



42U Dynamic Expansion Rack and 42U 1100 mm Enterprise V2 Dynamic Rack Installation Guide



Type: 9363

Note

Before using this information and the product it supports, read the general information in Appendix A “Getting help and technical assistance” on page 51, Appendix B “Notices” on page 55, the safety information, warranties, and licenses information on the Lenovo Web site at:

<https://support.lenovo.com/documents/LNVO-DOCS>

Second Edition (November 2016)

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Contents

Safety	iii	Chapter 6. Parts listing	47
Safety statements	iv	Appendix A. Getting help and technical assistance	51
Chapter 1. Introduction	1	Before you call.	51
Notices and statements in this document	1	Using the documentation	52
Chapter 2. Installing a rack cabinet.	3	Getting help and information from the World Wide Web	52
Size and weight specifications	5	How to send DSA data	52
Planning the floor layout	6	Creating a personalized support web page	52
Removing and installing the outriggers (side stabilizers)	6	Software service and support	53
Installing the front stabilizer bracket, recirculation prevention plate (optional) and securing the rack to the floor surface	8	Hardware service and support	53
Removing and installing the side covers.	15	Taiwan product service	53
Removing and installing a front door	17	Appendix B. Notices.	55
Removing and installing a rear door	18	Trademarks	56
Reversing a front door.	19	Important notes	56
Attaching racks in a suite	26	Recycling information	56
Chapter 3. Installing optional devices	29	Particulate contamination	57
Installation guidelines	29	Telecommunication regulatory statement	57
Installing devices on the rack-mounting flanges.	30	Electronic emission notices.	58
Installing threaded rails	31	Federal Communications Commission (FCC) statement	58
Installing cage nuts	31	Industry Canada Class A emission compliance statement	58
Installing clip nuts	32	Avis de conformité à la réglementation d'Industrie Canada	58
Installing devices vertically in the rack cabinet	32	Australia and New Zealand Class A statement	58
Installing a 1U PDU or console switch vertically in the rack side area.	33	European Union EMC Directive conformance statement	58
Installing a 1U PDU or console switch vertically in a rack side pocket	33	Germany Class A statement	59
Installing a 0U PDU vertically in the rear of a rack cabinet	34	Japanese electromagnetic compatibility statements	60
Chapter 4. Managing cables	37	Korea Communications Commission (KCC) statement	60
Front-to-rear cable channels	37	Russia Electromagnetic Interference (EMI) Class A statement	61
Using the cable-access bar in the bottom of the rack cabinet.	38	People's Republic of China Class A electronic emission statement	61
Using the cable-access openings in the top of the rack	39	Taiwan Class A compliance statement	61
Mounting an overhead cable tray	41	Taiwan BSMI RoHS declaration	62
Chapter 5. Moving a rack cabinet.	43	Index.	63

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 přečtěte 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.

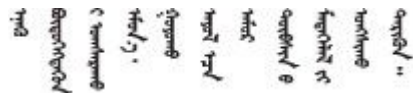
A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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 pečítajte 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.

ཐོན་ཇུས་འདི་བདེ་སྤྱོད་མ་བྱས་གོང་། སྐྱོར་གྱི་ཡིད་གཟབ་
བྱ་འདྲ་མིན་ཡོད་པའི་འོད་ཟེར་བལྟ་དགོས།

Bu ürünü kurmadan önce güvenlik bilgilerini okuyun.

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canjbinj soengq cungj vahgangj ancien siusik.

Safety statements

These statements provide the caution and danger information that is used in this documentation.

Important: Each caution and danger statement in this documentation 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 *Safety Information* document.

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

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

Statement 1



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 2



CAUTION:

When replacing the lithium battery, use only Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of. *Do not:*

- Throw or immerse into water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.

Statement 3



CAUTION:

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Class 1 Laser Product

Laser Klasse 1

Laser Klass 1

Luokan 1 Laserlaite

Appareil À Laser de Classe 1

Statement 4



CAUTION: Use safe practices when lifting.



≥ 18 kg (39.7 lb)



≥ 32 kg (70.5 lb)



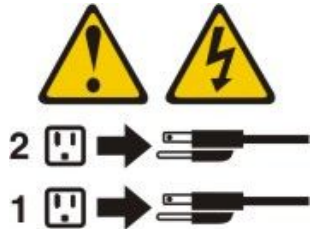
≥ 55 kg (121.2 lb)

Statement 5



CAUTION:

The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



Statement 8



CAUTION:

Never remove the cover on a power supply or any part that has the following label attached.



Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Statement 11



CAUTION:

The following label indicates sharp edges, corners, or joints nearby.



Statement 12



CAUTION:

The following label indicates a hot surface nearby.



Statement 13



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

Statement 15



CAUTION:

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

Statement 17



CAUTION:

The following label indicates moving parts nearby.



Statement 26



CAUTION:
Do not place any object on top of rack-mounted devices.



Statement 31



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 power source.**
- **Connect to properly wired power sources 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 ac power cords, dc power sources, network connections, telecommunications systems, and serial cables before you open the device covers, unless you are instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when you install, move, or open covers on this product or attached devices.**

To Connect:

1. Turn OFF all power sources and equipment that is to be attached to this product.
2. Attach signal cables to the product.
3. Attach power cords to the product.
 - For ac systems, use appliance inlets.
 - For dc systems, ensure correct polarity of -48 V dc connections: RTN is + and -48 V dc is -. Earth ground should use a two-hole lug for safety.
4. Attach signal cables to other devices.
5. Connect power cords to their sources.
6. Turn ON all the power sources.

To Disconnect:

1. Turn OFF all power sources and equipment that is to be attached to this product.
 - For ac systems, remove all power cords from the chassis power receptacles or interrupt power at the ac power distribution unit.
 - For dc systems, disconnect dc power sources at the breaker panel or by turning off the power source. Then, remove the dc cables.
2. Remove the signal cables from the connectors.
3. Remove all cables from the devices.

Statement 34



CAUTION:

To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel in a restricted-access location, as defined by the NEC and IEC 60950-1, First Edition, The Standard for Safety of Information Technology Equipment.
- Connect the equipment to a properly grounded safety extra low voltage (SELV) source. A SELV source is a secondary circuit that is designed so that normal and single fault conditions do not cause the voltages to exceed a safe level (60 V direct current).
- Incorporate a readily available approved and rated disconnect device in the field wiring.
- See the specifications in the product documentation for the required circuit-breaker rating for branch circuit overcurrent protection.
- Use copper wire conductors only. See the specifications in the product documentation for the required wire size.
- See the specifications in the product documentation for the required torque values for the wiring-terminal screws.

Statement 35:



CAUTION:

Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both.

Statement 36:



CAUTION:

Always install the slide retention screw.

Statement 37



 **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.**
- **Do not extend multiple devices from the rack cabinet simultaneously, unless the rack-mounting instructions direct you to do so. Multiple devices extended into the service position can cause your rack cabinet to tip.**
- **If you are not using the IBM 9308 rack cabinet, securely anchor the rack cabinet to ensure its stability.**

Attention: This product is suitable for use on an IT power distribution system whose maximum phase-to-phase-voltage is 240 V under any distribution fault condition.

Chapter 1. Introduction

This document contains general installation instructions for installing the following rack cabinets. Always read the documentation for your server or optional device for detailed installation instructions.

- 42U 1100 mm Enterprise V2 Dynamic Rack, Type 9363-4PX
- 42U 1100 mm Enterprise V2 Dynamic Expansion Rack, Type 9363-4EX

Installing the rack cabinet consists of the following tasks:

1. Unpack the rack according to the *42U 1100 mm Enterprise V2 Dynamic Rack and Expansion Rack Unpacking Instructions*.
2. Install the rack stabilizer brackets on all rack cabinets.
3. 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.
4. Install one or more optional devices.

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

5. 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.

If documentation updates are available, you can download them from the Lenovo® website. The rack cabinet 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. To check for updates, go to <http://www.lenovo.com/support>.

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

For more information about rack cabinets and options, see <http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp>.

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Safety Information* document, which is available at <https://support.lenovo.com/documents/LNVO-DOCS>. Each statement is numbered for reference to the corresponding statement in your language in the *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 cabinet

The standard and expansion rack cabinets are 42U-high¹ racks. The standard rack cabinet comes with side covers installed. The expansion rack cabinet does not come with side covers but includes the required hardware for building a suite of racks. You need one standard rack cabinet per suite.

Notes:

1. If required by local building codes, each stand-alone rack can be bolted to the floor with a fastener in each corner.
2. The illustrations in this document might differ slightly from your hardware.

Statement 1



CAUTION:

To ensure safety, all applicable components 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.

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

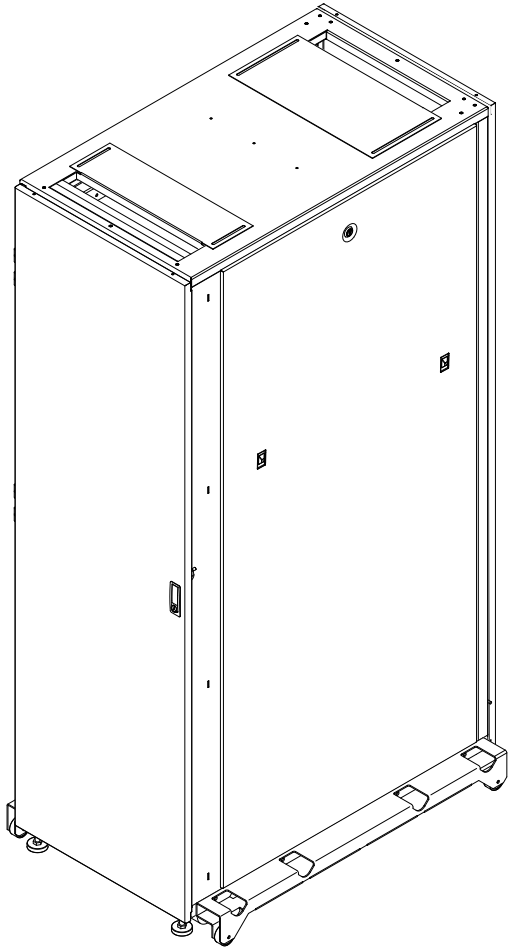


Figure 1. 42U 1100 mm Enterprise V2 Dynamic Rack, Type 9363-4PX

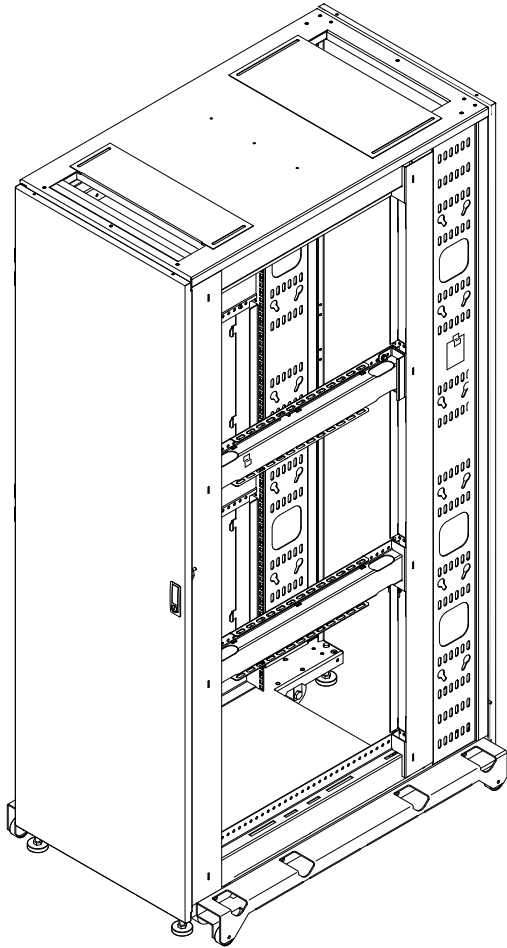


Figure 2. 42U 1100 mm Enterprise V2 Dynamic Expansion Rack, Type 9363-4EX (comes without side covers)

Size and weight specifications

The 42U racks and 42U expansion racks conform to the Electronic Industries Association (EIA) standard *EIA-310-D Cabinets, Racks, Panels, and Associated Equipment (1992)*. For the rack cabinet dimensions and weights, see the following tables.

Table 1. 42U rack physical dimensions

The last row contains a note that is associated with a superscript number in the previous cells.

Configuration	Dimensions
9363-4PX 42U 1100 mm Enterprise V2 Dynamic Rack without outriggers	2009 mm x 604 mm ¹ x 1100 mm (79.1 in. x 23.8 in. x 43.3 in.)
9363-4PX 42U 1100 mm Enterprise V2 Dynamic Rack with outriggers	2009 mm x 780 mm x 1100 mm (79.1 in. x 30.7 in. x 43.3 in.)
9363-4EX 42U 1100 mm Enterprise V2 Dynamic Expansion Rack without outriggers	2009 mm x 600 mm x 1100 mm (79.1 in. x 23.6 in. x 43.3 in.)

Table 1. 42U rack physical dimensions (continued)

Configuration	Dimensions
9363-4EX 42U 1100 mm Enterprise V2 Dynamic Expansion Rack with outriggers	2009 mm x 780 mm x 1100 mm (79.1 in. x 30.7 in. x 43.3 in.)
Notes:	
1. Includes side cover latches. When the side covers are removed, the rack width is 600 mm (23.6 in.).	

