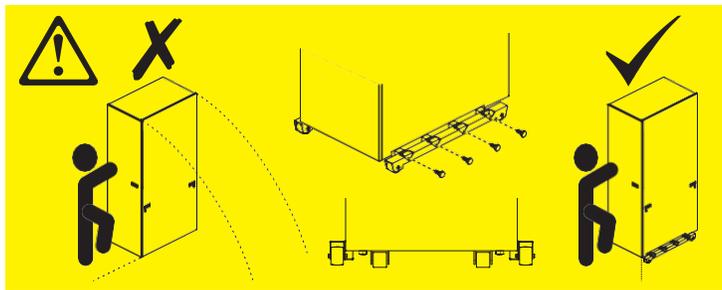
CAUTION:

The weight of this part or unit is more than 55 kg (121.2 lb). It takes specially trained persons, a lifting device, or both to safely lift this part or unit.



 <p>> 500 lbs. (> 227 kg.)</p>		<p>Use Only Professional Movers!</p> <p>يجب الاستعانة بخبرات نقل متخصصة</p> <p>Utilizar somente transportadores profissionais</p> <p>Faire appel à des professionnels seulement pour déplacer l'équipement.</p> <p>只能使用专业搬运机</p> <p>Maak gebruik van professionele verhuizers</p> <p>Faites exclusivement appel à des déménageurs professionnels.</p> <p>Nur professionelle Transportunternehmen mit der Durchführung beauftragen.</p> <p>Να μετακινηθεί μόνο από επαγγελματίες μεταφορείς</p> <p>העזרו במובילים מקצועיים בלבד</p> <p>Csak hivatásos szállítóval költöztesse</p> <p>Avvalersi solo di trasportatori esperti</p> <p>機器を移動するには専門の業者に依頼してください。</p> <p>전문 운송 인력만이 이동시킬 수 있습니다.</p> <p>Należy korzystać wyłącznie z usług wyspecjalizowanych firm.</p> <p>El traslado del equipo debe realizarlo personal especializado</p> <p>Trebaju raditi samo profesionalni transportni radnici</p> <p>Použijte pouze profesionální stěhováky</p> <p>Erug kun professionelle flyttefolk.</p> <p>Käytä vain ammattitaitoista kuljetusliikettä</p> <p>Utstyret må kun flyttes av godkjent flyttepersonell</p> <p>Contacte apenas transportadoras profissionais</p> <p>Используйте только профессиональных грузчиков</p> <p>Na presun použite len profesionálov</p> <p>Använd endast professionell flyttpersonal</p>
 <p>Use Only Professional Movers!</p>		

! ATTENTION !

Note: Each stand-alone rack must be attached to the floor by a trained service technician according to your local building codes. Place a fastener in each corner of the rack. Each fastener must have a rated pull-out force of at least 460 newtons.

United Kingdom - Notice to Customers:

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

Chapter 1. Introduction

This document contains general installation instructions for the Lenovo 42U 1200 mm Deep Static and Expansion Racks and the Lenovo 47U 1200 mm Deep Static and Expansion Racks. Always read the documentation that comes with your server or optional device for detailed installation instructions.

Installing the rack cabinet consists of the following tasks:

1. Unpack the rack according to the *Lenovo 42U and 47U 1200 mm Deep Static and Expansion Racks Rack Unpacking Instructions* document that comes with the rack cabinet.
2. Locate the rack according to the *Lenovo eServer Rack Planning Guide*.
3. Install rack stabilizer brackets on all racks.
4. Prepare the rack for optional devices:
 - Remove the side covers, if applicable.
 - Remove the front and rear doors from all racks, if necessary.
 - Attach expansion racks to a standard rack or to each other to form suites.
5. Install one or more optional devices.

Note: Install the heaviest devices in the bottom of the rack cabinet.

6. Complete the rack cabinet installation:
 - Reinstall side covers on all racks or on the outermost racks in a suite.
 - Reinstall front and rear doors on all racks.
7. Rack is set up and ready for use.

If documentation updates are available, you can download them from the Lenovo website. The rack might have features that are not described in the documentation that comes with the rack, and the documentation might be updated occasionally to include information about those features, or technical updates might be available to provide additional information that is not included in the rack documentation.

Note: Changes are made periodically to the Lenovo Web site. Procedures for locating documentation might vary slightly from what is described in this document.

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Lenovo Rack Safety Information* document that comes with the rack cabinet. Each statement is numbered for reference to the corresponding statement in your language in the *Lenovo Rack Safety Information* document.

The following notices and statements are used in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage might occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Chapter 2. Installing a rack

The 42U 1200 mm Deep Static and Expansion Racks are 42U high¹ and the 47U 1200 mm Deep Static and Expansion Racks are 47U high. The 42U and 47U deep static racks come with side covers installed. The 42U and 47U expansion racks do not come with side covers but include the required hardware for building a suite of racks. You will need one standard rack per suite.

The racks conform to the Electronic Industries Association (EIA) standard *EIA-310-D Cabinets, Racks, Panels, and Associated Equipment (1992)*.

Statement 1:



CAUTION:

To ensure safety, all configurations of the rack cabinet must be certified by a nationally recognized testing laboratory in order 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.

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

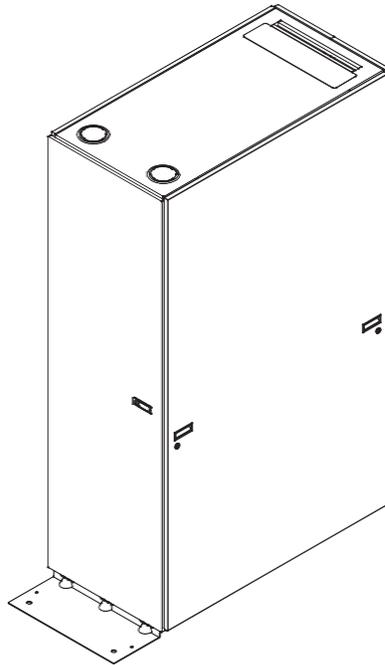


Figure 1. 42U or 47U Deep Static Rack

1. One U is equal to 4.45 cm (1.75 in.)

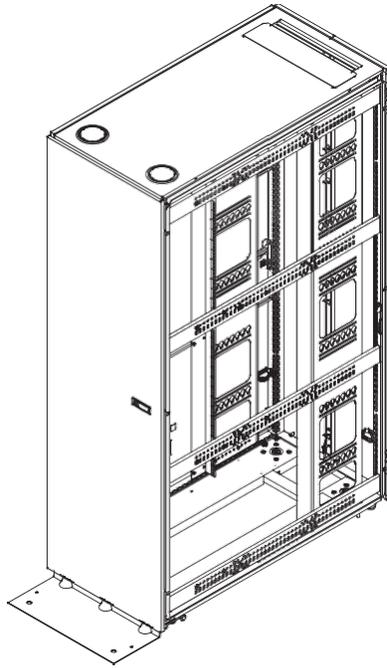


Figure 2. 42U or 47U Deep Static Expansion Rack without side covers

Installing the front stabilizer bracket

See the unpacking instructions that come with the rack for information about how to unpack and locate the rack; then, lower the rack-leveling pads and install the front stabilizer bracket for added stability.

