



Lenovo RackSwitch G7000 Redundant Power Supply Installation Guide



Note: Before using this information and the product it supports, read the general information in Notices and Getting help and technical assistance, and see the *Warranty Information* document that comes with your power supply option.

Second Edition (October 2017)

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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 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.

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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་རྒྱུ་འདི་བདེ་སྤྱོད་མ་བྱས་གོང་། རྒྱུ་ལྷན་གྱི་ཡིད་གཟབ་
བྱ་འདྲ་མིན་ཡིད་པའི་འོད་ལྗེས་བཟང་དགོས།

Bu ürünü kurmadan önce güvenlik bilgilerini okuyun.

مەزكۇر مەھسۇلاتنى ئورنىتىشتىن بۇرۇن بىخەتەرلىك ئۇچۇرلىرىنى ئوقۇپ چىقىڭ.

Youq mwngz yungh canjbinj neix gaxgonq, itdingh aeu doeg aen
canjbinj soengq cungj vahgangj ancien siusik.

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 *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 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



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 13



 **DANGER**

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 14



CAUTION:

Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the following label is attached.



Important:

- The power supply does not contain any serviceable parts.
- Make sure that the power receptacle is near the equipment and is easily accessible so that the power supply can be disconnected quickly.

This product is also designed for IT power distribution systems with phase-to-phase voltage of 230V.

Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 70 dB (A) oder weniger.

Chapter 1. Introduction

The Lenovo RackSwitch G7000 Redundant Power Supply (RPS) is a 1U redundant power supply. Up to four RackSwitches can be connected to a single dedicated power source.

Note: The power supply comes with an attached power cord.

For a list of replaceable components pertaining to the redundant power supply, such as rack-mounting kits and power cords, see the Lenovo Networking Catalog.

The Lenovo Documentation CD

The Lenovo *Documentation* CD includes the product *Safety Information* document, the *License Agreement for Machine Code (LAMC)* document, and the *Environmental Notices and User Guide* document.

To access these documents:

- If you are using a Windows operating system, insert the CD into the CD or DVD drive and from My Computer, double click the CD or DVD drive and select the installation guide that supports your product.
- If you are using a Linux operating system, insert the CD into the CD or DVD drive and run the following command from the `mnt/cd` directory, `sh.linux.sh`. Double click on the Installation Guides directory and select the installation guide that supports your product.

Hardware and software requirements

The Lenovo *Documentation* CD requires the following minimum hardware and software:

- Microsoft Windows XP, Windows 2000, or Red Hat Linux
- 100 MHz microprocessor
- 32 MB of RAM
- Adobe Acrobat Reader 3.0 (or later) or xpdf, which comes with Linux operating systems

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Safety Information* document, which is on the Lenovo *Documentation* CD. 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.

Redundant power supply features

The redundant power supply has the following features:

- 1U rack-mountable DC power supply, with attached power cord
- Mounting kit
- AC power cable connector (AC power cord purchased separately)
- Four independent 12V DC/78W output ports
- Seamless redundant power if the RackSwitch internal power supply unit fails

Major components

This section describes the redundant power supply hardware components.

The G7000 redundant power supply is a 1U rack-mountable DC power supply that supports up to four RackSwitches.

The following illustrations show the front panel and rear panel of the power supply.

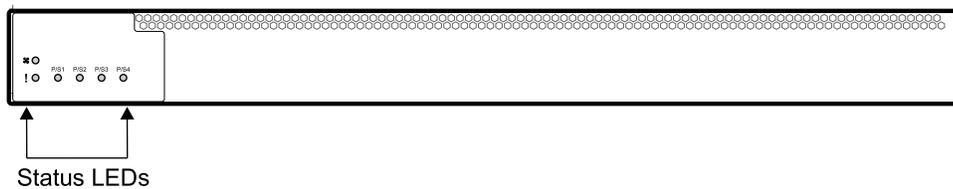


Figure 1. G7000 Front view

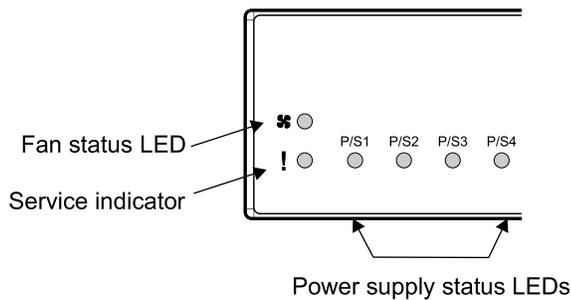


Figure 2. G7000 front panel detail

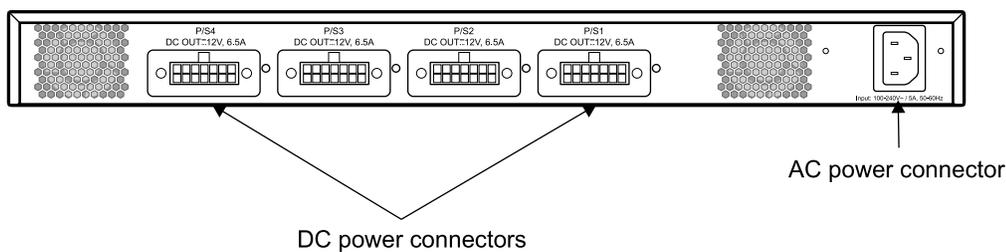


Figure 3. G7000 rear view

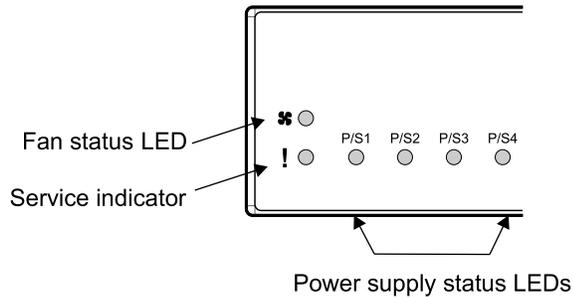
Hardware options

The following list provides an overview of the redundant power supply hardware.

- Redundant power supply
- Mounting hardware

Status LEDs

The following illustration shows the power supply status LEDs.



The redundant power supply LEDs are described in the following table.

Table 1. Redundant power supply status LEDs

Symbol	Description
	Fan status
!	Service LED
○	Power supply status

The following table describes the system LEDs.