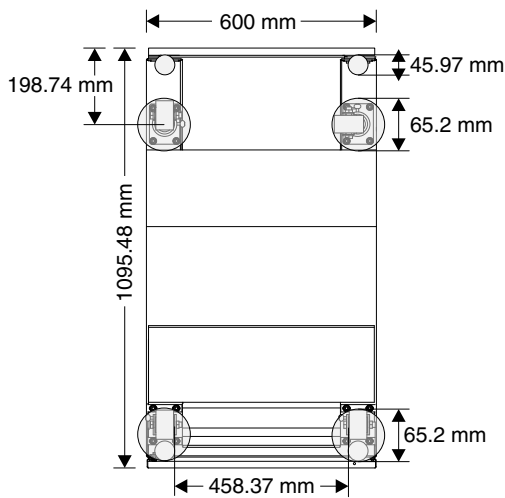
Table 2. 42U 1100 mm Enterprise V2 Dynamic Rack and Expansion Rack weights

	9363-4PX 42U dynamic rack	9363-4EX 42U dynamic expansion rack
Empty (with outriggers)	169 kg (372 lb)	132 kg (292 lb)
Total load	953 kg (2100 lb)	953 kg (2100 lb)
Maximum configuration	1121 kg (2472 lb)	1085 kg (2392 lb)

Planning the floor layout

Step 1. For planning purposes, use the floor layout that is shown in the following illustration as a guide for cutting holes in the floor tiles to run cables for the devices in the rack cabinet.

The circles in the illustration represent the area where the casters and leveling feet might touch the ground. Make sure that there are no holes in the floor tiles that are too close to these circles.



Front of Rack

Figure 3. Floor layout for cutting holes in the floor tiles

Removing and installing the outriggers (side stabilizers)

The outriggers are the stabilizers with wheels that are installed on the sides of the rack cabinet. After the rack is in its final location and will not be moved more than 2 m (6 ft), you can remove the outriggers.



 **DANGER**

Always relocate the rack cabinet with the outriggers installed. Keep the outriggers and install them if you have to move the rack to another location in the future.

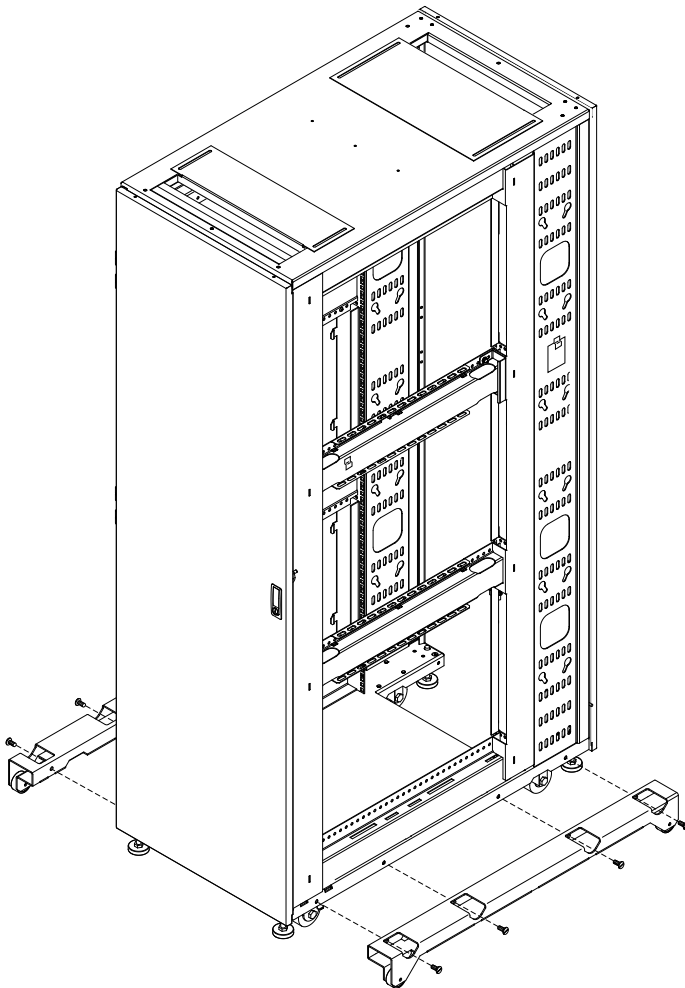
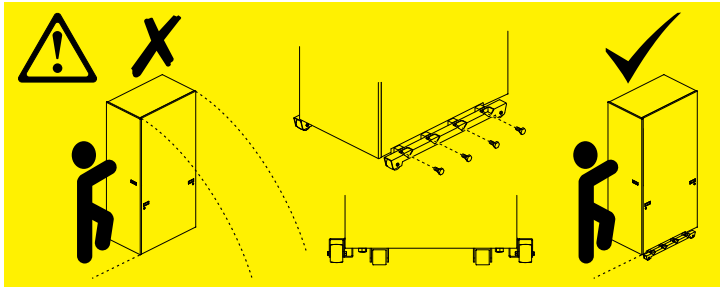


Figure 4. Removing and installing the outriggers

To remove the outriggers, use the 6 mm hex wrench that comes in the hardware kit to remove the four bolts that attach each outrigger to the rack cabinet. Keep the outriggers and bolts for future use if you have to move the rack.

Notes:

1. Before you attach an expansion rack to a standard rack or another expansion rack, you must remove the outriggers from the racks so that the racks fit together correctly.
2. You can install or remove the outriggers on a rack cabinet with or without side covers.

Install the outriggers before you move the rack cabinet to another location. Use the 6 mm hex wrench that comes in the hardware kit to install the four bolts that attach each outrigger to the rack cabinet.

Installing the front stabilizer bracket, recirculation prevention plate (optional) and securing the rack to the floor surface

See the *42U 1100 mm Enterprise V2 Dynamic Rack and Expansion Rack Unpacking Instructions* for information about how to unpack and locate the rack.

Statement 2



- | |
|--|
| <ul style="list-style-type: none">• 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. |
|--|

The procedure in this section describes the following tasks:

- Lowering the leveling pads
- Installing the recirculation prevention plate (optional)
- Installing the front stabilizer bracket
- Bolting the rack cabinet to the floor surface for added stability

Complete the following steps:

- Step 1. Use 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 cabinet. The pads prevent the rack from rolling.

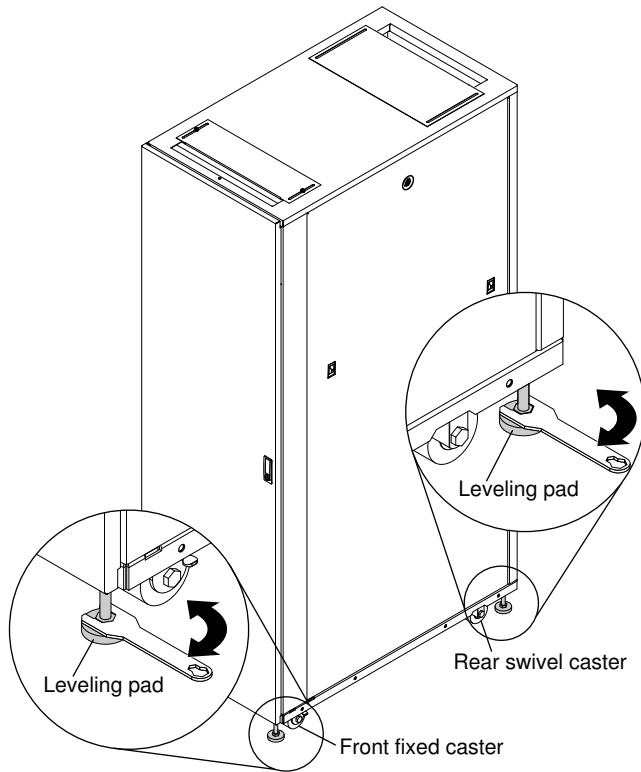


Figure 5. Lowering the leveling pads

- Step 2. Hand-tighten the thumbscrews on the front fixed casters.
- Step 3. Remove both outriggers from the sides of the rack by removing the four bolts on each side with a 6 mm hex wrench. Save the outriggers for use in the future if you have to move the rack cabinet to another location.

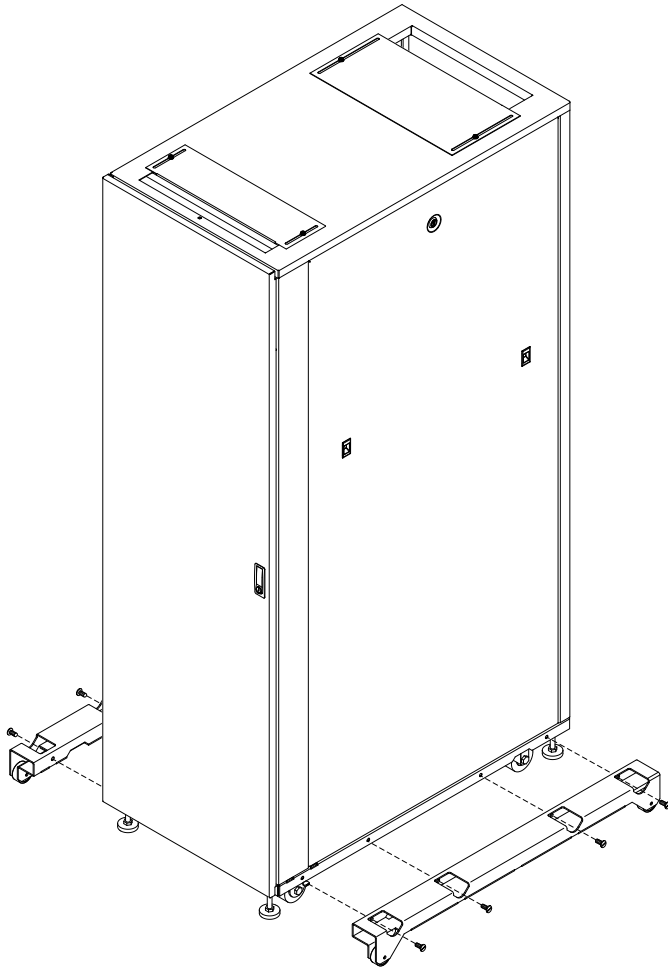


Figure 6. Removing the outriggers

Step 4. Remove the front door if you are installing the recirculation prevention plate or front stabilizer bracket. For more information about removing the front door, see “Removing and installing a front door” on page 17.

Step 5. The following sub-steps are optional. Complete the appropriate steps for your rack cabinet.

Note: The recirculation prevention plate prevents hot air recirculation from beneath the rack by sealing the open space between the rack bottom and the floor surface. The plate also seals the front cable egress if the rack front-side foam seal kit is not installed.

- If this is *not* a stand-alone rack and you are *not* installing the front stabilizer bracket, attach the recirculation prevention plate with the four screws and hex wrench from the hardware kit.

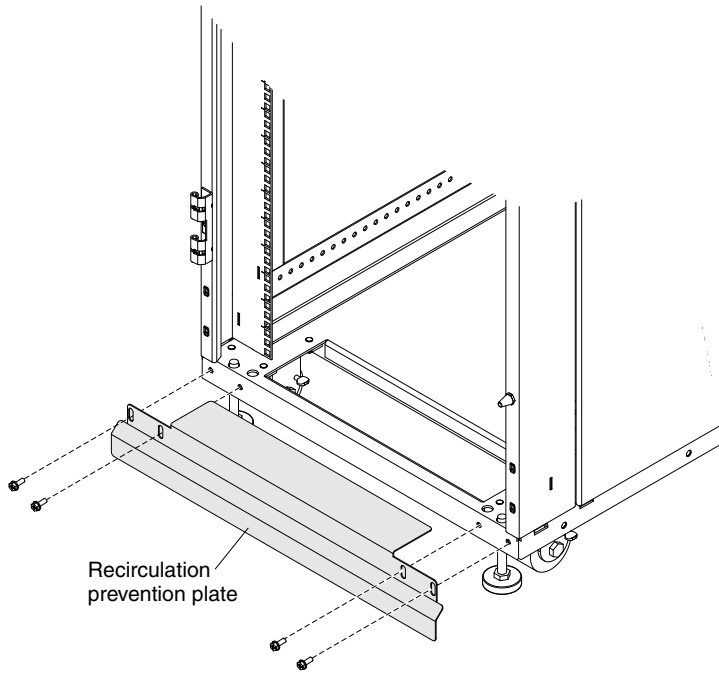


Figure 7. Installing the recirculation prevention plate and no front stabilizer bracket

- If this is a stand-alone rack cabinet, complete the following steps:
 1. Align the four holes in the recirculation prevention plate with the four holes in the rack cabinet.