Statement 2:



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.

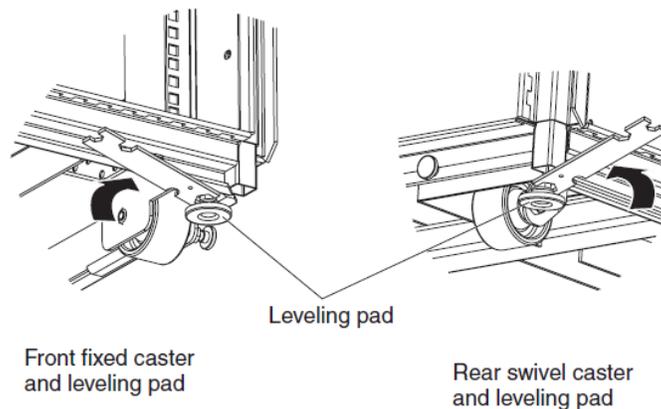


Figure 3. Lowering the leveling pads

Complete the following steps to lower the leveling pads and install the front stabilizer bracket:

1. Use the smaller end of the open-end wrench that comes with the hardware kit to lower each of the four leveling pads just enough so that they touch the floor. The rack casters support the weight of the rack. The pads prevent the rack from rolling.
2. Hand tighten the thumbscrews on the front-fixed casters.

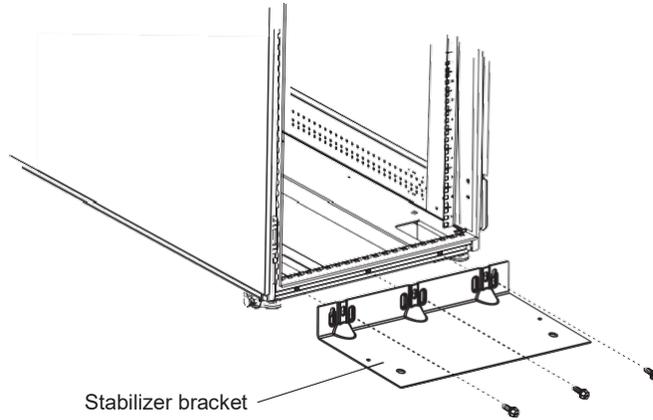


Figure 4. Installing the front stabilizer bracket

3. Attach the front stabilizer bracket to the front of the rack with the screws and hex wrench that come with the hardware kit.



DANGER:

All stand-alone rack configurations must be equipped with anti-tip plates on both sides and bolted to the floor surface.

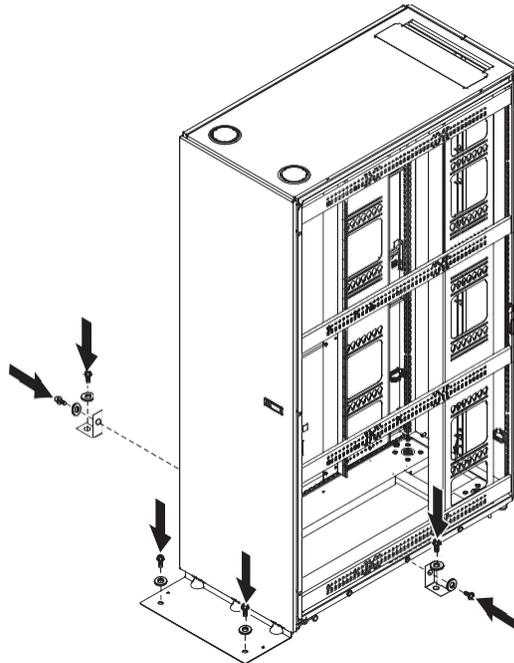


Figure 5. Installing the side stabilizer brackets and bolting the rack to the floor surface

4. If this is a stand-alone rack that will be loaded with less than 68 kg (150 lb) of equipment, complete the following steps to install the side stabilizer brackets:

- a. Remove the side covers (see Removing and installing side covers for instructions).
 - b. Attach the side stabilizer brackets to the center cage nut on each side of the rack with the hex bolts and washers (see Figure 5). The stabilizer brackets, bolts, and washers come in the hardware kit.
5. Bolt the rack to the floor surface through the holes in the front and side stabilizer brackets (see Figure 5) and reinstall the side covers.

Removing and installing side covers

The deep static standard racks come with side covers installed. Remove the side covers from a rack before you install or remove optional devices.

Note: The 42U and 47U deep static expansion racks do not come with side covers.

Complete the following steps to remove the side covers from a deep static standard rack.

Note: The illustrations in this procedure show the removal of a side cover from a 42U standard rack. The same procedure applies to a 47U standard rack.

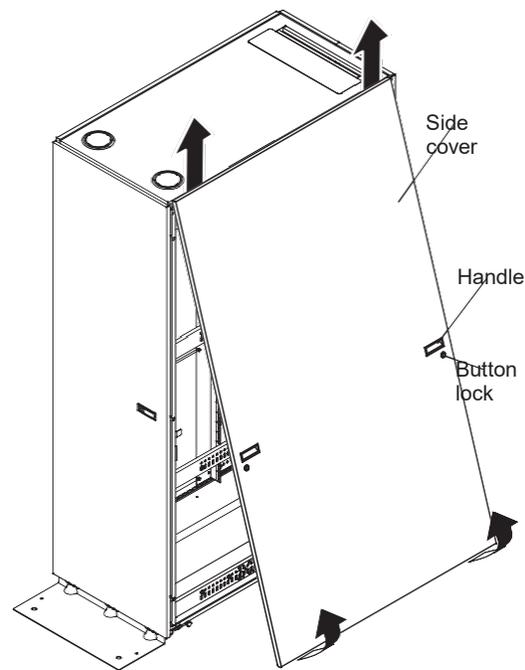


Figure 6. Removing a side cover

1. Unlock both button locks on a side cover.
2. Using the recessed handles, tilt the bottom of the side cover slightly toward you; then, lift the side cover away from the ridge on the top of the rack.
3. Repeat this procedure to remove the second side cover.

To install the side covers, reverse this procedure. Lock each side cover to secure it to the rack.