Table 2. Redundant power supply LED descriptions

Function	Service required	Power supply (n)†	Fan
Total Power Failure	Off	Off	Off
Service Required	Flash blue	Flash green (Note 1)	Flash green (Note 2)
Power supply (n*) OK but disabled or not connected	Off	Off	Not applicable
Power supply (n*) OK and enabled	Off	Steady green	Not applicable
Power supply (n*) Failure	Flash blue	Flash green	Not applicable
Fans OK	Not applicable	Not applicable	Steady green

Table 2. Redundant power supply LED descriptions (continued)

Function	Service required	Power supply (n)†	Fan
Fan Failure	Flash blue	Not applicable	Flash green
<p>†- There are four power supply port LEDs (n = 1,2,3,4, respectively) on the front panel, and four LEDs on the rear panel next to each DC output connector.</p> <p>Note 1: If service required is due to a power supply failure, this LED flashes. Otherwise, it is steady green.</p> <p>Note 2: If service required is due to fan failure, this LED flashes. Otherwise, it is steady green.</p>			

Connections

The power supply supports up to four RackSwitches using DC cable connections. The power cord attaches to a universal grounded AC power source.

Technical specifications

The redundant power supply technical specifications are described in the following sections.

Physical characteristics

The physical characteristics of the redundant power supply are listed in the following table.

Table 3. Physical characteristics

Specification	Physical characteristics
Dimensions (H x W x D)	43.7 x 444 x 382 mm (1.72 x 17.3 x 15.0 in.)
Weight	5.37 kg. (11.84 lb)

Environmental specifications

The environmental specifications for the redundant power supply are listed in the following table.

Table 4. Environmental specifications

Specification	Measurement
Temperature, ambient operating	0° C to +50° C (32° F to 122° F)
Temperature, storage	-40° C to +75° C (-40° F to 167° F)
Relative humidity (non-condensing), operating	10 to 90%
Relative humidity (non-condensing), storage	10 to 90%
Altitude, operating	- 60 m to 2,000 m (6,561 feet)
Altitude, storage	12,190 m (39,993 feet)
Acoustic noise	Less than 65 dB
Heat dissipation	1239 BTU/hour

Power specifications

The power specifications for the redundant power supply are listed in the following table.

Table 5. AC power specifications

Specification	Measurement
Number of power supplies	2
AC-input frequency (universal)	50 - 60 Hz
AC-input voltage (universal)	100 - 240 VAC
AC inrush current	102.4 A (RMS) @ 120 VAC/60 Hz 145 A (RMS) @ 230 VAC/50 Hz
AC-input current (maximum)	3.438 A (RMS) @ 120 VAC/60 Hz 1.760 A (RMS) @ 230 V/50 Hz
Power delivery	78 W/12V DC output. Four independent 12 V DC outputs ports per device.
Power supply rated output power	180 W each
System power dissipation (typical)	245 VA
System power dissipation (maximum)	413 VA

Chapter 2. Installing and removing the redundant power supply

This chapter describes how to install and remove the redundant power supply in the following racks:

- Installing and removing the redundant power supply in a standard equipment rack
- Installing and removing the redundant power supply in a Lenovo System x or IBM Power rack

Before installing the redundant power supply

Locate and record the important product information about the G7000 unit in the following table. The identification label (bottom of unit) contains the product name, serial number, and part number for the G7000 unit. The following illustration is an example of the serial number label. It may differ slightly from the G7000 identification labels.



After installed most of the identification labels are hidden from view and require removing the unit in order to relocate them.

Attention: This product information is required to register your product, place a service call, and replace the unit.

After the redundant power supply is installed most of the labels are hidden from view and require removing the unit in order to relocate them.

Record this information below and print this page and keep it in a safe place for future reference. You will need this information when you register the redundant power supply or open a service call. You can register the redundant power supply at <http://www.ibm.com/support/mysupport/>.

Product name	Lenovo RackSwitch G7000 Redundant Power Supply
Serial number	_____
Part number	_____

Required tools

You need the following tools or equipment to install the redundant power supply:

- Standard flat-blade screwdriver
- #2 Phillips screwdriver
- Electrostatic discharge wrist strap

Package contents

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

The following parts ship with the redundant power supply:

- 1U redundant power supply unit
- Two DC power cords
- One standard rack-mount kit that includes:
 - Two brackets
 - Screws to attach brackets to the redundant power supply
 - Screws to attach the redundant power supply to the equipment rack
 - One power cord retention kit
- One *Documentation CD*, which contains the *Safety Information* document, the *Safety labels*, and the *Environmental Notices and User Guide* document.
- One *Warranty Information* document
- One *Important Notices* document

Environmental requirements

This section describes the basic environmental requirements for the redundant power supply. Make sure the location where you install the redundant power supply meets the following requirements:

- Install the redundant power supply in a dry, clean, well-ventilated area.
- Provide adequate space in the front and back of the redundant power supply, to ensure proper air flow.
- Make sure that an adequate grounded power supply is within reach of the redundant power supply.
- Make sure that twisted-pair cable is routed away from power lines, fluorescent lighting fixtures and other sources of electrical interference.

Preventing electric shock

This product does not contain any user-serviceable parts. Do not remove the cover of this device.





When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the provided power cord. Do not use the provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- 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 procedures when installing, moving, or opening covers on this product or attached devices. To disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices.

To connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

Handling static-sensitive devices

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

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

- Limit your movement. Movement can cause static electricity to build up around you.
- The use of a grounding system is recommended. For example, wear an electrostatic-discharge wrist strap, if one is available.

- Handle the device carefully, holding it by its edges or its frame.
- Do not touch solder joints, pins, or exposed printed circuitry.
- Do not leave the device where others can handle and damage it.
- While the device is still in its static-protective package, touch it to an unpainted metal part of any unpainted metal surface on a grounded rack component in the rack in which you are installing the device, for at least 2 seconds. This drains static electricity from the package and from your body.
- Remove the device from its package and install it directly into the redundant power supply without setting it down. If it is necessary to set down the device, put it back into its static-protective package. Do not place the device on a redundant power supply cover or on a metal surface.
- Take additional care when you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Installing and removing the redundant power supply in a standard equipment rack

This section describes how to install and remove the redundant power supply in a standard 19-inch equipment rack. For information about mounting the redundant power supply in Lenovo System x racks, see *Installing and removing the redundant power supply in a Lenovo System x or IBM Power rack*.

The following parts come in the standard mounting kit.

Table 6. Standard rack mounting kit parts

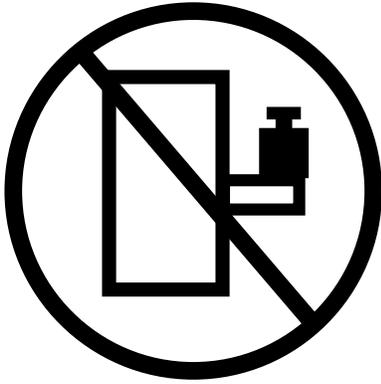
Item number	Description	Quantity
1	M6 locking washers	4
2	M6 screws	4
3	M6 clip nuts	4
4	M6 cage nuts	4
5	M4 screws	8
6	Mounting bracket	2

Attention: The rack-mounting frame may not be able to support the weight of the power supply with only the front post mounting brackets (2-post application). If the power supply has an undesirable amount of sag, it is recommended to use a 4-post mounting kit.