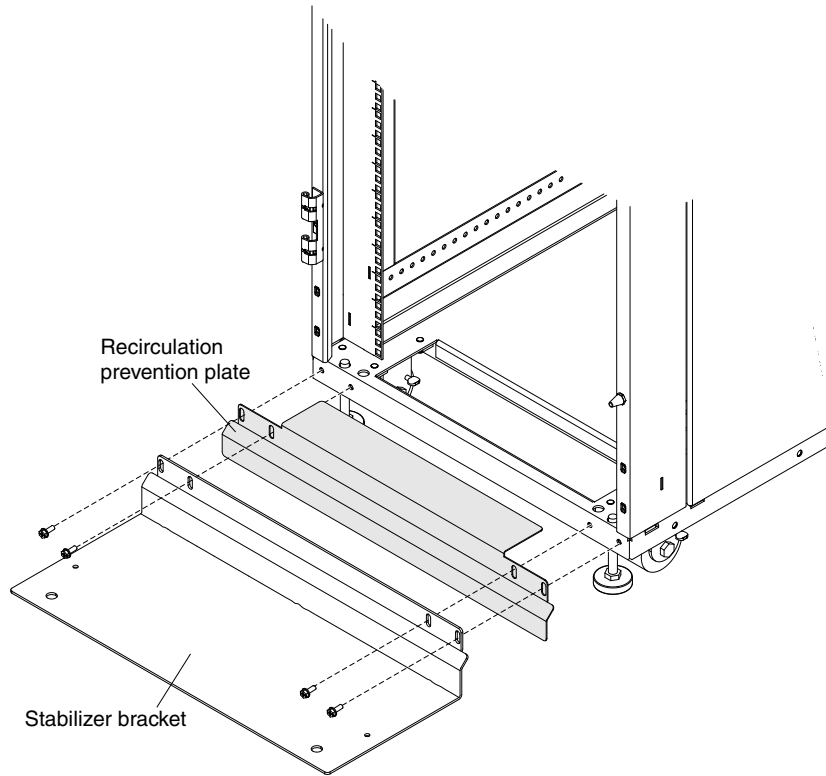


Figure 8. Installing the recirculation prevention plate and the front stabilizer bracket

2. Position the front stabilizer bracket in front of the recirculation prevention plate and align the screw holes.
 3. Use the four screws and the hex wrench that come in the hardware kit to secure the front stabilizer bracket and recirculation prevention plate to the rack cabinet.
 4. Tighten the screws until the stabilizer bracket is flush against the recirculation prevention plate (if it is used) or flush against the rack (if the recirculation prevention plate is not used).
- Step 6. If this is a stand-alone rack cabinet and you are not installing the recirculation prevention plate, attach the front stabilizer to the front of the rack cabinet with the screws and hex wrench that come with the hardware kit.

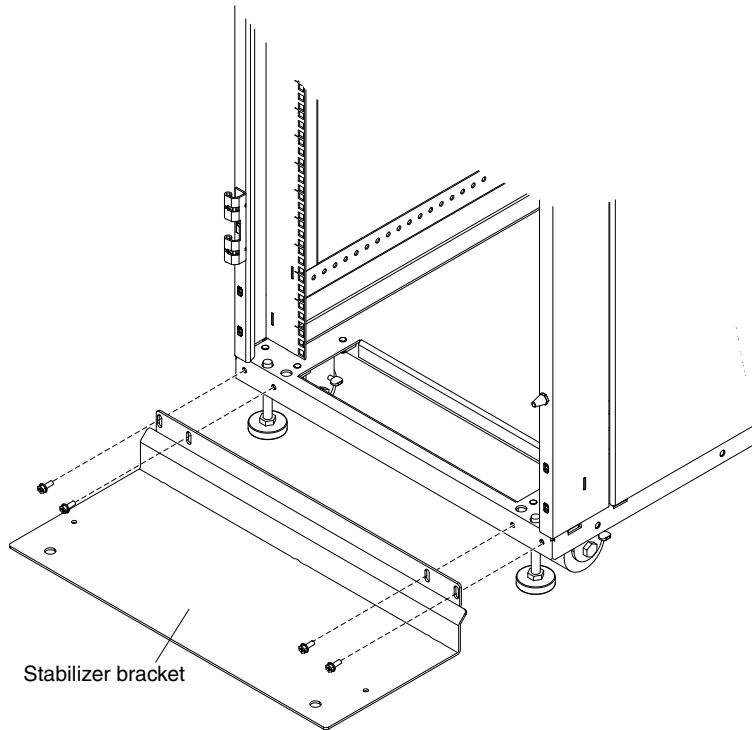


Figure 9. Installing the front stabilizer and no recirculation prevention plate

Note: If required by local building codes, each stand-alone rack can be bolted to the floor with a fastener in each corner.

Step 7. Bolt the rack to the floor surface by using the following methods:

- If a front stabilizer bracket or stabilizer plate is installed, bolt the rack to the floor surface through the holes in the front stabilizer by using two bolts and washers.

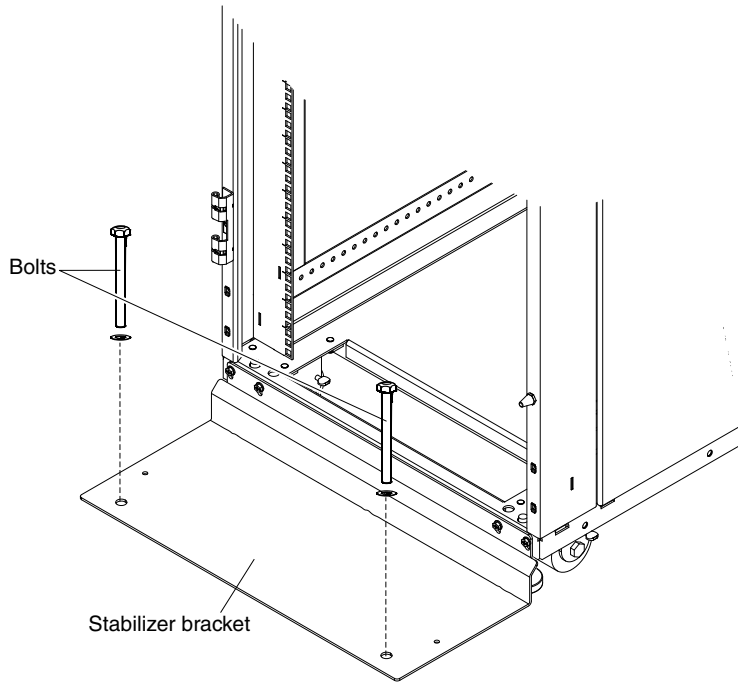


Figure 10. Bolting the front stabilizer to the floor surface

Bolt the rear of the rack to the floor surface through the holes in the lower frame by using two bolts and washers.

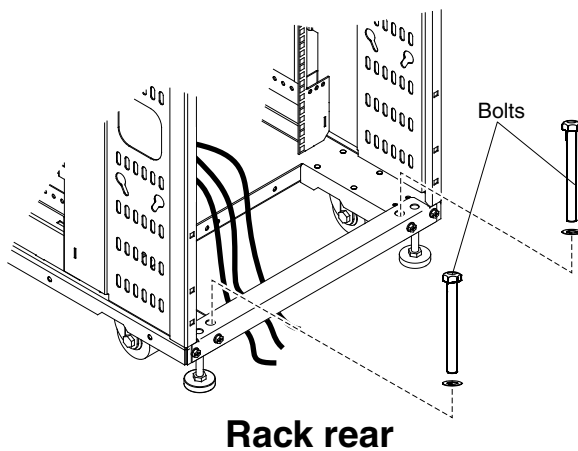


Figure 11. Bolting the rear of the rack to the floor surface

- If a front stabilizer bracket or stabilizer plate is not installed, bolt the front of the rack to the floor surface through the holes in the lower frame by using two bolts and washers.

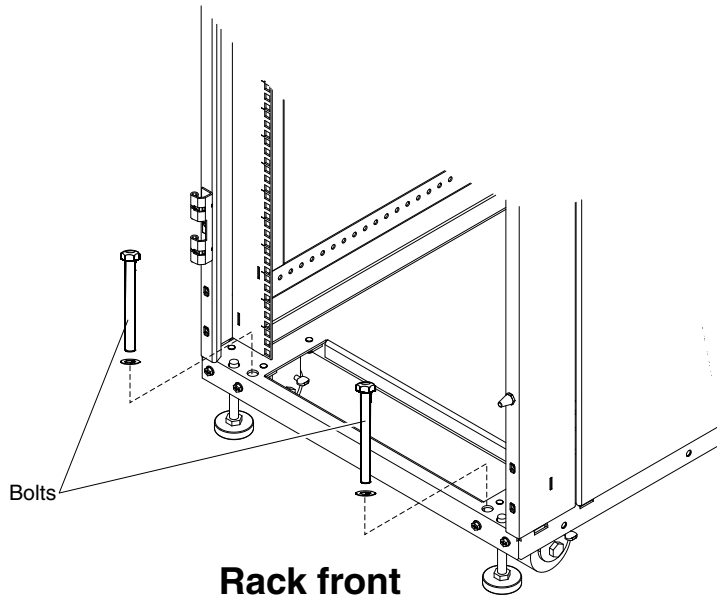


Figure 12. Bolting the front of the rack to the floor surface

Bolt the rear of the rack to the floor surface through the holes in the lower frame by using two bolts and washers. See Figure 11 “Bolting the rear of the rack to the floor surface” on page 14.

Step 8. Reinstall the front door if you removed it in step Step 4 on page 10.

Removing and installing the side covers

The standard rack comes with the side covers installed. Remove the side covers from the rack before you install or remove optional devices.

To remove the side covers from a standard rack, complete the following steps:

- a. Unlock the button lock on the top of a side cover.

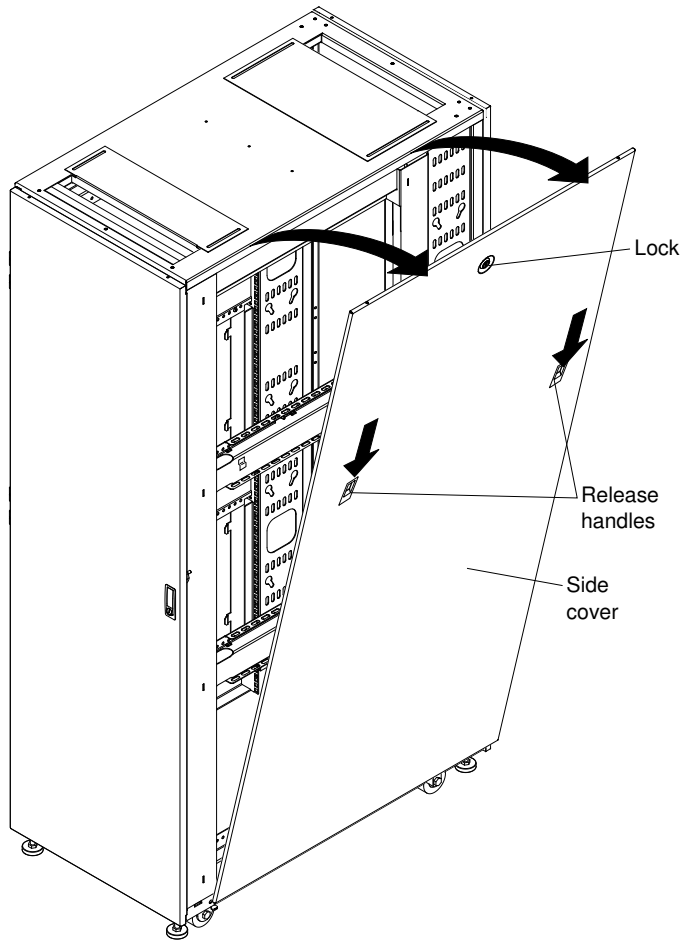


Figure 13. Removing a side cover

- b. Press down on both release handles, and tilt the top of the side cover slightly toward you; then, lift the side cover up and away from the ridge on the bottom of the rack cabinet.
- c. Repeat this procedure to remove the second side cover.

To install a side cover, align the side cover with the ridge in the bottom side of the rack cabinet and press down. Press in on both release handles and then rotate the top of the side cover toward the rack. Lock the side cover to secure it to the rack cabinet.

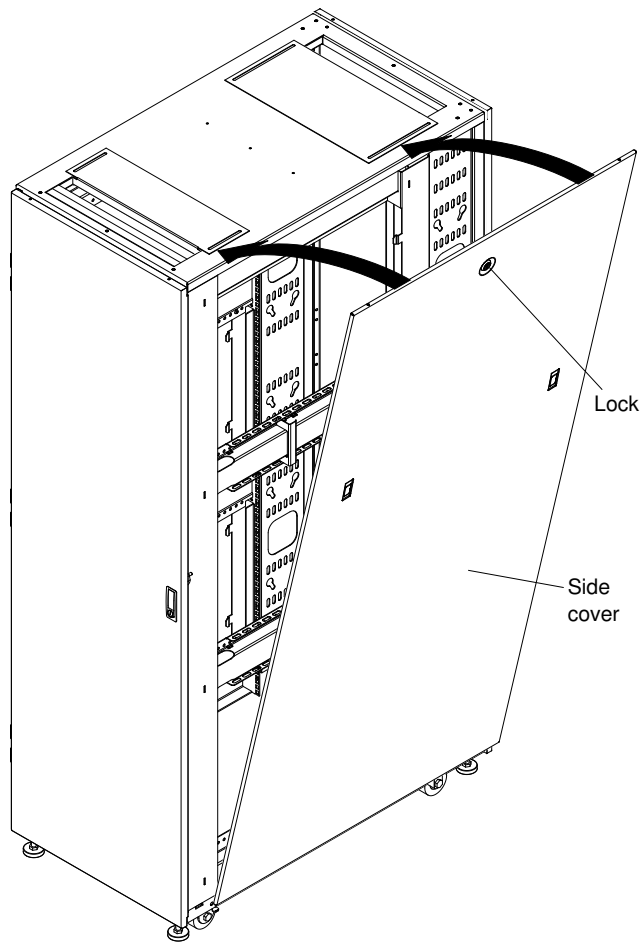


Figure 14. Installing a side cover

Removing and installing a front door

All racks come with the front door installed. Remove the front door when you install and remove devices in the rack, if part of the rack is obstructed by the door as you install devices.

To remove the front door from the rack cabinet, complete the following steps:

- a. Unlock and open the door.