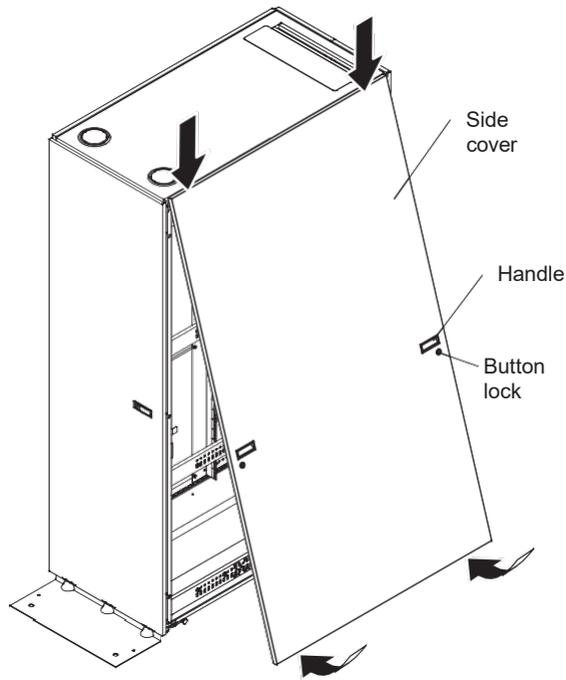


Figure 7. Installing a side cover

Removing and installing rack doors

All deep static racks come with front and rear doors installed. Remove the rack doors when installing and removing options in the rack, if part of the rack is obstructed by the door as you install the optional device.

Removing and installing a front door

Complete the following steps to remove a front door from the rack.

Note: The illustration in this procedure shows the removal of a front door from a 42U standard or expansion rack. The same procedure applies to the 47U standard or expansion rack.

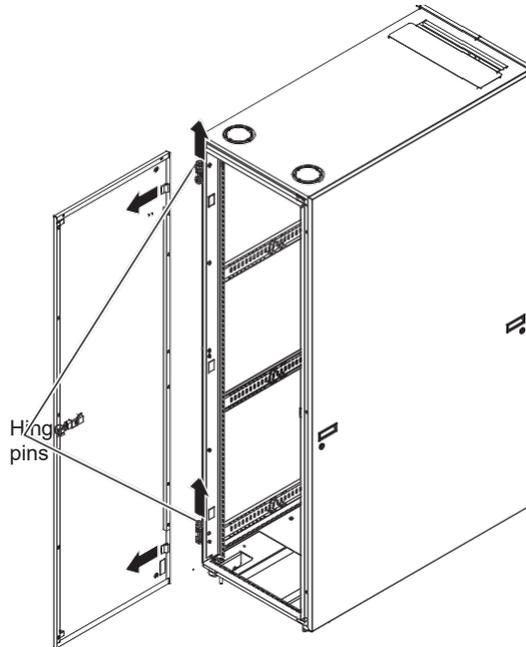


Figure 8. Removing a front door

1. Unlock and open the door.
2. Holding the door firmly with one hand, lift both hinge pins until they lock in the open position. This releases the door from the hinges.
3. Grasp the door firmly with both hands and pull it away from the hinges; then, set the door aside.

Complete the following steps to install a front door on the rack:

1. Grasp the door firmly with both hands and align the door to the hinge pins. Slide the door onto the hinges.
2. Holding the door with one hand, push the hinge pins down to the closed position.

Removing and installing rear doors

Complete the following steps to remove the rear doors from the rack.

Note: The illustration in this procedure shows the removal of the rear doors from a 42U standard or expansion rack. The same procedure applies to removal of the rear doors from a 47U standard or expansion rack.

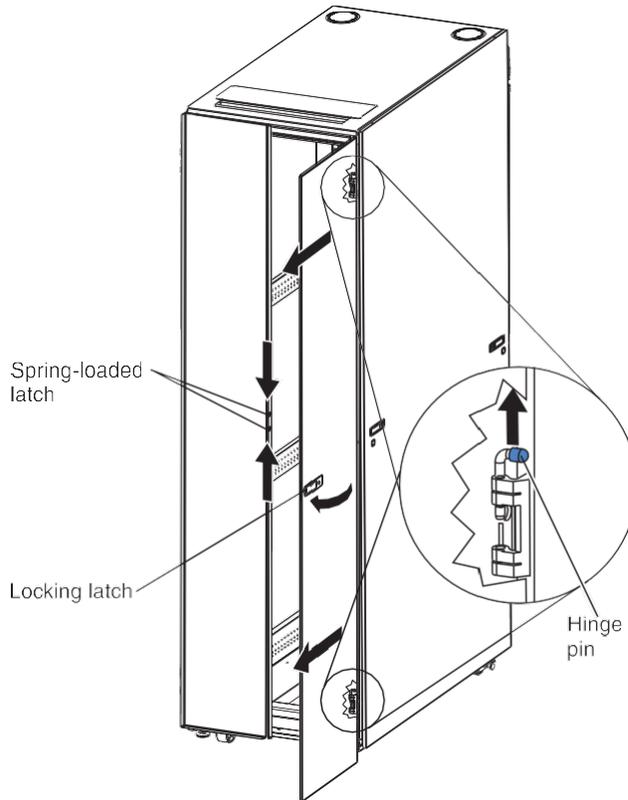


Figure 9. Opening and removing the rear doors

1. Unlock and open the right-side door.
2. Hold the door firmly with one hand; then, lift both hinge pins on the inside of the door until they lock in the open position. This releases the door from the hinges.
3. Grasp the door firmly with both hands and pull it away from the hinges; then, set the door aside.
4. Open the left-side door by squeezing the blue handles on the spring-loaded latch and pulling the door open.
5. Hold the left-side door firmly with one hand; then, lift both hinge pins on the inside of the door until they lock in the open position. This releases the door from the hinges.
6. Grasp the door firmly with both hands and pull it away from the hinges; then, set the door aside.

Reverse this procedure to install the rear doors on the rack. Make sure that the door with the spring-loaded latch is installed on the left side.

Reversing a front door

Complete the following steps to reverse a front door on a rack so that it opens in the opposite direction.

Note: The illustrations in this procedure show a 42U standard or expansion rack. The same procedure applies to a 47U standard or expansion rack.

1. Remove the door according to “Removing and installing a front door” on page 11.

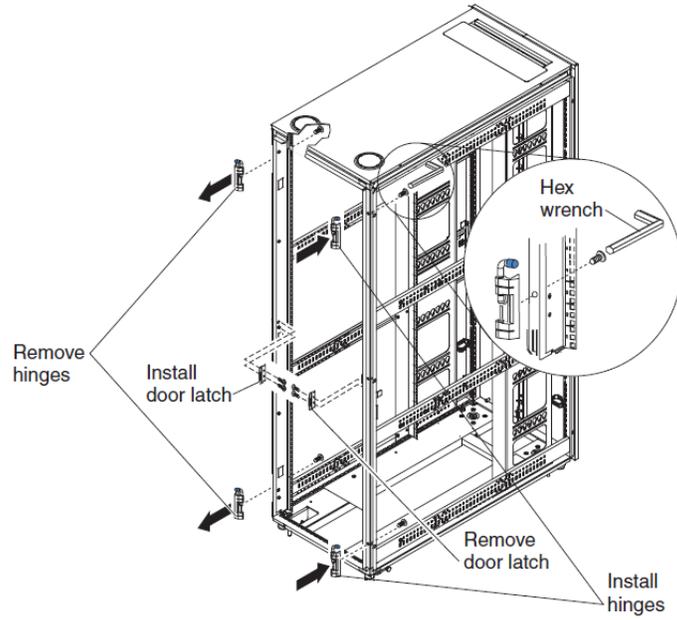


Figure 10. Moving the door hinges and front door latch

2. Use a hex wrench to remove the top and bottom hinges from the rack; then, install the hinges on the other side of the rack.