Rack-mounted devices are not to be used as shelves or work spaces.

(L002)

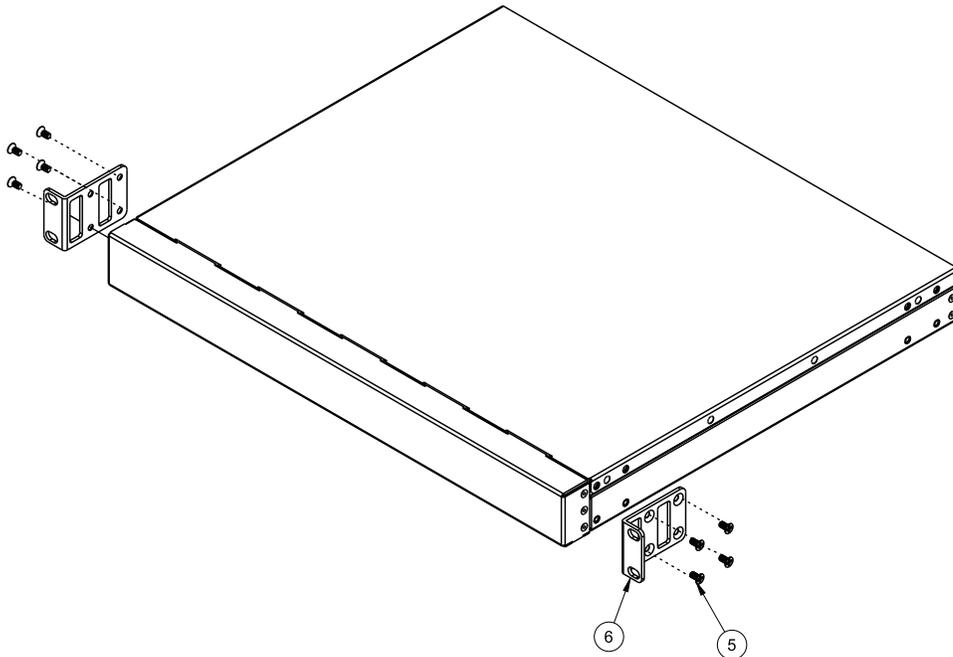


Attention: For earthquake stability, mount the switch in a 4-post rack.

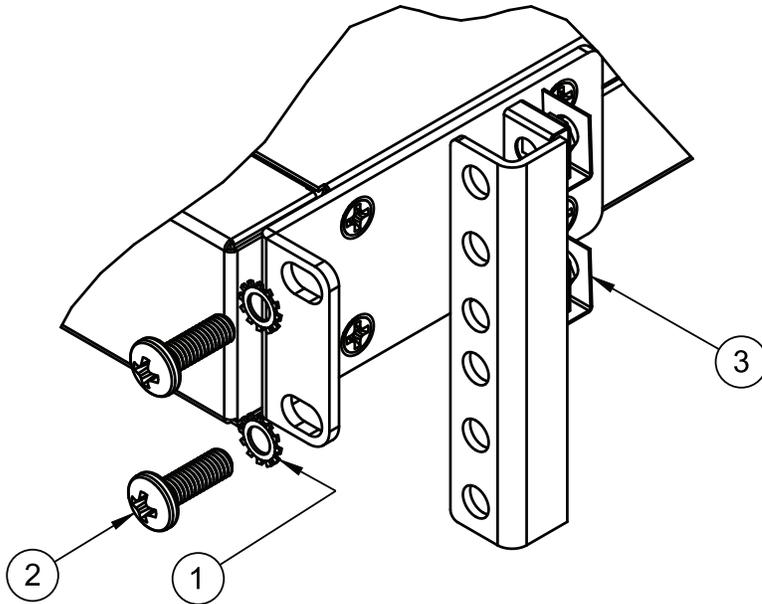
Installing the redundant power supply

To install the G7000 redundant power supply in a standard equipment rack, complete the following steps:

- Step 1. Locate and record the product information to register your product and set aside. See Before installing the redundant power supply.
- Step 2. Remove the cover screws from the switch.
- Step 3. Use the M4 screws to attach a mounting bracket to each side of the unit. Torque the screws to approximately 1.13 newton-meters (Nm) (10 inch-pounds).



- Step 4. Slide the redundant power supply into the rack.
- Step 5. Use the M6 screws, washers, and clip nuts (or cage nuts) to secure the unit to the rack. Torque the screws to approximately 3.5 Nm (30 inch-pounds).



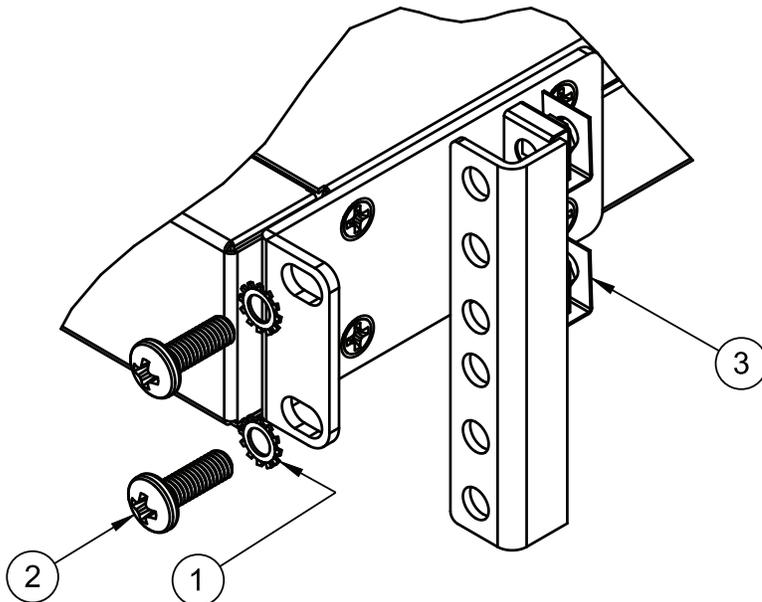
Step 6. Connect all power cables.