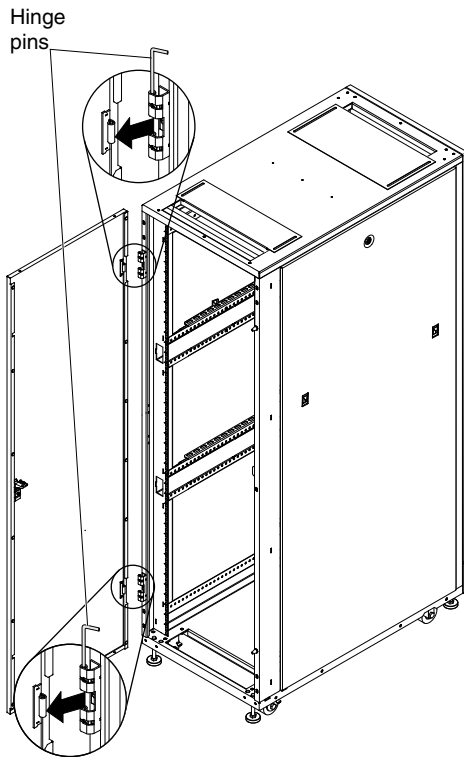


Figure 15. Removing the front door

- b. 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.
- c. Grasp the door firmly with both hands and pull it away from the hinges; then, set the door aside.

To install the front door on the rack cabinet, complete the following steps:

- a. Grasp the door firmly with both hands, align the door with the hinges, and slide the door into place.
- b. Holding the door with one hand, push the hinge pins down to the closed position.

Removing and installing a rear door

All racks come with the rear door installed. Remove the rear door when you install and remove devices in the rack, if part of the rack is obstructed by the door as you install devices.

To remove a rear door from the rack cabinet, complete the following steps:

- a. Unlock and open the door.

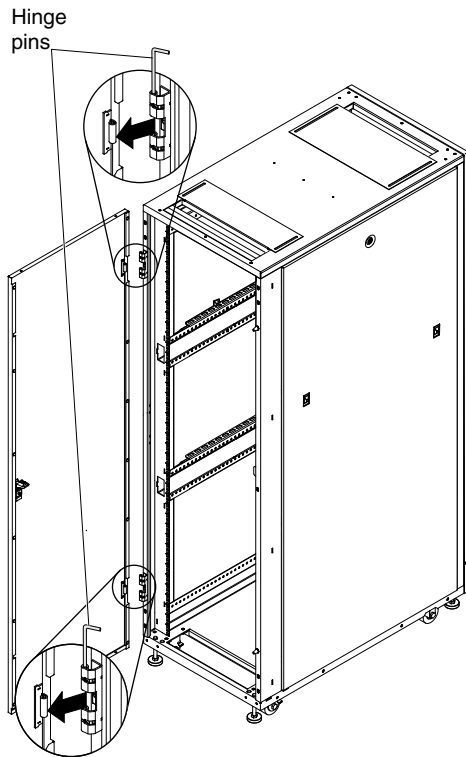


Figure 16. Removing a rear door

- b. 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.
- c. Grasp the door firmly with both hands and pull it away from the hinges; then, set the door aside.

To install a rear door on the rack cabinet, complete the following steps:

- a. Grasp the door firmly with both hands, align the door with the hinges, and slide the door into place.
- b. Holding the door with one hand, push the hinge pins down to the closed position.

Reversing a front door

To reverse a front door on a rack cabinet so that the hinges are on the right side, complete the following steps:

Step 1. Remove the front door according to “Removing and installing a front door” on page 17.

Step 2. Remove the doorstop on the top-right side of the rack cabinet by removing the screw.

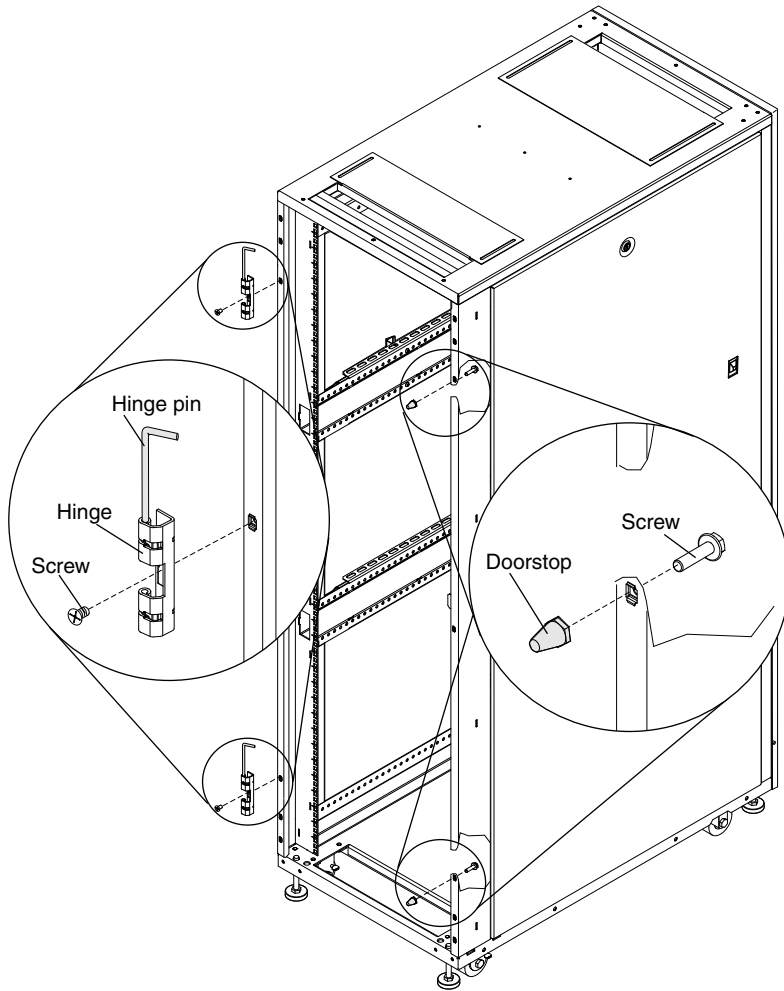


Figure 17. Removing the doorstop and door hinges

Step 3. Remove the door hinges from the rack:

- a. Remove the hinge pin by placing a small screwdriver under the end of the retainer spring, press the spring out, and pull the hinge pin out of the hinge.

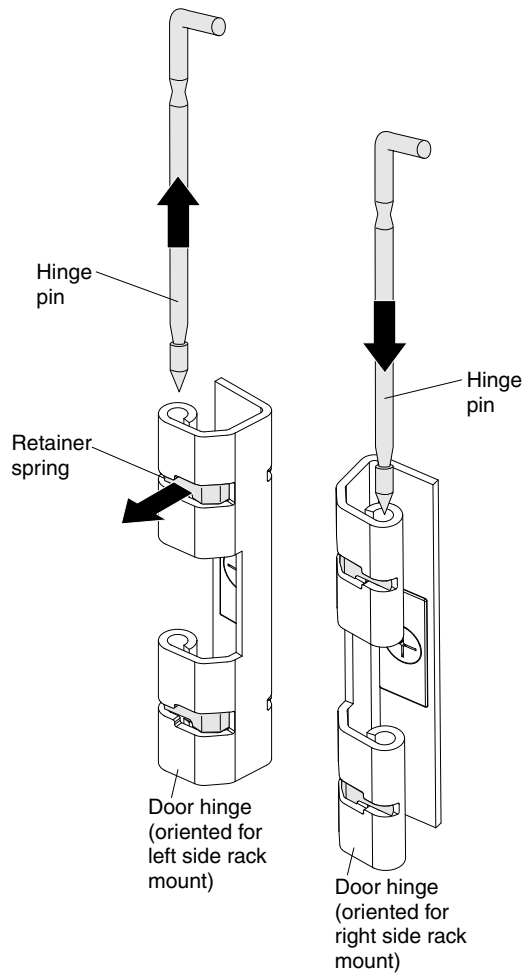


Figure 18. Removing and installing a door hinge pin

b. Use a Phillips screwdriver to remove the hinge screw.

Repeat step Step 3 on page 20 to remove the other hinge.

Step 4. Attach the doorstop to the top-left side of the rack. Use the empty screw hole from where you removed the top hinge.

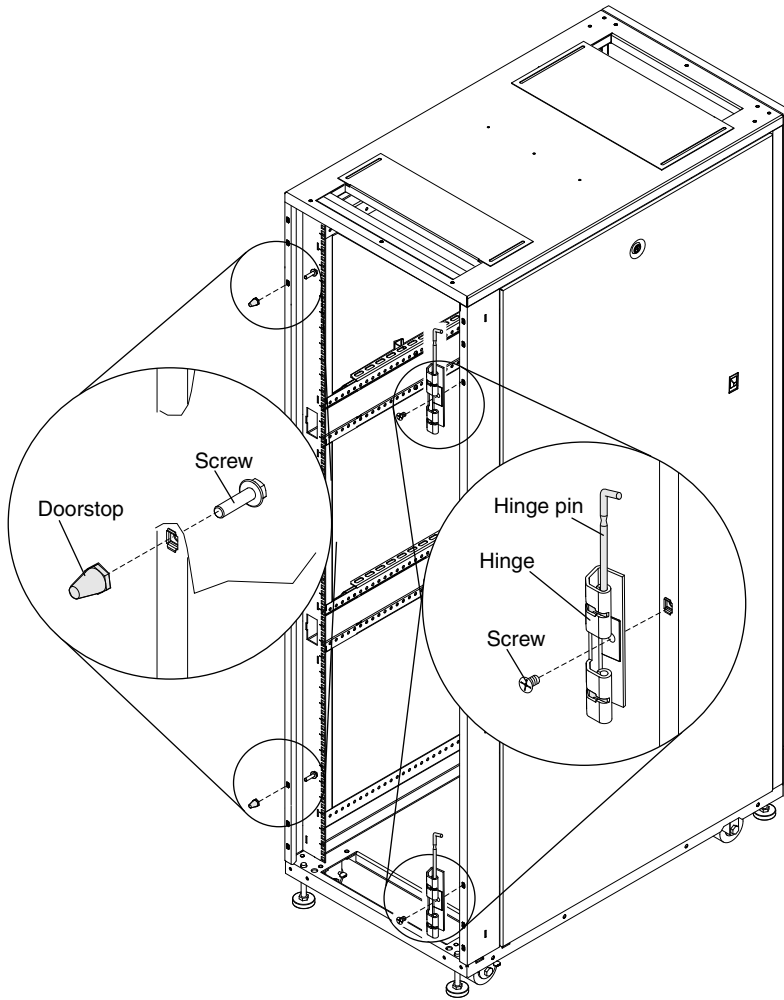


Figure 19. Installing the doorstop and door hinges

- Step 5. Install the top and bottom hinges on the right side of the rack cabinet:
- a. Orient the hinge to install it on the right side of the rack cabinet, as shown in the following illustration.

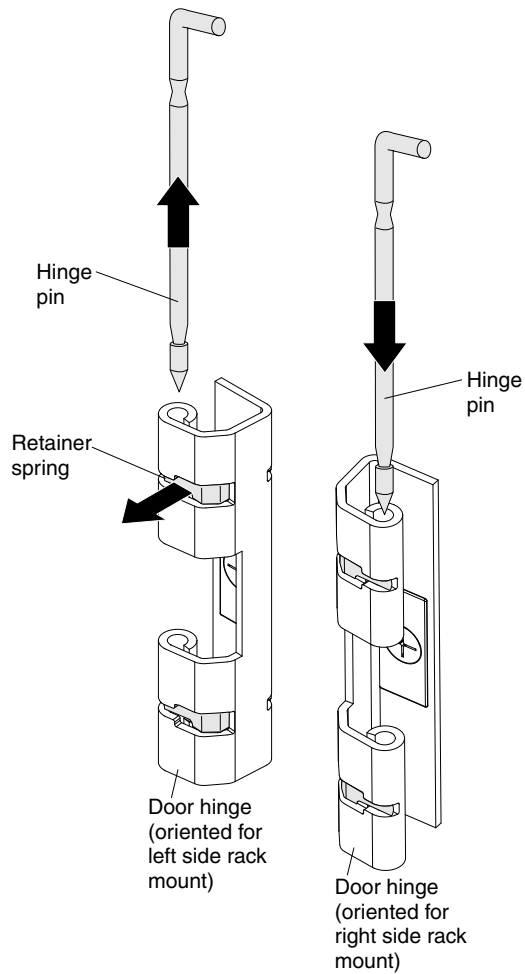


Figure 20. Removing and installing a door hinge pin

- b. Align the screw hole in the hinge with the screw hole on the right side of the rack cabinet. For the top hinge, use the empty screw hole from where you removed the doorstop.
- c. Attach the hinge to the rack flange with the screw.
- d. Partially insert the hinge pins in the hinges.

Step 6. Remove the front door latch from the left side of the rack cabinet and attach it to the right side of the rack cabinet.