Note: There are extra screws in the hardware kit in case you drop one into the rack channel.

3. Remove the front door latch and attach it to the other side of the rack.

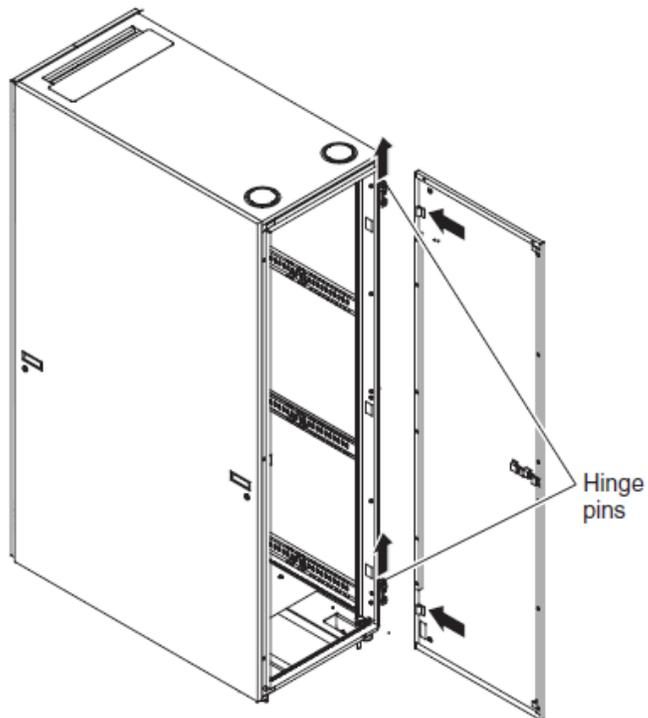


Figure 11. Rotating and installing the door

4. Carefully rotate the door 180°; then, install the door on the other side of the rack.
5. Remove the Lenovo logo from the bottom of the door; then, snap it into place near the top of the perforated section of the door.

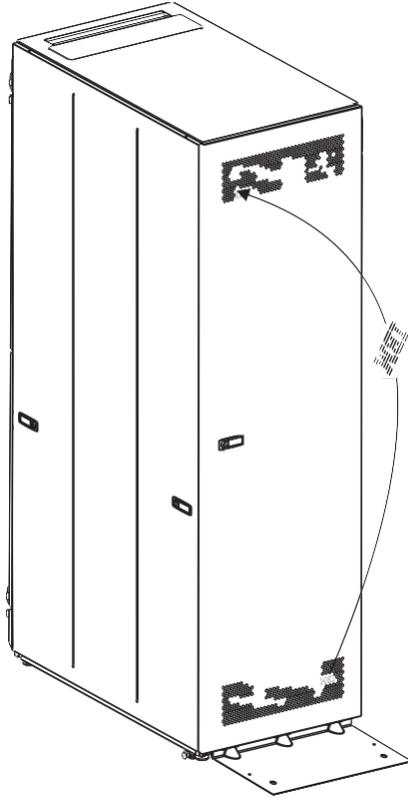


Figure 12. Moving the Lenovo logo

Attaching racks in a suite

Expansion racks come with all the hardware required for you to attach racks together and form a suite. A box wrench, hex wrench, and screws are provided with the expansion-rack hardware kit. You need one 42U or 47U deep standard rack to form a suite. You do not have to remove the doors to attach the racks together. Complete the following steps to attach racks together in a suite.

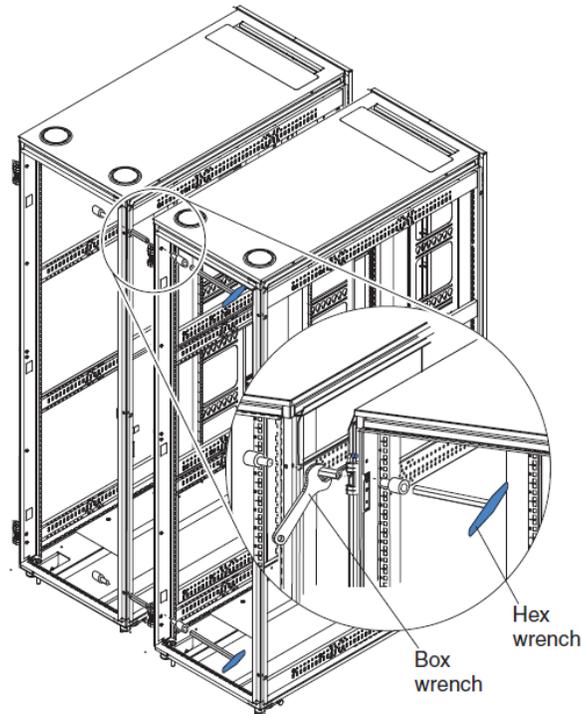


Figure 13. Attaching 42U deep static standard and expansion racks to each other to form a suite

1. Apply the strip of gasket that comes with the hardware kit to the outside, front and rear vertical edges of the expansion rack to prevent the two racks from rubbing against each other.
2. Insert an attachment pin that comes with the expansion rack through the top slot on the front of the standard and expansion racks as shown in Figure 13. The slot is located behind the top hinge.
3. Hold the attachment pin in place with the box wrench and use the hex wrench to tighten a screw on each side of the attachment pin.
4. Install a second attachment pin in the slot near the bottom hinge of the rack.
5. Hold the attachment pin in place with the box wrench and use the hex wrench to tighten a screw on each side of the attachment pin.
6. Repeat this procedure to attach the back of the racks together with two attachment pins.

Repeat this procedure to attach additional expansion racks to the suite.

Chapter 3. Installing optional devices

There are many servers and optional devices that you can install in the standard rack or expansion racks. Always read the documentation that comes with your server or optional device for detailed installation instructions.

Installation guidelines

When you install optional devices in the rack, follow these safety guidelines.

Statement 2:



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.

Statement 3:



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

Statement 4:



DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:

- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- Connect all power cords to a properly wired and grounded electrical outlet.
- Connect to properly wired outlets any equipment that will be attached to this product.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and

modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.

- Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.

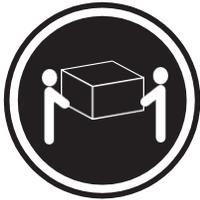
To Connect:

1. Turn everything OFF.
2. First, attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlet.
5. Turn device ON.

To Disconnect:

1. Turn everything OFF.
2. First, remove power cords from outlet.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

Statement 5:



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



≥ 55 kg (121.2 lb)

CAUTION:

Use safe practices when lifting.