Removing the redundant power supply from a standard equipment rack

To remove the redundant power supply from a standard equipment rack, complete the following steps:

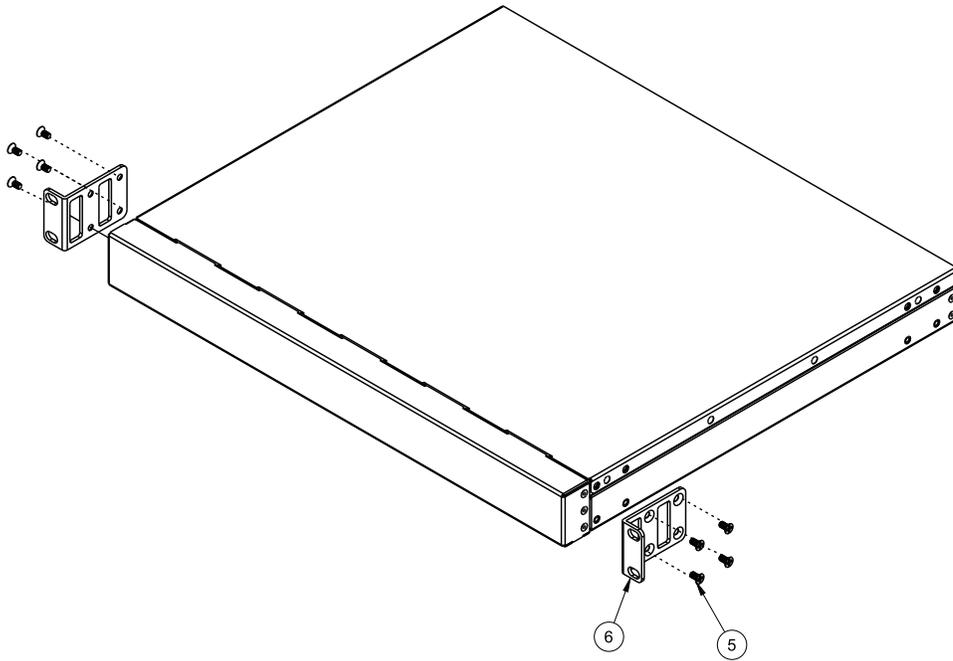
Step 1. Disconnect all external cables.

Step 2. Loosen and remove M6 screws, washers, and clip nuts (or cage nuts) to remove the redundant power supply from the rack.



Step 3. Slide the redundant power supply out of the rack.

Step 4. Loosen and remove the M4 screws attaching the mounting bracket on each side of the redundant power supply.



Installing and removing the redundant power supply in a Lenovo System x or IBM Power rack

This section describes how to install and remove the redundant power supply in a Lenovo System x 4-post rack. For information about mounting the redundant power supply in other rack types, see *Installing and removing the redundant power supply in a standard equipment rack*.

The System x mounting kit must be purchased separately.

The following table lists the parts included in the System x 4-post mounting kit.

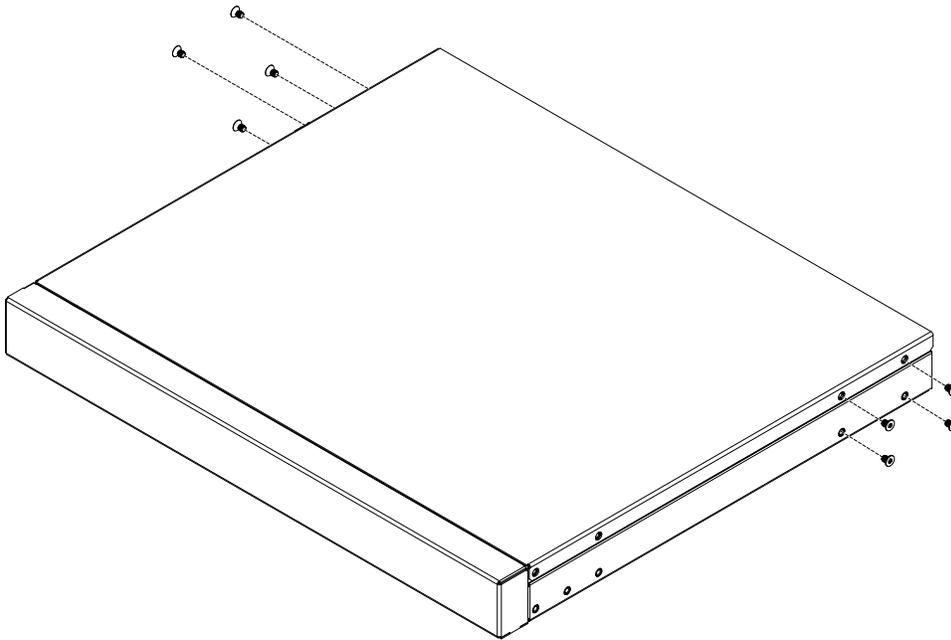
Table 7. System x rack mount kit parts

Item number	Description	Quantity
1	Label	1
2	M6 locking washers	8
3	M3 screws	4
4	M6 screws	8
5	M6 clip nuts	8
6	M6 cage nuts	8
7	M4 screws	16
8	Filler plate	1
9	redundant power supply front bracket	2
10	Rear mounting bracket	1
11	Rear mounting bracket with cord exit	1

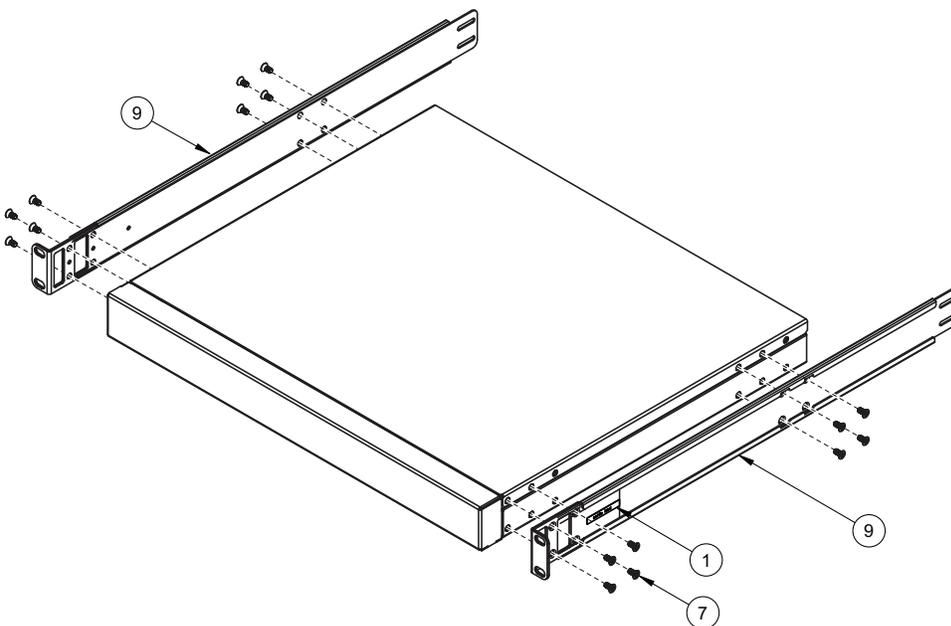
Installing the redundant power supply

To install the redundant power supply in a Lenovo System x or IBM Power rack, complete the following steps:

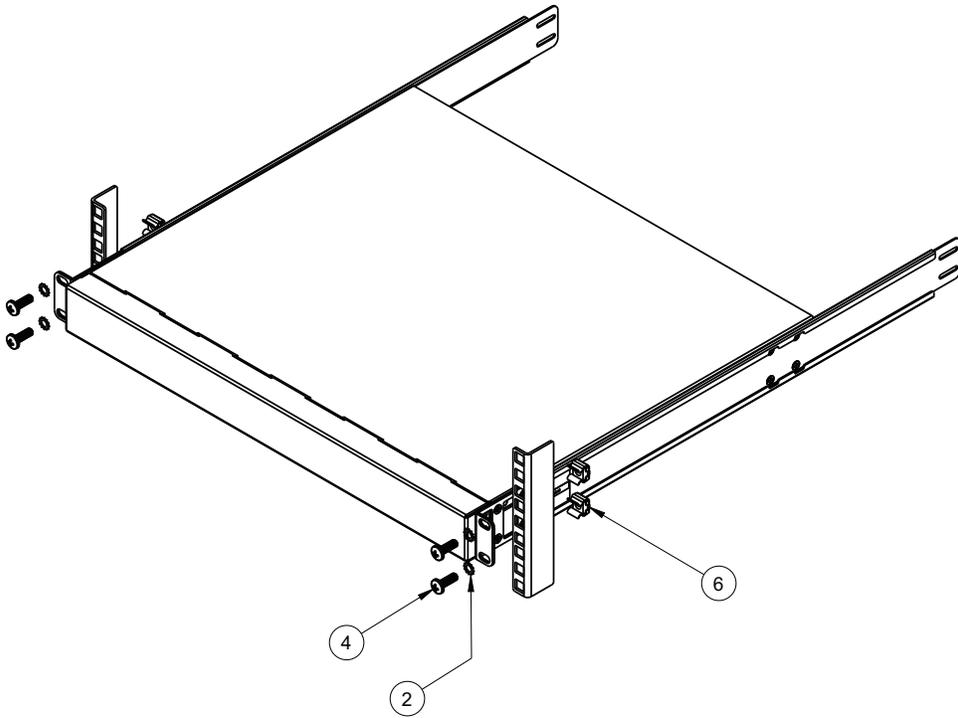
1. Locate and record the product information to configure and register your product and set aside. See Before installing the redundant power supply.
2. Remove the rear cover screws.



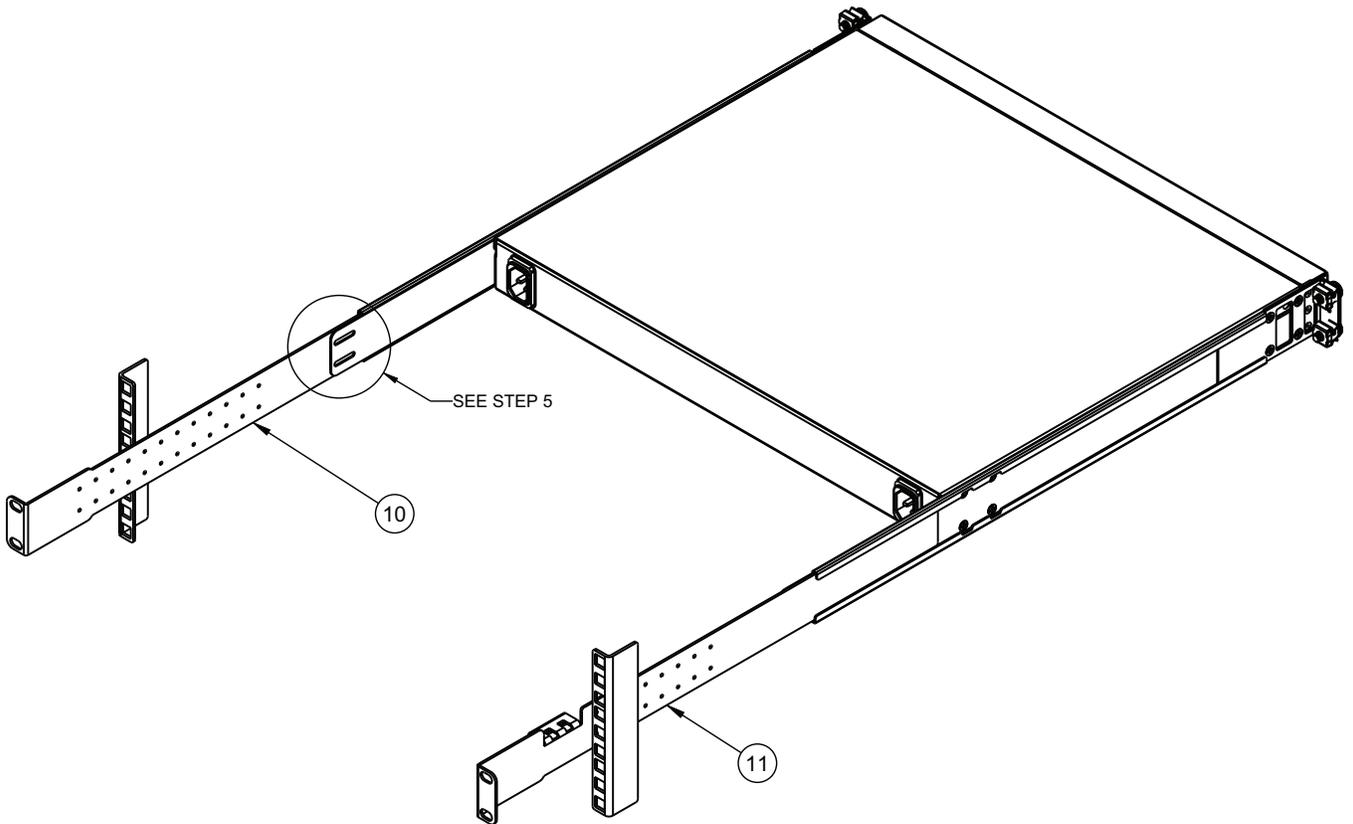
3. Use the M4 screws to attach the front mounting brackets to each side of the redundant power supply. Torque the screws to approximately 1.13 Nm (10 inch-pounds).