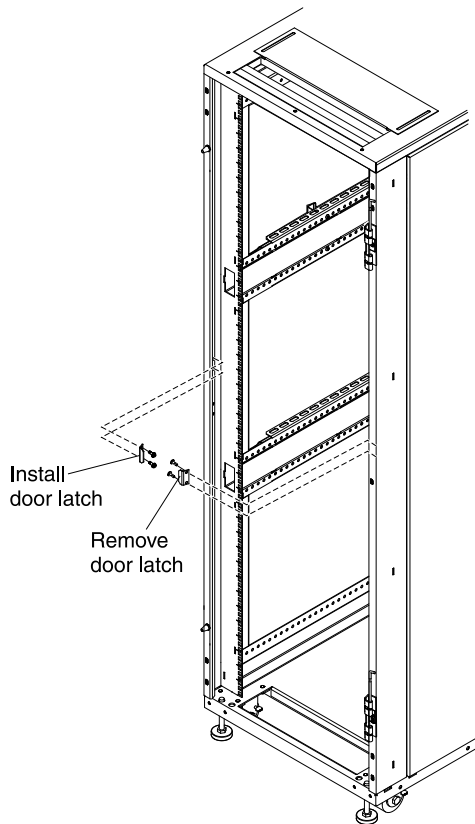


Figure 21. Moving the front door latch

- Step 7. Install the door on the right side:
- a. Carefully rotate the door 180°.

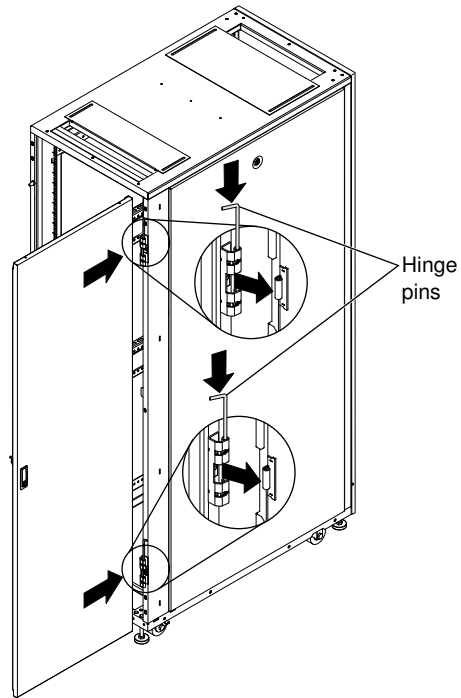


Figure 22. Rotating and installing the door

- b. Grasp the door firmly with both hands, align the door with both hinges, and slide the door into place.
- c. Holding the door with one hand, push the hinge pins down to the closed position.

Step 8. Remove the Lenovo logo from the bottom of the door; then, snap it into place near the top of the door.

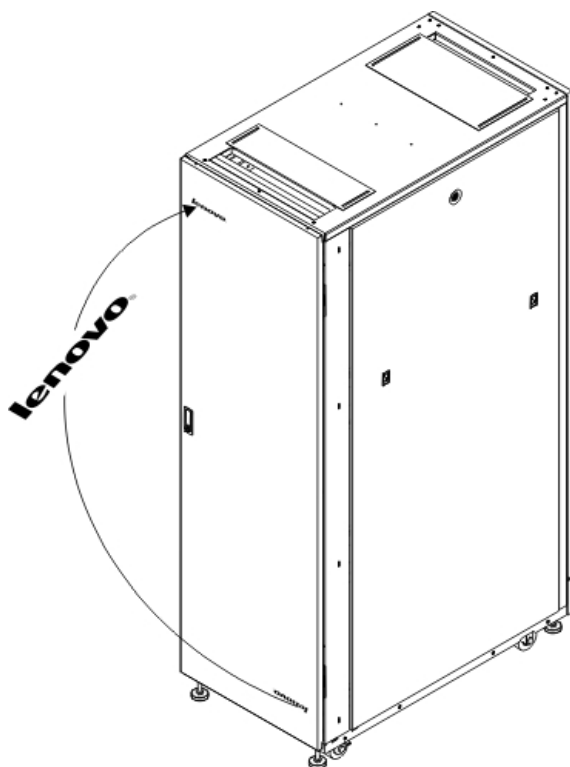


Figure 23. Moving the Lenovo logo

Attaching racks in a suite

Expansion racks come with all the hardware that is required for you to attach racks together and form a suite. A hex wrench and screws come with the expansion-rack hardware kit. You need one standard rack to form a suite. You have to remove the doors before you can attach the racks together.

Note: Before you attach an expansion rack to a standard rack or another expansion rack, you must remove the outriggers from the racks so that the racks fit together correctly.

To attach racks together in a suite, complete the following steps:

- Step 1. Remove the front and rear doors. For more information, see “Removing and installing a front door” on page 17.
- Step 2. On the side of the standard rack cabinet where you are attaching the expansion rack, remove the side cover. For more information, see “Removing and installing the side covers” on page 15.
- Step 3. Where the two racks come together at the top front, align the screw holes of an attachment bracket (which comes with the expansion rack cabinet) with the holes in the standard rack and expansion rack (see the following illustration). Secure the bracket to the racks with four screws. Do not fully tighten the screws. Repeat this step for the bottom front attachment bracket; then, tighten all of the bracket screws.

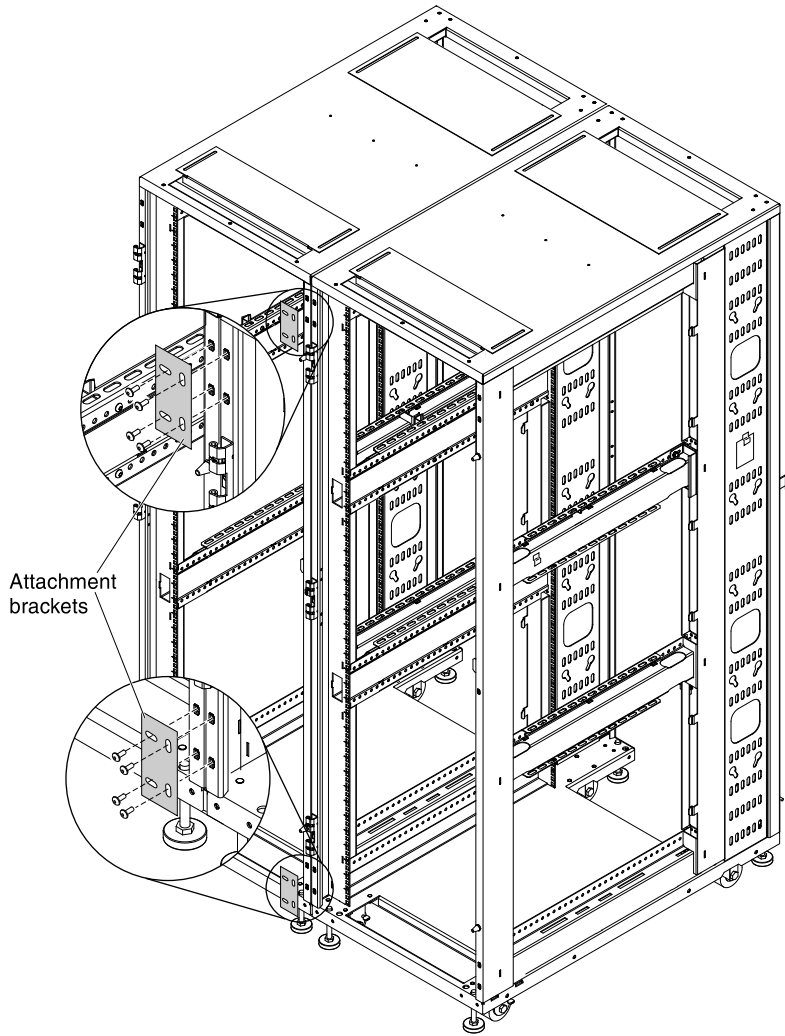


Figure 24. Attaching standard and expansion racks to each other to form a suite

- Step 4. Repeat step Step 3 on page 26 to attach the rear top and bottom attachment brackets.
- Step 5. 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 and expansion racks. Always read the documentation that comes with your server or optional device for detailed installation instructions.

Installation guidelines

Statement 1



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.**

Table for Safety Statement 1 that explains the steps to connect and disconnect cables.

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Rack Safety Information, 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 4



Three graphic illustrations for safety practices when lifting.

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 object on top of rack-mounted devices.



Installing devices on the rack-mounting flanges

For optional devices that require threaded holes for mounting, you must install either cage nuts or clip nuts. Use cage nuts in the square mounting holes provided in the rack-mounting flanges in the main horizontal 42U compartment. Use clip nuts in the round holes provided in the six 1U rear vertical-mounting compartments. For detailed information about the mounting requirements for a device, see the instructions that come with the device.

Note: The rack cabinet comes with a supply of cage nuts and clip nuts, and devices that require them come with the applicable cage nuts or clip nuts.

Installing threaded rails

Step 1. If a device has threaded holes or device rails that have threaded holes, you must install the device on the rail-mounting flanges on the inside of the rack-mounting flanges. For detailed information about how to use threaded rails, see the device documentation.

Installing cage nuts

Step 1. Install cage nuts in 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

To install a cage nut with the cage-nut-insertion tool, complete the following steps.

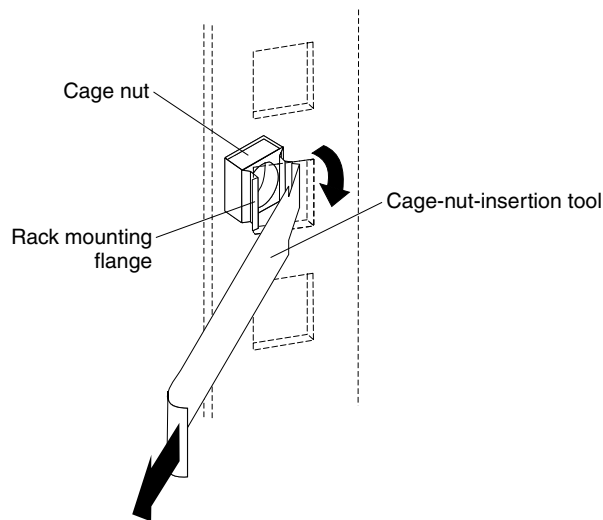


Figure 25. Installing cage nuts with the cage-nut-insertion tool

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

To install a cage nut with a flat-blade screwdriver, complete the following steps.

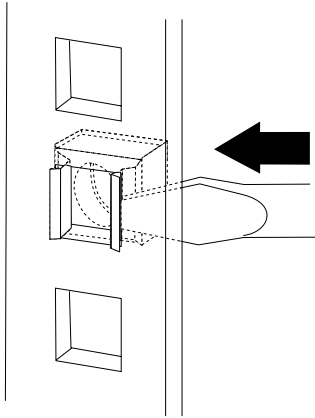


Figure 26. Installing cage nuts with a flat-blade screwdriver

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

Installing clip nuts

- Step 1. Install clip nuts by sliding them over the mounting holes in the rear vertical 1U mounting compartments as shown in the following illustration.

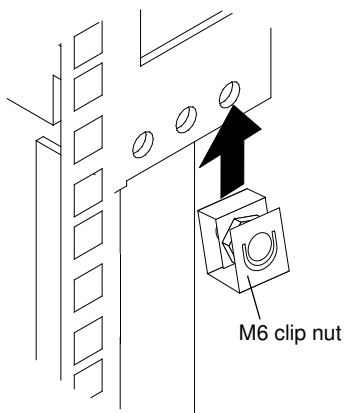


Figure 27. Installing clip nuts on the rack-mounting flanges

Installing devices vertically in the rack cabinet

You can use the space on the sides and in the rear of the rack cabinet to vertically mount power distribution units (PDUs) and console switches.

For more information about installing a device vertically in the rack cabinet, see the documentation that comes with your PDU or console switch.

Installing a 1U PDU or console switch vertically in the rack side area

The rack cabinet comes with space on the sides to vertically mount PDUs and console switches. Each rack has six locations, three on each side of the rack cabinet. To install a device in the side area, you must use flange nuts and the M6 button-head cap screws that come in the hardware kit.

To install a 1U PDU or console switch vertically in the rack side area, complete the following steps:

- Step 1. Attach the two mounting brackets to the sides of the PDU or console switch. For more information, see the documentation that comes with the device.
- Step 2. Align the holes in the mounting bracket with the holes in the rack flange.

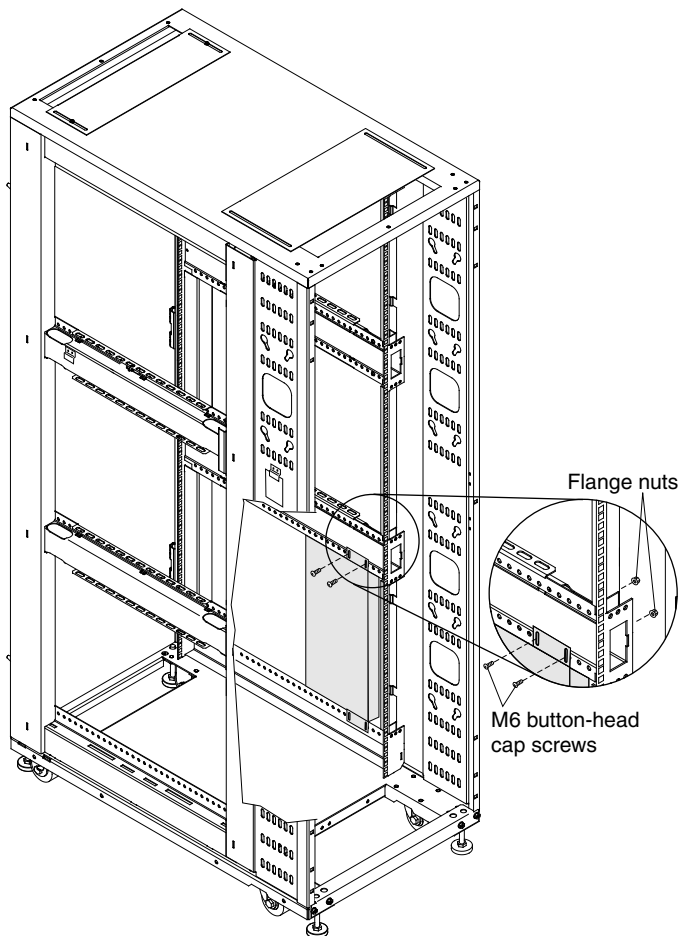


Figure 28. Installing a 1U PDU or console switch vertically in the rack side area

- Step 3. Secure the PDU or console switch to the rack with four flange nuts on the rack flange and four M6 button-head cap screws on the mounting bracket side.