Statement 6:



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.

Always install the heaviest devices in the bottom of the rack.

For information about optional, compatible devices that you can install in the rack, go to the ServerProven Web site at <https://static.lenovo.com/us/en/serverproven/index.shtml>.

Installing devices on the rack-mounting flanges

When you install optional devices in the rack, secure the device or the rails for that device on rack-mounting flanges. Some devices come with threaded holes on the rail-mounting flange. Other devices require that you use cage nuts to install them in the rack.

Installing threaded rails

You must install devices that have threaded holes or device rails that have threaded holes on the rail-mounting flange on the inside of the rack-mounting flanges. See the device documentation for detailed information about how to use threaded rails.

Installing cage nuts

You must use cage nuts for all optional devices that do not have threaded holes. The rack comes with a supply of cage nuts, and devices that require them come with cage nuts. Cage nuts are installed on the inside of the rack-mounting flanges with either the cage-nut-insertion tool or a flat-blade screwdriver. The cage-nut-insertion tool comes with the rack and some optional devices.

Using the cage-nut-insertion tool

Complete the following steps to install a cage nut with the cage-nut-insertion tool.

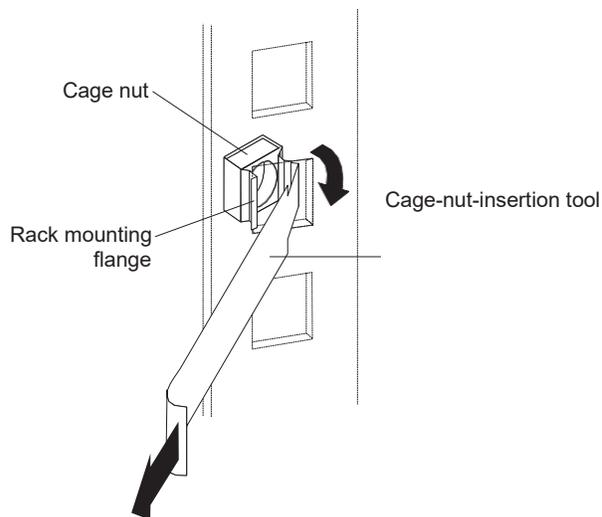


Figure 14. Installing cage nuts with the cage-nut-insertion tool

1. Determine the hole in which you want to install the cage nut.
2. From the inside of the rack mounting flange, insert one edge of the cage nut into the hole.
3. Push the tool through the hole and hook the other edge of the cage nut.
4. Pull the tool and the cage nut back through the hole to complete the installation of the cage nut.

Using a flat-blade screwdriver

Complete the following steps to install a cage nut with a flat-blade screwdriver.

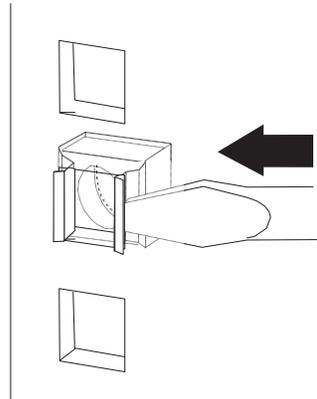


Figure 15. Installing cage nuts with a flat-blade screwdriver

1. Determine the hole in which you want to install the cage nut.
2. Hold the cage nut in one hand and compress the cage-nut clip with a flat-blade screwdriver.
3. With the clip compressed, push the edge of the cage nut fully into the hole from the inside of the rack-mounting flange.
4. Release the screwdriver pressure on the clip to lock the cage nut into place.

Installing devices vertically in the rack

The racks come with space on the sides that can be used to vertically mount power distribution units (PDUs) and console switches. The 42U and 47U racks come with six locations, three on each side of the rack. See the documentation that comes with your PDU or console switch for detailed instructions for installing a device vertically in a rack.

Chapter 4. Managing cables

Always read the instructions that come with your server or optional device for detailed cable-management information. Use the following general guidelines when cabling servers or optional devices that you install in a rack.

Statement 8:



DANGER

- **Plug power cords from devices in the rack cabinet into electrical outlets that are located 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 servicing 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 installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.**
-
- Do not run cables in front of or behind other devices that will prevent service access to those devices.
 - Do not bend fiber-optic cable beyond its specified limits.
 - Label all cables so that they are clearly distinguishable from each other.
 - When installing devices mounted on slide rails, such as servers, observe the following precautions:
 - Run the cables neatly along equipment cable-management arms and secure the cables to the arms using provided cable straps.
 - Leave enough extra cable so that the device can fully extend without straining the cables.
 - Secure the cables so that the device can retract without pinching or cutting the cables.
 - When installing devices mounted on fixed rails, observe the following precautions:
 - Run the cables neatly along the posts or side rails in the rack out of the way of other installed devices.
 - Secure the cables with the provided cable straps.
 - Make sure that the cables cannot be pinched or cut by the rack rear door or other devices.
 - Run internal cables that connect devices in adjoining racks through the large openings in the rear of the rack.
 - Run external cables through the bottom of the rack or through the cable-access opening in the top of the rack.

Cable-routing brackets

To route cables neatly in the rear of the racks, use the cable-routing brackets that come in the hardware kit. The rack comes with eight cable-routing brackets. Use a screwdriver to install or remove a bracket on the rack-mounting flange in the rear of the rack.

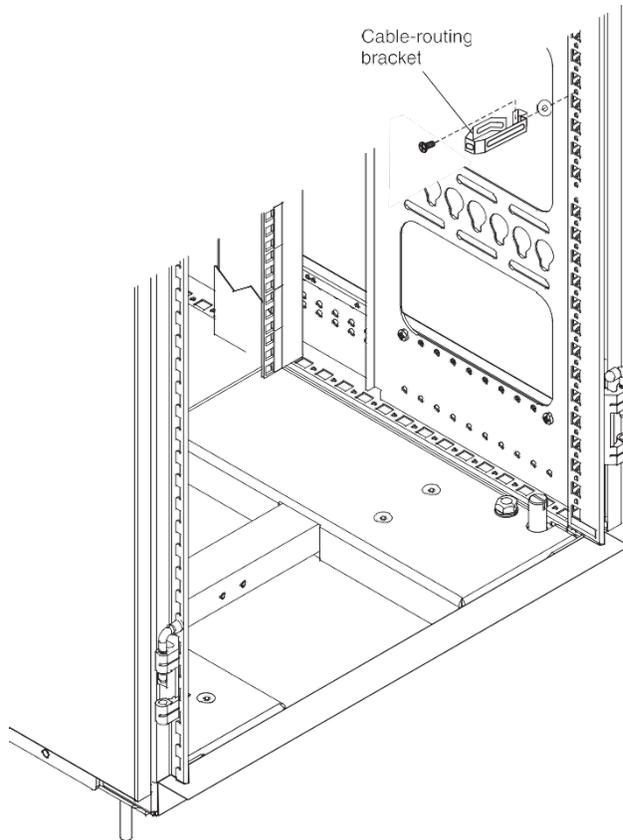


Figure 16. Installing and removing a cable-routing bracket

Using the cable-access bar in the bottom of the rack

Complete the following steps to route external cables through the opening provided in the bottom rear of the racks.