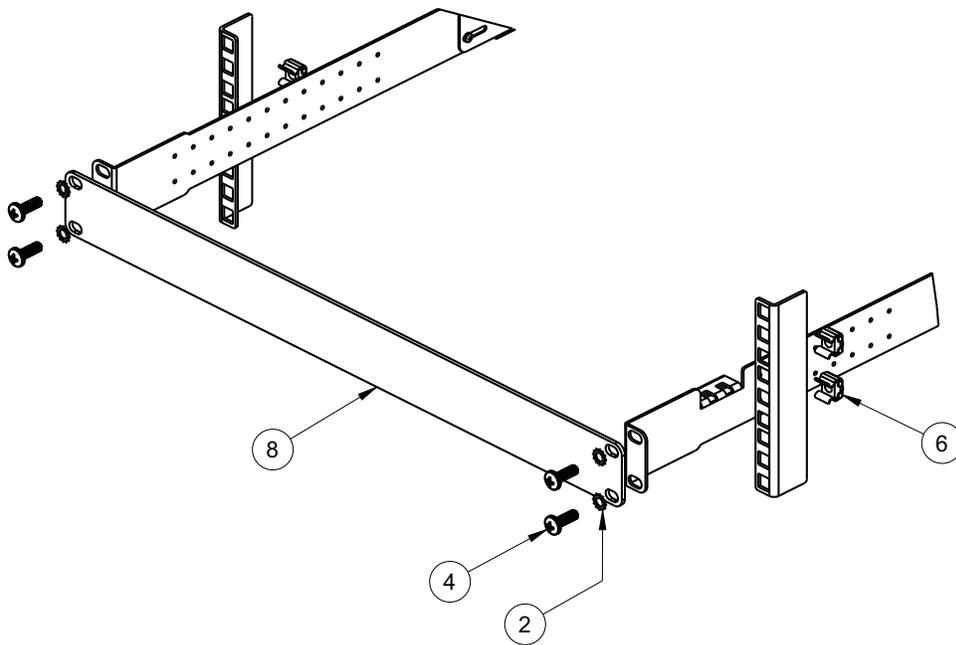
4. Use the M6 screws, washers, and clip nuts to connect the front mounting brackets to the front and rear posts in the rack. Torque the screws to approximately 3.5 Nm (30 inch-pounds).



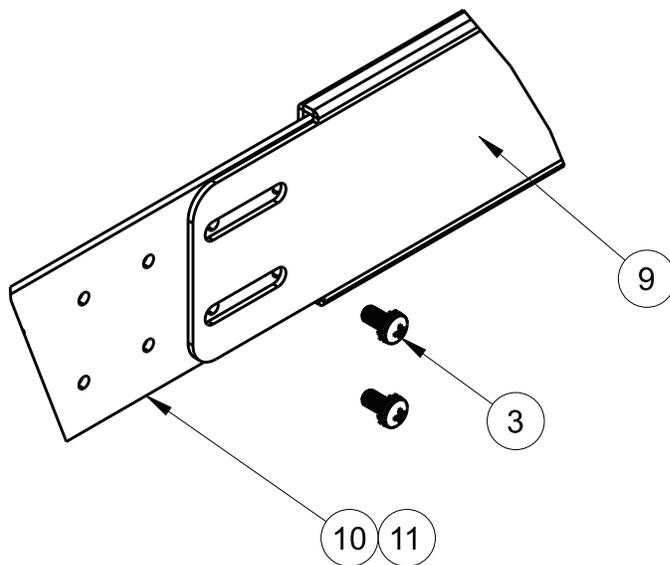
5. Slide the rear mounting brackets into the slots available on the front mounting brackets.



6. Use M6 washers, screws, and clip nuts to attach the filler plate to the rear mounting brackets. Torque the screws to approximately 3.5 Nm (30 inch-pounds).



7. Use M3 screws to secure the rear brackets to the front brackets. Torque the screws to approximately 0.5 Nm (4 inch-pounds).