Installing a 1U PDU or console switch vertically in a rack side pocket

The rack cabinet comes with rear vertical side pockets that you can use to vertically mount PDUs and console switches. Each rack has six locations, three on each side of the rack cabinet. The rear vertical side pockets have round holes in the rack-mounting flanges. You must install clip nuts in the holes before you install a device.

To install 1U PDU or console switch vertically in a rack side pocket, complete the following steps:

- Step 1. Attach the two mounting brackets to the sides of the PDU or console switch. For more information, see the documentation that comes with the device.
- Step 2. Install four clip nuts on the rack flanges as shown in the illustration.

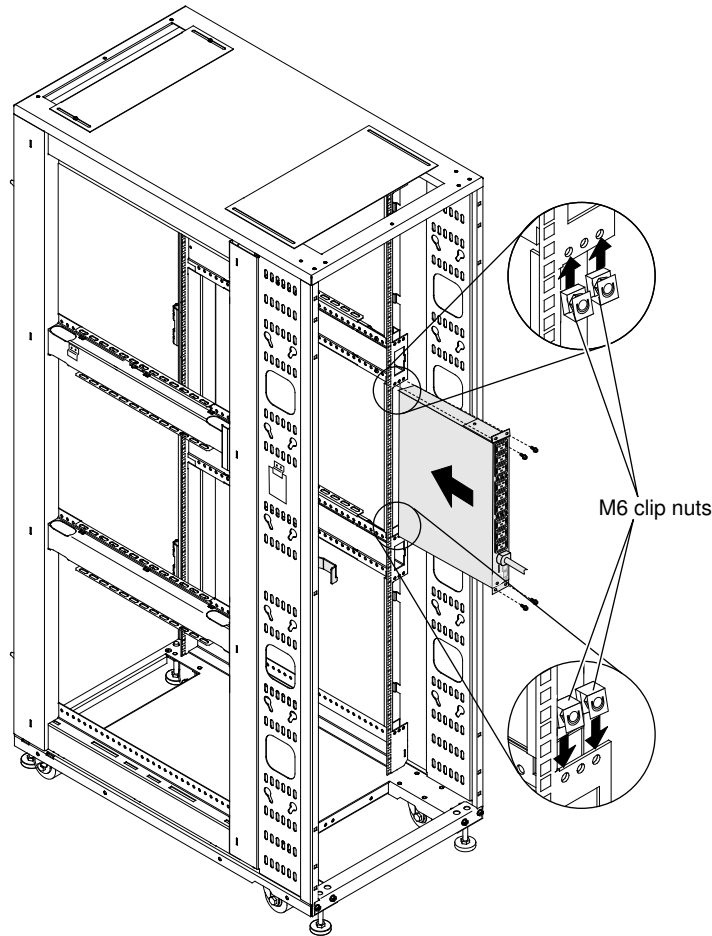


Figure 29. Installing a 1U PDU or console switch vertically in a rack side pocket

- Step 3. Carefully slide the PDU or console switch into the side pocket and secure the device with four M6 screws.

Installing a 0U PDU vertically in the rear of a rack cabinet

- Step 1. To install a 0U PDU vertically in the rear of a rack cabinet, orient the PDU vertically and insert the two pegs on the PDU into the keyhole slots in the side of the rack cabinet (see the following illustration). Push down to secure the PDU in position.

The following illustration shows one way to install a 0U PDU in the rear of the rack cabinet. You can install up to four 0U PDUs vertically in the rack cabinet, depending on your rack configuration.

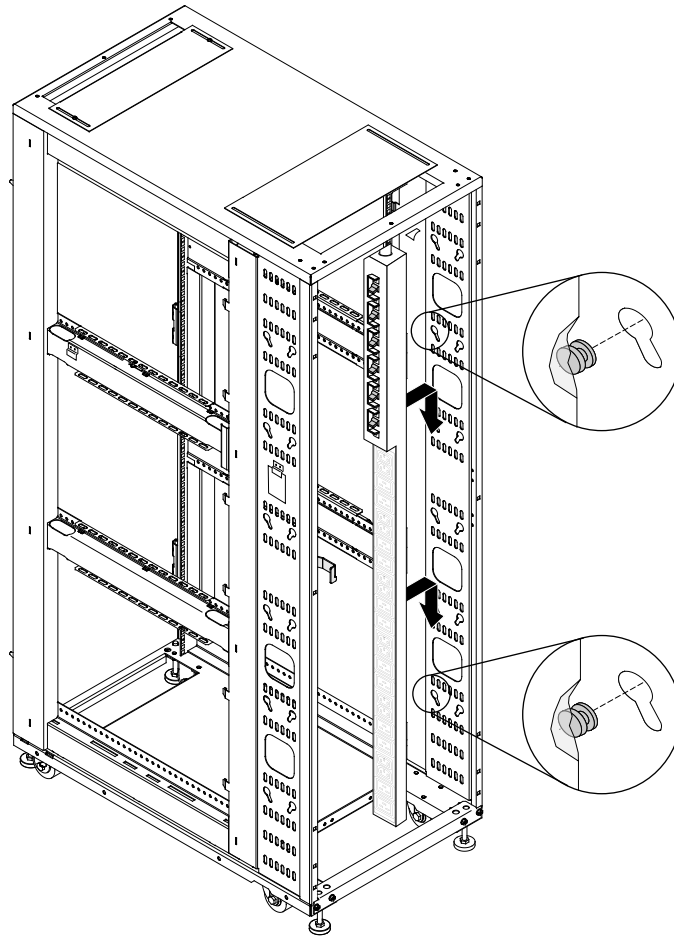


Figure 30. Installing a 0U PDU vertically in the rear of the rack cabinet

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 you cable servers or other devices that you install in a rack cabinet.

Statement 8



- **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 cables beyond the specified limits.
 - Label all cables so that they are clearly distinguishable from each other.
 - When you install devices that are 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 you can fully extend the device without straining the cables.
 - Secure the cables so that you can retract the device without pinching or cutting the cables.
 - When you install devices that are mounted on fixed rails, observe the following precautions:
 - Run the cables neatly along the posts or side rails in the rack cabinet 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 cabinet rear door or other devices.
 - Run internal cables that connect devices in adjoining racks through the large openings in the rear of the rack cabinet.
 - Run external cables through the bottom of the rack cabinet or through the cable-access opening in the top of the rack.

Front-to-rear cable channels

You can route cables from the front to the rear of the rack cabinet by using the cable channels on the sides of the rack. There are two cable channels on each side of the rack cabinet.

Before you use a cable channel, remove the cable channel cap. You can use a flat-blade screwdriver or a similar tool to pry the cap off the end of the channel. If a cable channel is not being used, keep the cap in place to prevent hot air recirculation from the rear of the rack to the front of the rack.

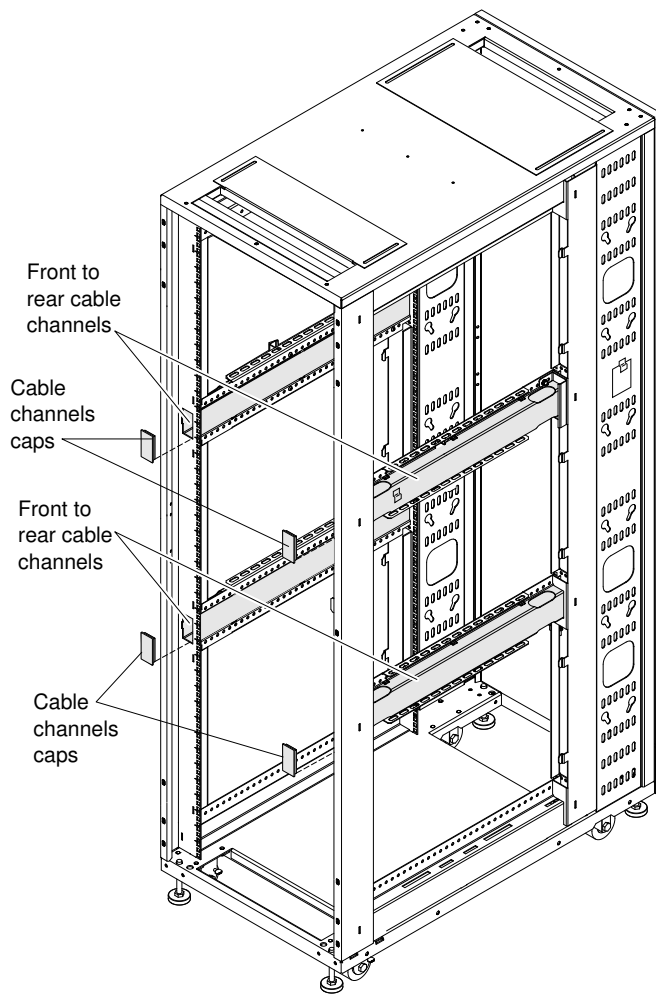


Figure 31. Removing the caps from the front-to-rear cable channels

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

The cable-access bar on the bottom rear of the rack cabinet keeps the external cables in place.

To route external cables through the opening in the bottom rear of the rack, complete the following steps:

Step 1. Remove the four screws that attach the cable-access bar to the rack cabinet, as shown in the following illustration.

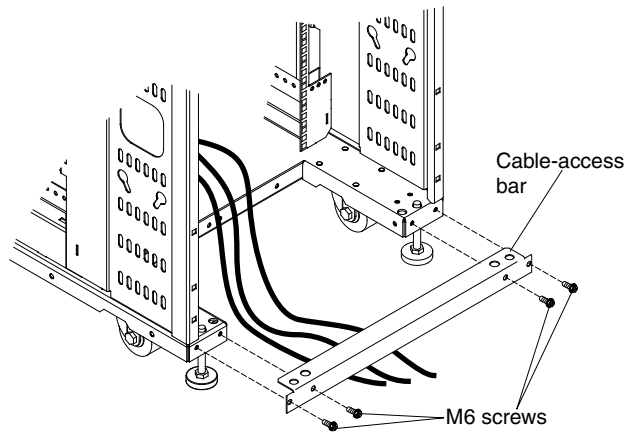


Figure 32. Routing cables using the cable-access bar

- Step 2. Route the cables through the opening.
- Step 3. Reattach the cable-access bar to the rack cabinet with the four screws that you removed in step Step 1 on page 38. Make sure that you do not pinch or cut any cables.

Using the cable-access openings in the top of the rack

- Step 1. Use the front and rear rectangular cable-access openings on the top of the rack cabinet to route external cables and to control the flow of air inside the rack.
- Step 2. To adjust a cable-access cover, use a Phillips or flat-blade screwdriver to loosen the two screws on the sides of the cover. Then, slide the cable-access cover to the position that you want, based on the requirements for your rack configuration.

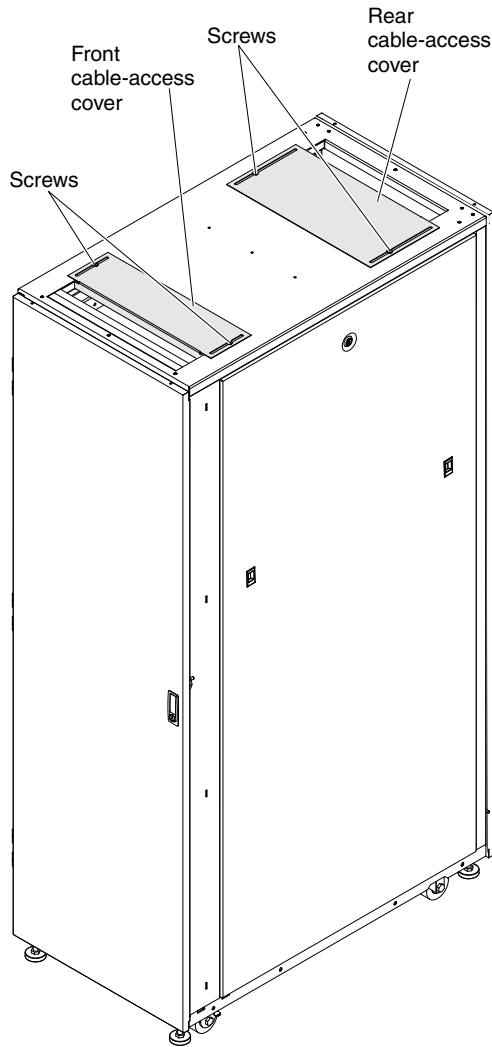


Figure 33. Location of the cable-access openings

Use the following guidelines to adjust the size of the cable-access openings:

Top front cable-access opening

Slide the cable-access cover as far forward as possible to close off the open area so no hot exhaust air can recirculate back through the rack and exhaust out of the top of the rack.

Note: The front opening is very close to the front of the rack and the air inlet to the servers in the rack.

Top rear cable-access opening

Slide the cover all the way open or closed, or in any intermediate position. Leaving the cover open provides extra exhaust area for components near the top and bottom of the rack; however, in some configurations, this shortens the hot air recirculation path from the rear to the front.