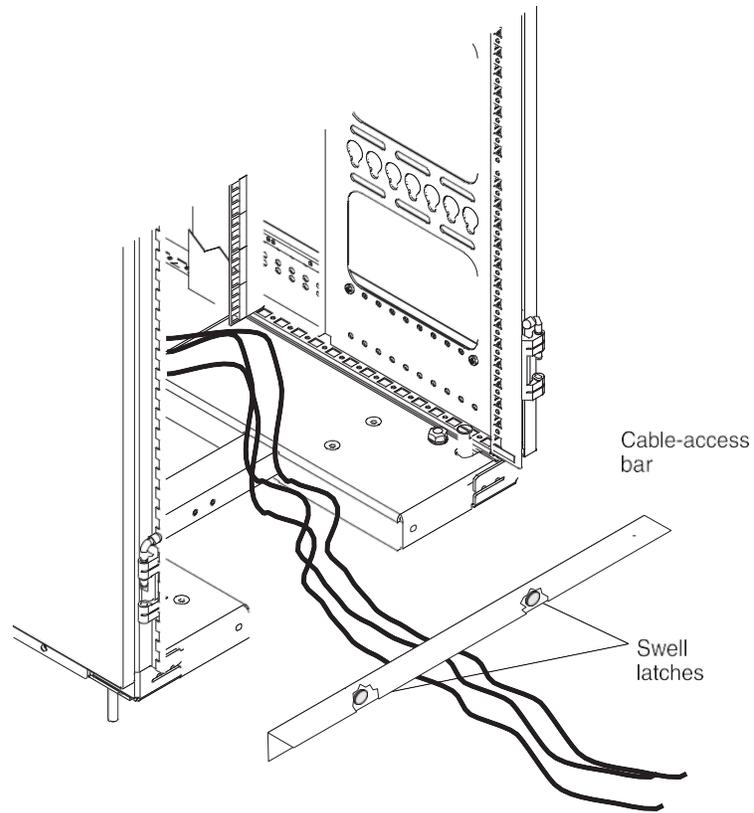


Figure 17. Routing cables using the cable-access bar

1. Release the two swell latches connecting the cable-access bar to the rear of the rack.
2. Route the cables through the opening.
3. Attach the cable-access bar to the rack by tightening the swell latches. Make sure that you do not pinch or cut any cables.

Using the cable-access opening in the top of the racks

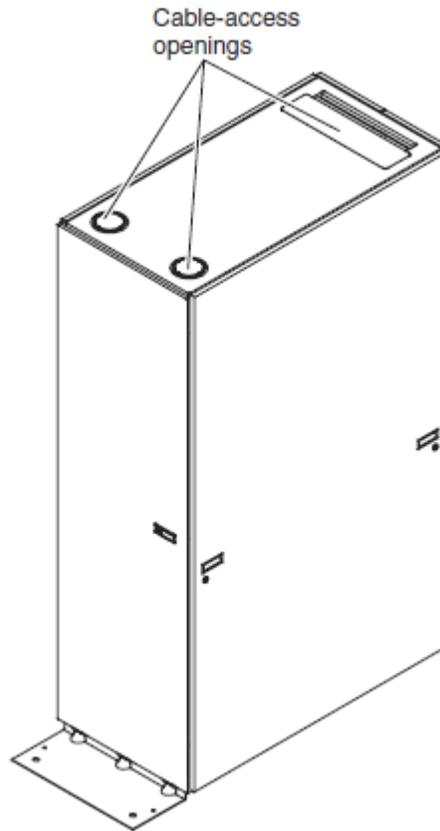


Figure 18. Location of the cable-access opening

Complete the following steps to route external cables through the rectangular cable-access opening in the top rear of the standard or expansion rack.

1. Loosen the two wing nuts on the cable-access panel in the inside, top of the rack; then, slide the cable-access panel towards the front of the rack.
2. Route the cables through the opening.
3. Slide the cable-access panel toward the back of the rack. Make sure that you do not pinch or cut any cables.
4. Tighten the two wing nuts.

Complete the following steps to route external cables through the two round cable-access openings in the top front of the standard or expansion rack.

1. Use a flat-blade screwdriver to pry the round cable-access cover off the rack.
2. Snap out and discard the center of the cable-access cover.
3. Replace the outer ring of the cable-access cover in the cable-access opening.
4. Route the cables through the opening.

Grounding cable

This topic provides information about how to connect the grounding cables. Note that you need to prepare the grounding cables in advance before reading this topic. Lenovo does not provide any grounding cables.

Grounding cable for the rack frame

You need to connect a ground cable to the rear of the rack frame. There are no specific grounding pins on the rack frame. However, it is recommended that you refer to the following illustration to connect the ground cable to the top of the rear horizontal frames or the bottom of the rear vertical frames.

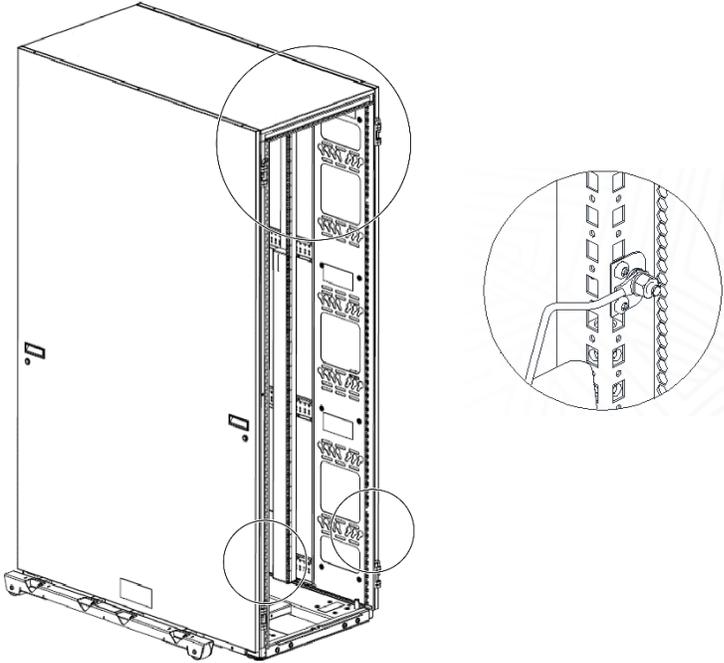


Figure 19. Connecting the ground cable to the rear frames of the rack

Grounding cable for the rack top cover

It is optional to connect a ground cable to the top cover. To ground the top cover, connect one end of the ground cable to the grounding pin on the top cover. Connect the other end of the ground cable to the top horizontal frame.