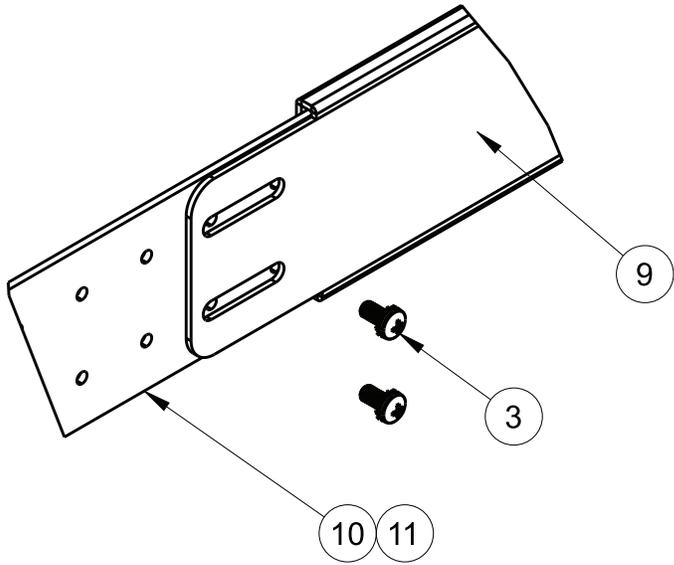


8. Connect all external cables.

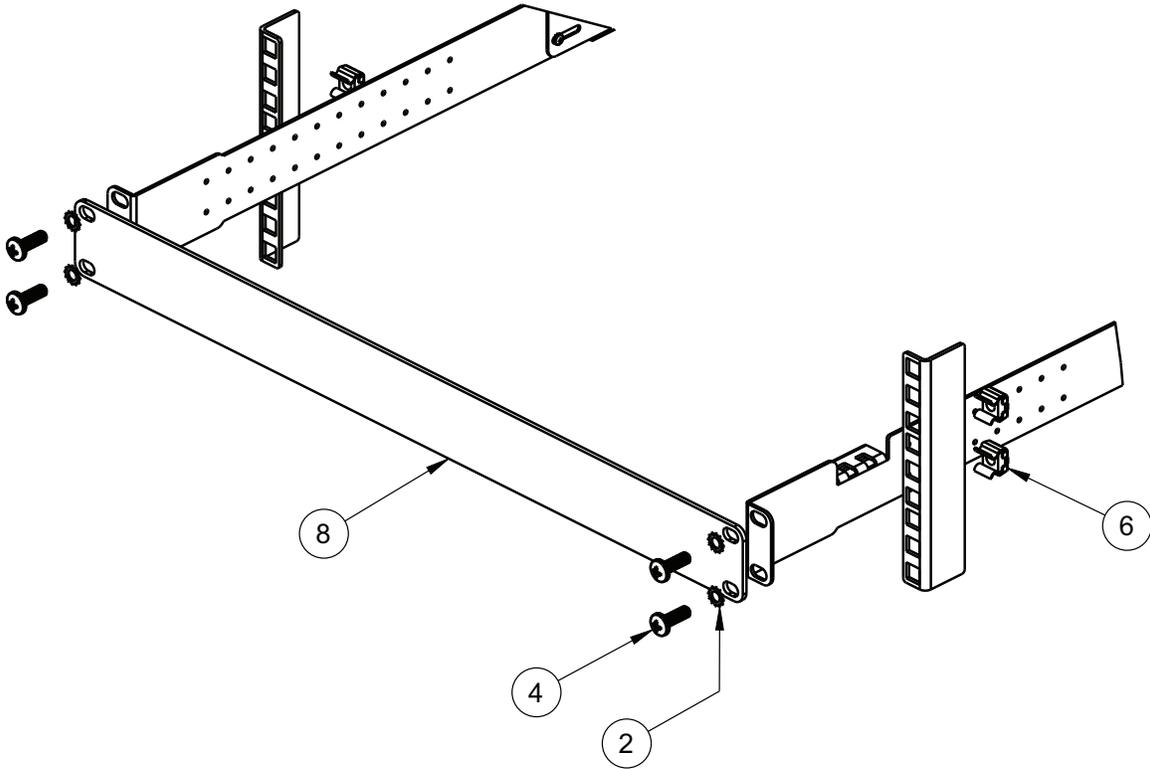
Removing the redundant power supply

To remove the redundant power supply from a System x rack, complete the following steps:

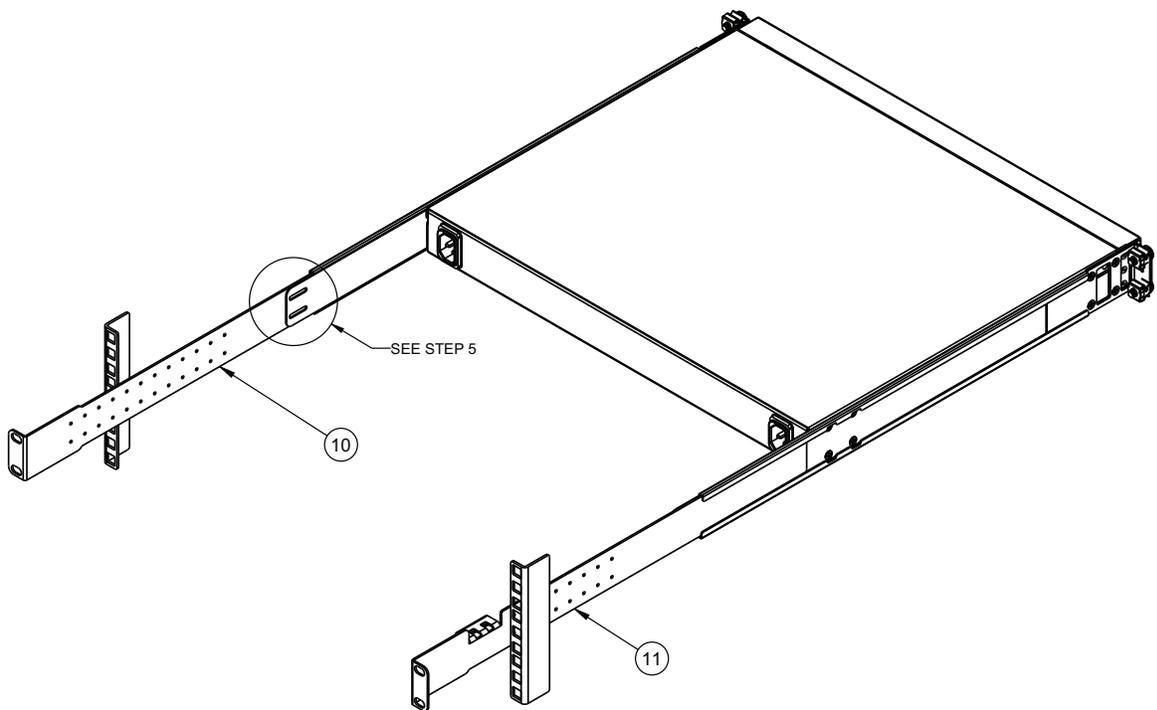
1. Disconnect all external cables.
2. Loosen and remove M3 screws that secure the rear brackets to the front brackets.



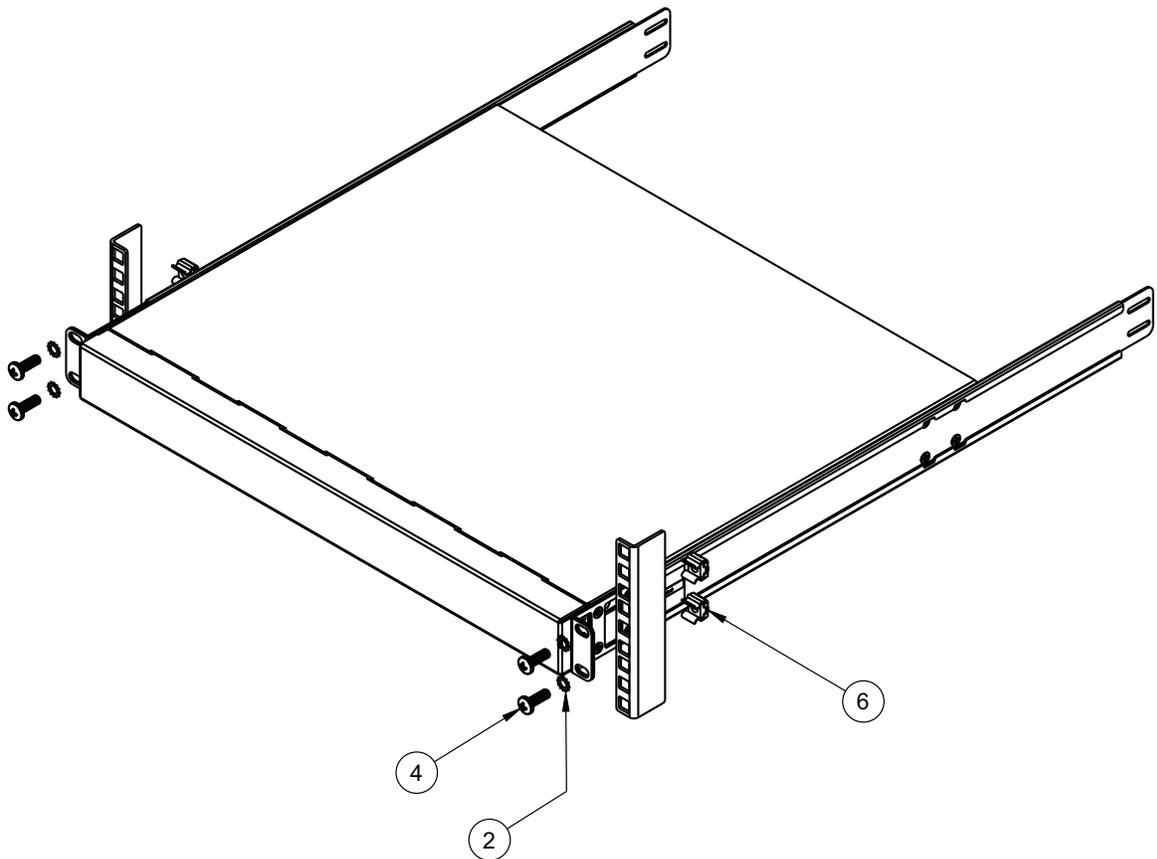
3. Loosen and remove M6 washers, screws, and clip nuts that attach the filler plate to the rear mounting brackets.