For information about adjusting the air flow in the rack if a Rear Door Heat eXchanger is installed on the rack cabinet, see the *Installation and Maintenance Guide* that comes with the heat exchanger.

Mounting an overhead cable tray

Step 1. The rack cabinet comes with pre-drilled holes in the top that you can use to attach an overhead cable tray (not provided by Lenovo) to the top of the rack suite.

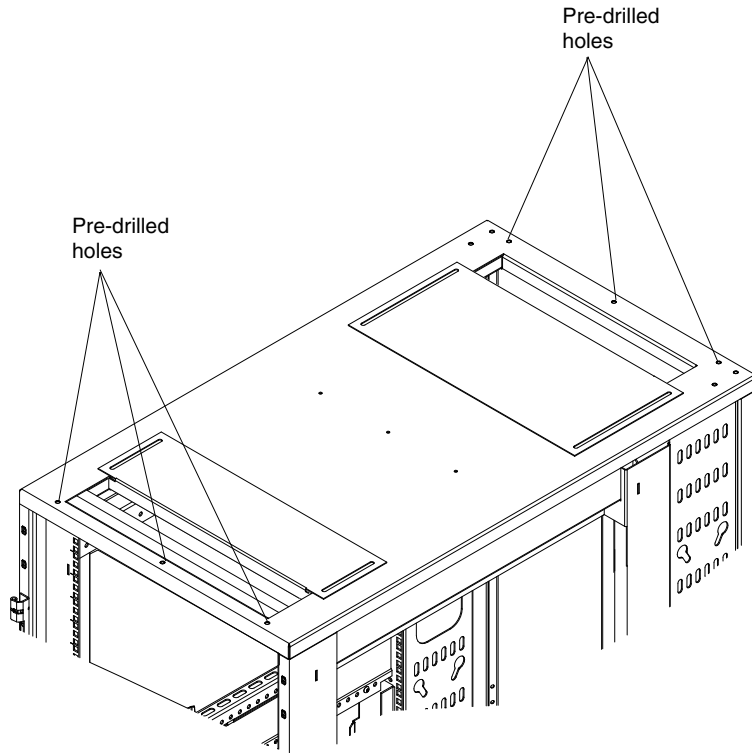


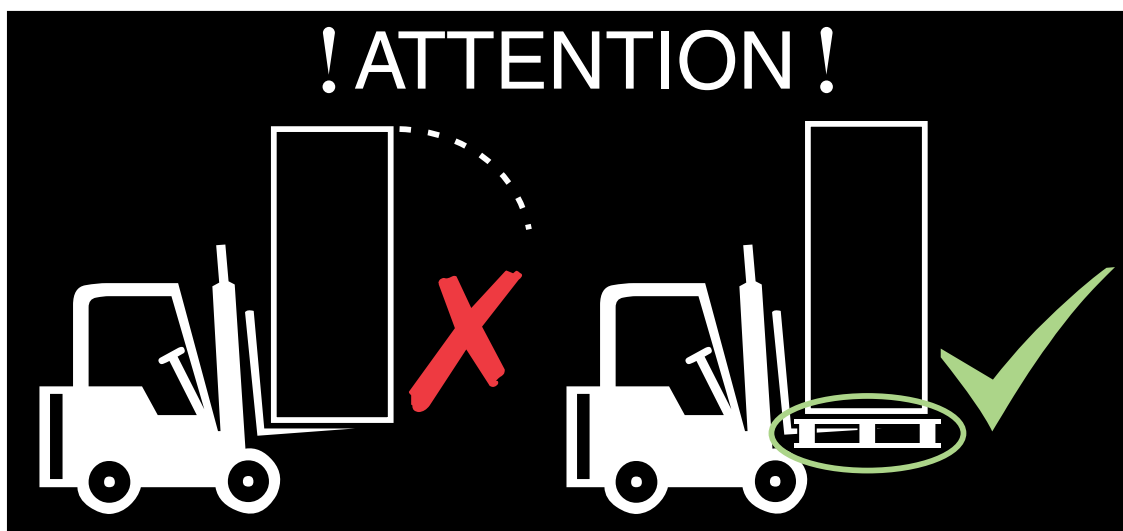
Figure 34. Pre-drilled holes in the top of the rack cabinet

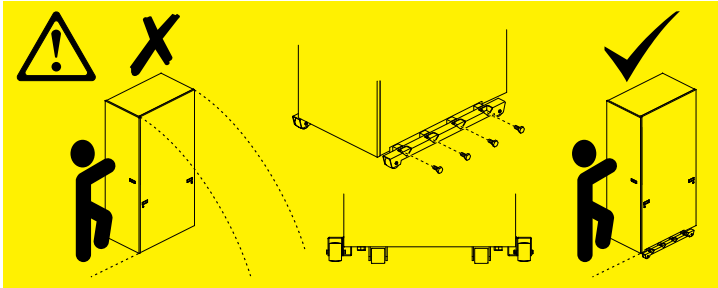
Chapter 5. Moving a rack cabinet

Before you move the rack cabinet to another location, read the important guidelines in this chapter.

When you move a rack cabinet, observe the following safety guidelines.

 <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 μετακινείται 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>機器を移動する際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>Použite pouze profesionální stěhováky</p> <p>Brug 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>		





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.

Make sure that a load of 75 kg (165 lb) or more is placed at the bottom of a configured rack that is not bolted to the floor.

To move the rack cabinet to another location, complete the following general steps:

- Step 1. Follow the safety guidelines in this chapter.
- Step 2. Know the weight of the rack cabinet. To help determine the weight of the rack, see “Size and weight specifications” on page 5. A general guideline is to assume a weight of 23 kg (50 lb) per rack U-space.
- Step 3. Use the following weight limit guidelines:
 - If the rack cabinet is empty, at least two people are required to move the rack.
 - If the rack cabinet weight is between 142 and 227 kg (between 313 and 500 lb), three or four people are required to move the rack.
 - If the rack cabinet weight is greater than 227 kg (500 lb), professional movers are required to move the rack.
- Step 4. Install the outriggers on both sides of the rack cabinet.



Always relocate the rack cabinet with the outriggers installed. Keep the outriggers and install them if you have to move the rack to another location in the future.

Use the 6 mm hex wrench that comes in the hardware kit to install the four bolts that attach each outrigger to the rack cabinet. Make sure that you tighten the bolts securely.

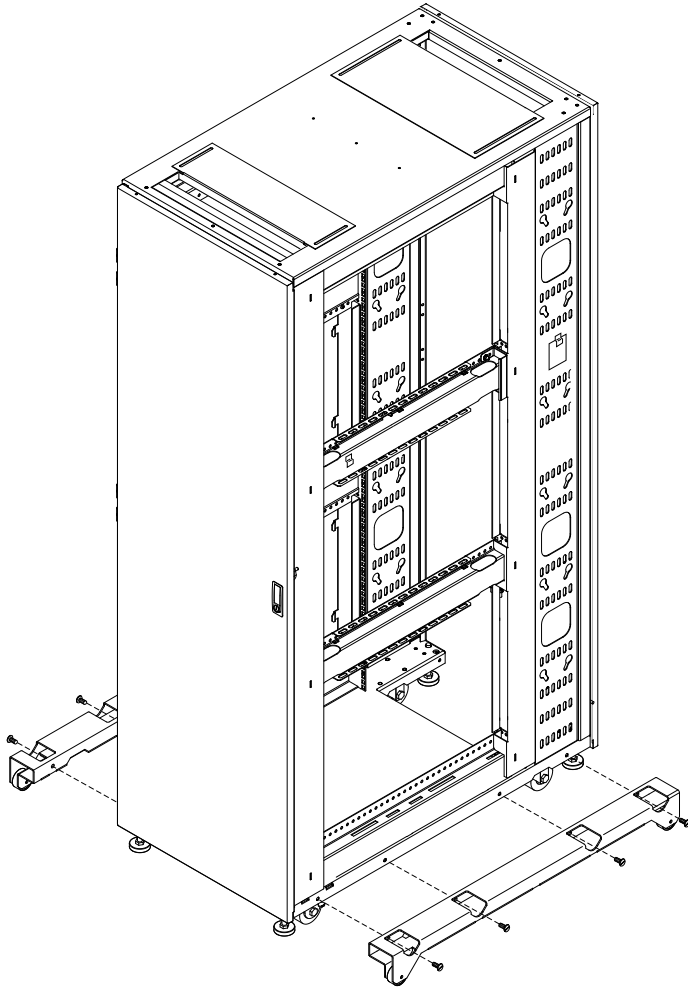


Figure 35. Installing the outriggers

Step 5. Carefully move the rack cabinet to the new location by using the safety guidelines in this chapter.

Chapter 6. Parts listing

The replaceable components that are available for the racks are described in this chapter.

For an updated parts listing, go to <http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp>.

Field replaceable units (FRUs) must be replaced only by a trained service technician, unless they are classified as customer replaceable units (CRUs).

Tier 1 CRU	Replacement of Tier 1 CRUs is your responsibility. If Lenovo installs a Tier 1 CRU at your request without a service contract, you will be charged for the installation.
Tier 2 CRU	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 product.
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” on page 51. For information about the terms of the warranty, go to <https://support.lenovo.com/documents/LNVO-DOCS>.

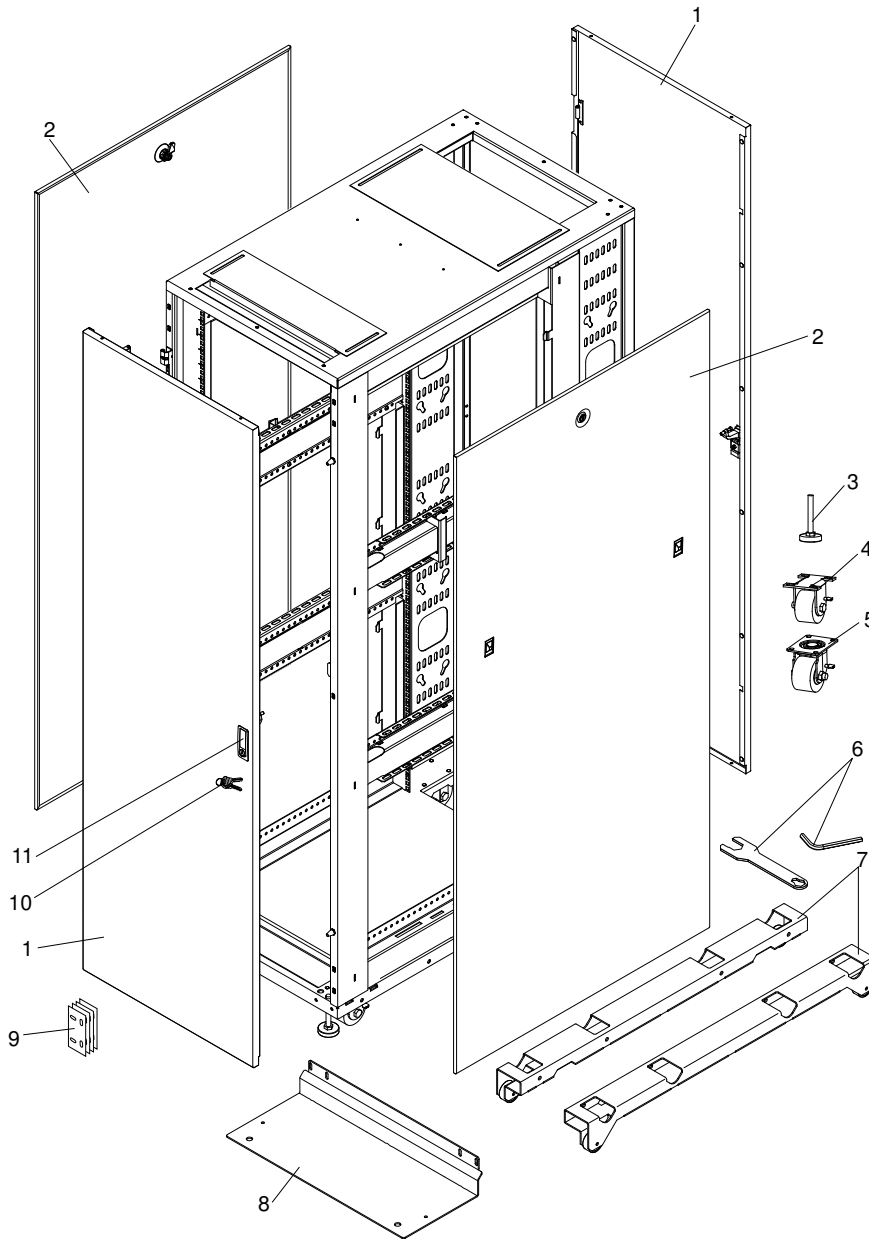


Figure 36. 42U rack and expansion rack parts

Table 3. Parts listing for 42U 1100 mm Enterprise V2 Dynamic Rack and 42U 1100 mm Enterprise V2 Dynamic Expansion Rack

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number (trained service technician only)
1	Front / rear door	90Y3056		
2	Side cover	90Y3065		
3	Adjustable foot			90Y3063
4	Fixed caster, front			90Y3061
5	Swivel caster, rear			90Y3062

Table 3. Parts listing for 42U 1100 mm Enterprise V2 Dynamic Rack and 42U 1100 mm Enterprise V2 Dynamic Expansion Rack (continued)

Index	Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number (trained service technician only)
6	Hardware and tool kit (includes tools, screws, washers, cage nuts, and fasteners)	90Y3064		
7	Outrigger (side stabilizer)		90Y3066	
8	Front stabilizer		90Y3059	
9	Baying kit	90Y3060		
10	Keys, door and side cover	90Y3058		
11	Latch, door	90Y3057		

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.