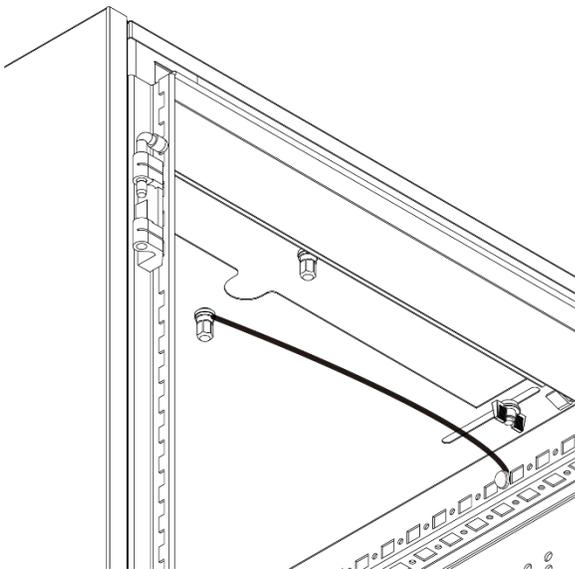


Figure 20. Connecting the ground cable to the top cover

Grounding cable for the rack side panel

It is optional to connect a ground cable to the side panel. To ground the side panel, connect one end of the ground cable to the grounding pin on the top of the side panel. Connect the other end of the ground cable to the top horizontal frame.

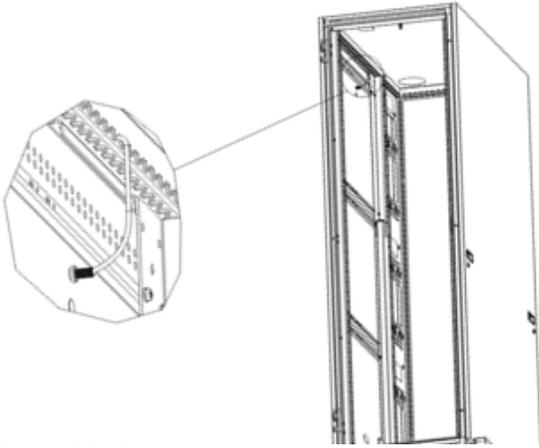


Figure 20. Connecting the ground cable to the side panel

Grounding cable for the rack front door

It is optional to connect a ground cable to the front door. Connect one end of the ground cable to the front door and the other end of the cable to the bottom horizontal frame.

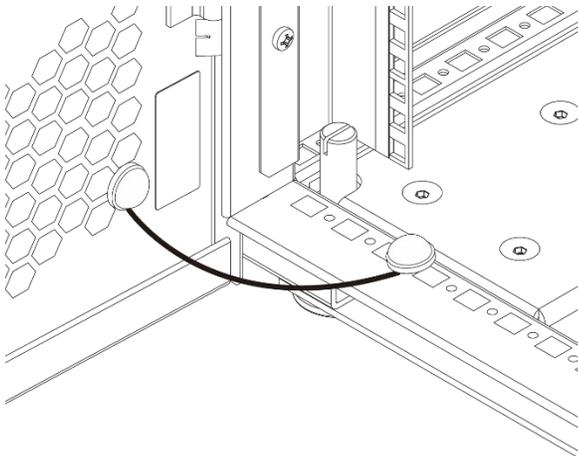


Figure 20. Connecting the ground cable to the front door

Grounding cable for the rack rear doors

It is optional to connect a ground cable to the rear doors. To ground a rear door, connect one end of the ground cable to the grounding pin on the bottom of the rear door. Connect the other end of the ground cable to the bottom of the rear vertical frame. Use the same method to connect the ground cables for both the left-side and right-side rear doors.

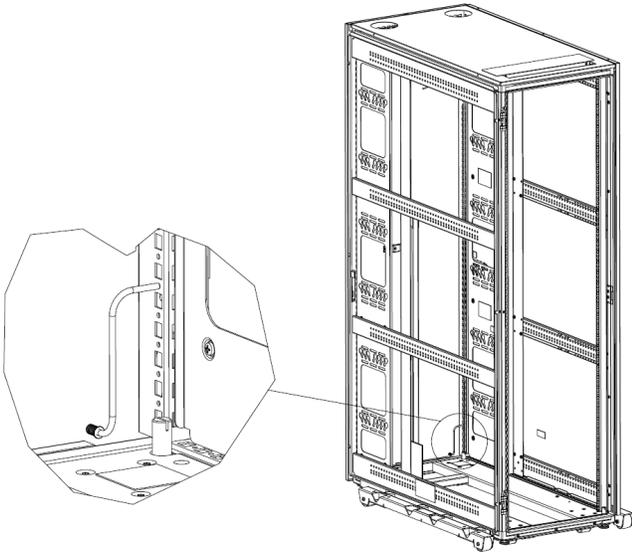


Figure 21. Connecting the ground cable to the rear door

Chapter 5. Moving a rack

Table 1 provides the rack weights for the 42U and 47U racks.

Note: The rack weights in the following table do not include the packaging, accessories, or side panels.

Table 1. 42U standard and expansion racks and 47U standard and expansion rack weights

	42U deep static rack	42U deep static expansion rack	47U deep static rack	47U deep static expansion rack
Empty	141 kg (310 lb)	104 kg (229 lb)	150 kg (331 lb)	110 kg (243 lb)

When you move a rack, follow these safety guidelines.

Statement 8:



DANGER

- Plug power cords from devices in the rack cabinet into electrical outlets that are located 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 servicing 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 installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.

Statement 11:



CAUTION:

Removing components from the upper positions in the 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 22U position and above.
 - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
 - Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 22U level.
- If the rack cabinet 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.

- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 2083 mm (30 x 82 in.)
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet.
- Do not use a ramp inclined at more than ten degrees.
- Once 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 of the pallet and strap the rack cabinet to the pallet.

Chapter 6. Parts listing (42U and 47U deep static and expansion racks)

The replaceable components that are available for the 42U Deep Static and Expansion Racks and 47U Deep Static and Expansion Racks are described in this chapter. To check for an updated parts listing on the Web, complete the following steps:

1. Go to <https://datacentersupport.lenovo.com/us/en/>.
2. Select **Infrastructure Options**.
3. Select **Rack Enclosures**.
4. Select your product name and machine type.

Replaceable rack components

Replaceable components are of three types:

- **Tier 1 customer replaceable unit (CRU):** Replacement of Tier 1 CRUs is your responsibility. If Lenovo installs a Tier 1 CRU at your request, you will be charged for the installation.
- **Tier 2 customer replaceable unit:** You may install a Tier 2 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service that is designated for your server.
- **Field replaceable unit (FRU):** FRUs must be installed only by trained service technicians.

For information about getting service and assistance, see Appendix A, "Getting help and technical assistance,". For information about the terms of the warranty, see the *Important Notices and Warranty Information* document that comes with the rack.