4. Slide the rear mounting brackets out of the slots available on the front mounting brackets.

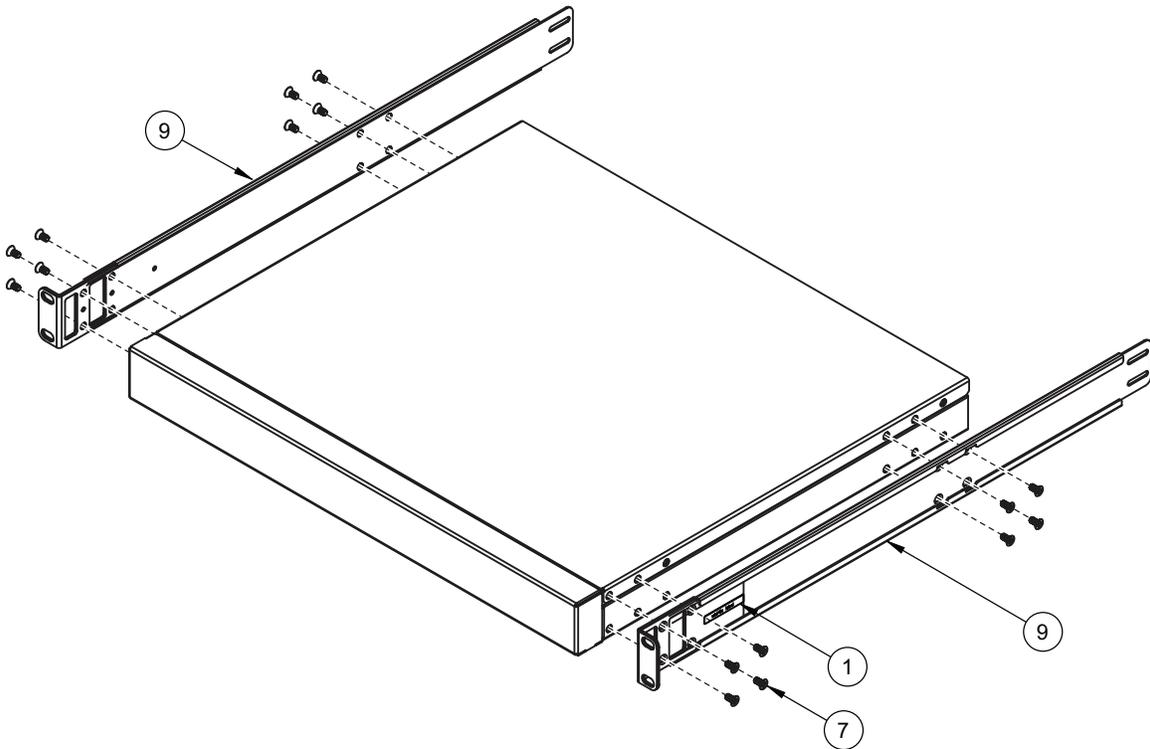


- Loosen and remove the M6 screws, washers, and clip nuts are used to connect the front mounting brackets to the front and rear posts in the rack.



- Slide the redundant power supply out of the rack.

7. Loosen and remove the M4 screws that attach the front mounting brackets to each side of the redundant power supply.



8. Record the product MTM number and serial number to use for the replacement redundant power supply, see Before installing the redundant power supply.

Appendix A. Getting help and technical assistance

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/us/en/serverproven/> to make sure that the hardware and software is supported by your product.
- Go to <https://support.lenovo.com/us/en/> 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 <https://www-947.ibm.com/support/servicerequest/Home.action> 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 <https://support.lenovo.com/us/en/>.

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 <https://support.lenovo.com/us/en/>. The most current version of the product documentation is available in the following product-specific Information Center:

System x products:

<http://systemx.lenovofiles.com/help/index.jsp>

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

To contact product support for Taiwan, call 0800-016-888. The call support is available 24 hours a day, 7 days a week.

Appendix B. Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area.

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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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Lenovo, the Lenovo logo, Flex System, System x, NeXtScale System, and x Architecture are trademarks of Lenovo in the United States, other countries, or both.

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.

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 8. 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

¹ ASHRAE 52.2-2008 - *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size*. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

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.

³ ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.

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 - Compliance to the Electromagnetic Compatibility Directive

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

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 2004/108/EG (früher 89/336/EWG) zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

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 2004/108/EG (früher 89/336/EWG) 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 EG Richtlinie 2004/108/EC (früher 89/336/EWG), 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, Gropiusplatz 10, 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."

Nach dem EMVG: "Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind." (Auszug aus dem EMVG, Paragraph 3, Abs. 4). Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Anmerkung: Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Handbüchern angegeben, zu installieren und zu betreiben.

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妨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

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) statement

高調波ガイドライン準用品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

Korea Communications Commission (KCC) statement

A급 기기 (업무용 방송통신기자재)

이 기기는 업무용(A급) 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

此为 A 级产品。在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Taiwan Class A compliance statement

警告使用者

此為甲類資訊技術設備，於居住環境中使用時，可能會造成射頻擾動，在此種情況下，使用者會被要求採取某些適當的對策。

Taiwan BSMI RoHS declaration

設備名稱：電源供應器，型號(型式)：G7000/RPS360 Equipment name Type designation (Type)						
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)
印刷電路板	—	○	○	○	○	○
外殼	—	○	○	○	○	○
線材	○	○	○	○	○	○
電源供應器	—	○	○	○	○	○

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。
Note 1: “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

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。
Note 2: “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3. “—”係指該項限用物質為排除項目。
Note 3: The “—” indicates that the restricted substance corresponds to the exemption.

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