Use this information to obtain additional information about Lenovo and Lenovo products, and determine what to do if you experience a problem with your Lenovo system or optional device.

Note: This section includes references to IBM web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the System x, Flex System, and NeXtScale System products.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself.

If you believe that you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare before you call.

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- 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/serverproven/> to make sure that the hardware and software is supported by your product.
- Go to <http://www.lenovo.com/support> to check for information to help you solve the problem.
- Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.
 - Hardware and Software Maintenance agreement contract numbers, if applicable
 - Machine type number (Lenovo 4-digit machine identifier)
 - Model number
 - Serial number
 - Current system UEFI and firmware levels
 - Other pertinent information such as error messages and logs
- Go to http://www.ibm.com/support/entry/portal/Open_service_request to submit an Electronic Service Request. Submitting an Electronic Service Request will start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The Lenovo product documentation also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

Using the documentation

Information about your Lenovo system and preinstalled software, if any, or optional device is available in the product documentation. That documentation can include printed documents, online documents, readme files, and help files.

See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. Lenovo maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.lenovo.com/support>.

Getting help and information from the World Wide Web

Up-to-date information about Lenovo products and support is available on the World Wide Web.

On the World Wide Web, up-to-date information about Lenovo systems, optional devices, services, and support is available at <http://www.lenovo.com/support>. The most current version of the product documentation is available in the following product-specific Information Centers:

- **Flex System products:**
<http://pic.dhe.ibm.com/infocenter/flexsys/information/index.jsp>
- **System x products:**
<http://publib.boulder.ibm.com/infocenter/systemx/documentation/index.jsp>
- **NeXtScale System products:**
<http://pic.dhe.ibm.com/infocenter/nxtscale/documentation/index.jsp>

How to send DSA data

You can use the Enhanced Customer Data Repository to send diagnostic data to Lenovo.

Before you send diagnostic data to Lenovo, read the terms of use at <http://www.ibm.com/de/support/ecurep/terms.html>.

You can use any of the following methods to send diagnostic data:

- **Standard upload:** http://www.ibm.com/de/support/ecurep/send_http.html
- **Standard upload with the system serial number:** http://www.ecurep.ibm.com/app/upload_hw
- **Secure upload:** http://www.ibm.com/de/support/ecurep/send_http.html#secure
- **Secure upload with the system serial number:** https://www.ecurep.ibm.com/app/upload_hw

Creating a personalized support web page

You can create a personalized support web page by identifying Lenovo products that are of interest to you.

To create a personalized support web page, go to <http://www.ibm.com/support/mynotifications>. From this personalized page, you can subscribe to weekly email notifications about new technical documents, search for information and downloads, and access various administrative services.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with your Lenovo products.

For more information about Support Line and other IBM services, see <http://www.ibm.com/services> or see <http://www.ibm.com/planetwide> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Hardware service and support

IBM is Lenovo's preferred service provider for the System x, Flex System and NeXtScale System products.

You can receive hardware service through your Lenovo reseller or from IBM. To locate a reseller authorized by Lenovo to provide warranty service, go to <http://www.ibm.com/partnerworld> and click **Business Partner Locator**. For IBM support telephone numbers, see <http://www.ibm.com/planetwide>. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

Taiwan product service

Use this information to contact product service for Taiwan.

委製商/進口商名稱: 荷蘭商聯想股份有限公司台灣分公司
進口商地址: 台北市內湖區堤頂大道2段89號5樓
進口商電話: 0800-000-702 (代表號)

Appendix B. Notices

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Morrisville, NC 27560
U.S.A.
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Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

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Intel and Intel Xeon are trademarks of Intel Corporation in the United States, other countries, or both.

Internet Explorer, Microsoft, and Windows are trademarks of the Microsoft group of companies.

Linux is a registered trademark of Linus Torvalds.

Other company, product, or service names may be trademarks or service marks of others.

Important notes

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard-disk-drive bays with the largest currently supported drives that are available from Lenovo.

Maximum memory might require replacement of the standard memory with an optional memory module.

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write cycles that it can be subjected to, expressed as total bytes written (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. Lenovo is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

Lenovo makes no representations or warranties with respect to non-Lenovo products. Support (if any) for the non-Lenovo products is provided by the third party, not Lenovo.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Recycling information

Lenovo encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. For information on recycling Lenovo products, go to: <http://www.lenovo.com/recycling>.



US & Canada Only



US & Canada Only

Particulate contamination

Attention: Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the device that is described in this document.

Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the device to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If Lenovo determines that the levels of particulates or gases in your environment have caused damage to the device, Lenovo may condition provision of repair or replacement of devices or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 4. Limits for particulates and gases

Contaminant	Limits
Particulate	<ul style="list-style-type: none"> The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2¹. Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282. The deliquescent relative humidity of the particulate contamination must be more than 60%². The room must be free of conductive contamination such as zinc whiskers.
Gaseous	<ul style="list-style-type: none"> Copper: Class G1 as per ANSI/ISA 71.04-1985³ Silver: Corrosion rate of less than 300 Å in 30 days
<p>¹ ASHRAE 52.2-2008 - <i>Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size</i>. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.</p> <p>² The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.</p> <p>³ ANSI/ISA-71.04-1985. <i>Environmental conditions for process measurement and control systems: Airborne contaminants</i>. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.</p>	

Telecommunication regulatory statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact a Lenovo representative or reseller for any questions.

Electronic emission notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Lenovo is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that might cause undesired operation.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU on the approximation of the laws of the Member States relating to electromagnetic compatibility. Lenovo cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits for Class A equipment according to European Standards harmonized in the Directives in compliance. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Lenovo, Einsteinova 21, 851 01 Bratislava, Slovakia



Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Germany Class A statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU (früher 2004/108/EC) zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der Klasse A der Norm gemäß Richtlinie.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der Lenovo empfohlene Kabel angeschlossen werden. Lenovo übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der Lenovo verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der Lenovo gesteckt/eingebaut werden.

Deutschland:

Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Betriebsmitteln Dieses Produkt entspricht dem „Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln“ EMVG (früher „Gesetz über die elektromagnetische Verträglichkeit von Geräten“). Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU (früher 2004/108/EC) in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln, EMVG vom 20. Juli 2007 (früher Gesetz über die elektromagnetische Verträglichkeit von Geräten), bzw. der EMV EU Richtlinie 2014/30/EU (früher 2004/108/EC), für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die Lenovo (Deutschland) GmbH, Meitnerstr. 9, D-70563 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 4 Abs. (1) 4: **Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.**

Nach der EN 55022: „Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.“

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Japanese electromagnetic compatibility statements

Japan VCCI Class A statement

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波障害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 V C C I - A

Japanese Electrical Appliance and Material Safety Law statement (for detachable AC power cord)

本製品およびオプションに電源コード・セットが付属する場合は、それぞれ専用のものでありますので他の電気機器には使用しないでください。

JEITA harmonics guideline - Japanese Statement for AC power consumption (W)

定格入力電力表示
(社) 電子情報技術参照委員会 家電・汎用品高調波抑制対策ガイドライン
実行計画書に基づく定格入力電力値： W
お手持ちのユニットの定格入力電力値(W)はユニットの電源装置に貼付されている電源仕様ラベルをご参照下さい

JEITA harmonics guideline - Japanese Statement of Compliance for Products Less than or Equal to 20A per phase

JEITA 高調波電流抑制対策適合品表示 (JEITA harmonics statements- Japan)
定格電流が 20A/相以下の機器 (For products where input current is less than or equal to 20A per phase)

日本の定格電流が 20A/相 以下の機器に対する高調波電流規制高調波電流規格
JIS C 61000-3-2 適合品

JEITA harmonics guideline - Japanese Statement of Compliance for Products More than 20A

定格電流が 20A/相を超える機器 (For products where input current is less than 20A/Phase of one PSU, but total system power is over 20A/Phase)

本製品は、1相当たり20Aを超える機器ですが、個々のユニットが「高調波電流規格 JIS C 61000-3-2適合品」であり、
本製品はその組み合わせであるため、「高調波電流規格 JIS C 61000-3-2適合品」としてあります

Korea Communications Commission (KCC) statement

이 기기는 업무용(A급)으로 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

This is electromagnetic wave compatibility equipment for business (Type A). Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ!

Настоящее изделие относится к оборудованию класса А. При использовании в бытовой обстановке это оборудование может нарушать функционирование других технических средств в результате создаваемых промышленных радиопомех. В этом случае от пользователя может потребоваться принятие адекватных мер.

People's Republic of China Class A electronic emission statement

声 明

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Taiwan Class A compliance statement

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這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Taiwan BSMI RoHS declaration

單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁶⁺)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
機架	○	○	○	○	○	○
外部蓋板	○	○	○	○	○	○
機械組零件	-	○	○	○	○	○
空氣傳動設備	-	○	○	○	○	○
冷卻組零件	-	○	○	○	○	○
內存模塊	-	○	○	○	○	○
處理器模塊	-	○	○	○	○	○
鍵盤	-	○	○	○	○	○
調製解調器	-	○	○	○	○	○
監視器	-	○	○	○	○	○
滑鼠	-	○	○	○	○	○
電纜組零件	-	○	○	○	○	○
電源	-	○	○	○	○	○
儲備設備	-	○	○	○	○	○
電池匣組零件	-	○	○	○	○	○
電池	-	○	○	○	○	○
有mech的電路卡	-	○	○	○	○	○
無mech的電路卡	-	○	○	○	○	○
雷射器	-	○	○	○	○	○
<p>備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。 Note1 : “exceeding 0.1wt%” and “exceeding 0.01 wt%” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。 Note2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考3. “-” 係指該項限用物質為排除項目。 Note3 : The “-” indicates that the restricted substance corresponds to the exemption.</p>						

Index

0U PDU, installing in rear of rack 34
1U PDU
 installing in side of rack 33
 installing in side pocket of rack 33

A

assistance, getting 51
attaching racks in a suite 26
attention notices 1
Australia Class A statement 58

B

bolting rack to floor 8

C

cable channels, front-to-rear 37
cable tray, mounting 41
cable-access bar 38
cable-access covers
 adjusting 39
 removing 39
cable-access opening 39
cables, managing 37
cage nuts, installing 31
cage-nut-insertion tool 31
Canada Class A electronic emission statement 58
caps, removing from cable channel 37
caution statements 1
China Class A electronic emission statement 61
Class A electronic emission notice 58
clip nuts, installing 32–33
console switch
 installing in side of rack 33
 installing in side pocket of rack 33
contamination, particulate and gaseous 57
creating a personalized support web page 52
CRU part numbers 47
custom support web page 52
cutting holes in floor tiles 6

D

danger statements 1
documentation
 using 52
documentation updates, obtaining 1
door
 reversing front 19
door latch, removing 19
door, front
 installing and removing 17
door, rear

 installing and removing 18
doorstop
 installing 19
 removing 19
DSA, sending data 52

E

electronic emission Class A notice 58
European Union EMC Directive conformance statement 58

F

FCC Class A notice 58
floor layout, planning 6
floor tiles, cutting holes 6
front door
 installing and removing 17
front door, reversing 19
front stabilizer, installing 8
front-to-rear cable channels 37
FRU part numbers 47

G

gaseous contamination 57
Germany Class A statement 59

H

hardware service and support telephone numbers 53
help
 from the World Wide Web 52
 from World Wide Web 52
 sending diagnostic data 52
 sources of 51
hinge pins
 installing 19
 removing 19

I

important notices 1, 56
information center 52
installing
 cage nuts 31
 clip nuts 32–33
 devices vertically in rack 32
 devices with threaded rails 31
 doorstop 19
 front door 17
 front stabilizer 8
 hinge pins 19
 optional devices 29

- outriggers 6, 43
- rear door 18
- recirculation prevention plate 8
- side covers 15

installing rack, tasks overview 1

J

Japanese electromagnetic compatibility statements 60

K

Korea Class A electronic emission statement 60

L

leveling pads
how to lower 8

M

managing cables 37
moving a rack 43

N

New Zealand Class A statement 58
notes 1
notes, important 56
notices 55

- electronic emission 58
- FCC, Class A 58

notices and statements 1

O

optional devices, installing 29
outriggers, removing and installing 6, 43
overhead cable tray, mounting 41

P

particulate contamination 57
parts listing 47
People's Republic of China Class A electronic emission statement 61
planning floor layout 6
product service, Taiwan 53

R

rack

- bolting to floor 8
- moving 43
- size and weight specifications 5

rack, installing tasks overview 1

rear door, installing and removing 18
recirculation prevention plate, installing 8
removing

- door latch 19
- doorstop 19
- front door 17
- hinge pins 19
- outriggers 6
- rear door 18
- side covers 15

reversing front door 19
Russia Class A electronic emission statement 61

S

safety iii
Safety Information 1
safety statements iii-iv
sending diagnostic data 52
service and support

- before you call 51
- hardware 53
- software 53

side covers, installing and removing 15
size and weight specifications of rack 5
software service and support telephone numbers 53
statements and notices 1
suite of racks, attaching 26
support web page, custom 52

T

Taiwan BSMI RoHS declaration 62
Taiwan Class A electronic emission statement 61
Taiwan product service 53
telecommunication regulatory statement 57
telephone numbers 53
threaded rails, installing devices with 31
trademarks 56

U

United States FCC Class A notice 58

W

weight and size specifications of rack 5

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