42U deep static standard and expansion racks

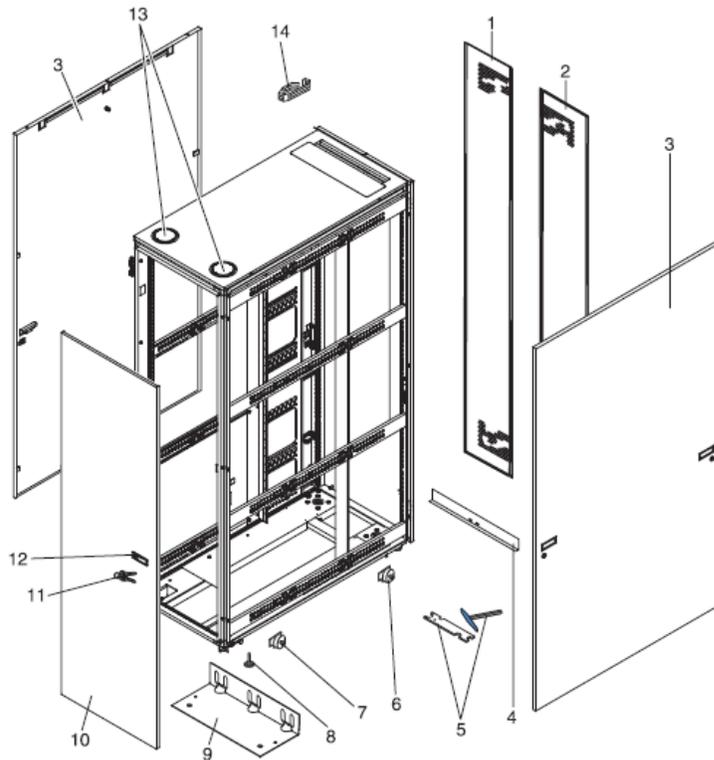


Table 2. Parts listing for 42U Deep Static Standard and Expansion Racks, Type 9361-4PX and 9361-4EX

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Split rear door, right	13N2058		
2	Split rear door, left	13N2059		
3	Side cover	69Y6024		
4	Cable-access bar	32R0711		
5	Hardware and tool kit (includes tools, screws, washers, cage nuts and fasteners)		81Y2392	
6	Swivel caster, rear			16R1493
7	Fixed caster, front			16R1492
8	Adjustable foot			16R1494
9	Front stabilizer	39M6739		
10	Front door	16R1485		
11	Keys, door and side cover	16R1497		
12	Latch, door	16R1496		
13	Cover, top front cable access	69Y6067		
14	Cable management kit		39M6653	
	Baying kit		39M6741	

47U deep static standard and expansion racks

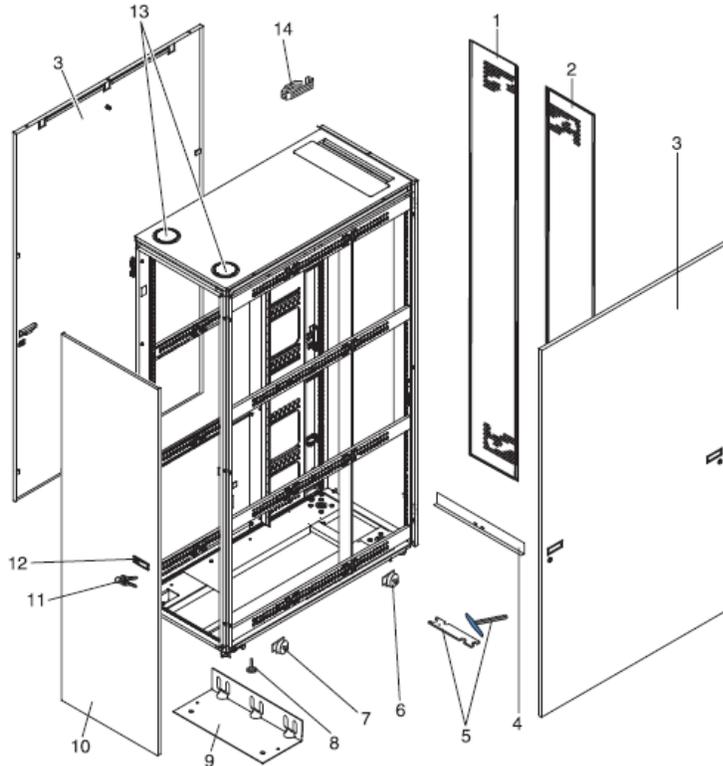


Table 3. Parts listing for 47U Deep Static Standard and Expansion Racks, Type 9362-4PX and 9362-4EX

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
1	Split rear door, right	69Y6035		
2	Split rear door, left	69Y6036		
3	Side cover	69Y6038		
4	Cable-access bar	32R0711		
5	Hardware and tool kit (includes tools, screws, washers, cage nuts and fasteners)		81Y2392	
6	Swivel caster, rear			16R1493
7	Fixed caster, front			16R1492
8	Adjustable foot			16R1494
9	Front stabilizer	39M6739		
10	Front door	69Y6037		
11	Keys, door and side cover	16R1497		
12	Latch, door	16R1496		
13	Cover, top front cable access	69Y6067		
14	Cable management kit		39M6653	
	Baying kit		39M6741	

Appendix A. Getting Help and Technical Assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

On the World Wide Web, up-to-date information about Lenovo systems, optional devices, services, and support are available at:

<http://datacentersupport.lenovo.com>

Note: This section includes references to IBM web sites and information about obtaining service. IBM is Lenovo's preferred service provider for IBM and Lenovo Uninterruptible Power Supply (UPS) and Power Distribution (PDU) units.

Before you call

Before you call, there are several steps that you can take to try and solve the problem yourself. If you decide that you do need to call for assistance, gather the information that will be needed by the service technician to more quickly resolve your problem.

You can find the product documentation for your products at the following location:

http://systemx.lenovofiles.com/help/index.jsp?topic=/com.lenovo.sysx.racks.doc/rack_product_page.html

You can take these steps to try to solve the problem yourself:

- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
- If you have installed new hardware or software in your environment, check <http://www.lenovo.com/us/en/serverproven/> to make sure that the hardware and software is supported by your product.
- Go to <http://datacentersupport.lenovo.com> and check for information to help you solve the problem.
- Check if there is a new release of the UPS management software for the Operating System in use and new Network Management Card firmware which is available on the Lenovo Datacenter Support site by visiting <https://datacentersupport.lenovo.com/solutions/ht504843>

Contacting Support

You can contact Support to obtain help for your issue.

You can receive hardware service through a Lenovo Authorized Service Provider. To locate a service provider authorized by Lenovo to provide warranty service, go to <https://datacentersupport.lenovo.com/serviceprovider> and use filter searching for different countries. For Lenovo support telephone numbers, see <https://datacentersupport.lenovo.com/supportphonenumber> for your region support details.

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