Lenovo ThinkSystem NE2580O RackSwitch

Installation Guide

For Network Operating System

Lenovo™

Important Product Information:

Before using this information and the product it supports, read Appendix B, "Notices" of this manual. Also read the product *Warranty Information* document and the *Important Notices* document included with the product.

Contents

Safety Information

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

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 Surgonosne 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 ασφαλείας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítés 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 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 dotyczace 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 prečítajte 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་རྫས་འདི་བདེ་སྐྱོད་མ་བྱས་གོང་། སྐོར་གྱི་ཡིད་གཟབ་
བྱ་འདུ་མིན་ཡོད་པའི་འོད་སྟེར་བལྟ་དགོས།

Bu ürünü kurmadan önce güvenlik bilgilerini okuyun.

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Safety Statements

Important

Each caution and danger statement in this document is labeled with a number. This number is used to cross reference the English-language caution or danger statement with the 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 system or optional device before you install the device.

Following is a compilation of the statements found throughout this manual.

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.

DANGER

> **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 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.
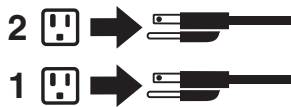
Statement 8

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 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 25

⚠️

CAUTION:

This product contains a Class 1M laser. Do not view directly with optical instruments.

Statement 26

⚠️

CAUTION:

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

🚫

Statement 31

⚠️ ⚡

DANGER

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

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**

- **Connect all power cords to a properly wired and grounded 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 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:	To Disconnect:
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. o For ac systems, use appliance inlets. o 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.	1.Turn OFF all power sources and equipment that is to be attached to this product. o For ac systems, remove all power cords from the chassis power receptacles or interrupt power at the ac power distribution unit. o 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 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.**

- **Always install devices starting from the bottom of the rack cabinet.**

- **Do not extend multiple devices from the rack cabinet simultaneously, unless the rack-mounting instructions direction you to do so. Multiple devices extended into the service position can cause your rack cabinet to tip.**

- **If you are not using the Lenovo 9308 rack cabinet, securely anchor the rack cabinet to ensure its stability.**

Other Important Safety Notices

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

This product is not intended for use in the direct field of view at visual display workplaces.

Machinenlärminformations-Verordnung—3. GPSGV, der höchste Shalldruckpegel beträgt 70 dB (A) oder weniger.

Chapter 1. ThinkSystem NE2580O

This *Installation Guide* provides information about the Lenovo ThinkSystem NE2580O RackSwitch (referred to as NE2580O throughout this document).

The NE2580O uses a wire-speed, non-blocking switching fabric that provides simultaneous wire-speed transport of multiple packets at low latency on all ports.

Port Configuration

The NE2580O contains the following ethernet ports:

- Forty-eight 25 Gigabit Ethernet (GbE) Small Form Pluggable 28 (SFP28) ports that can optionally be used as 10GbE SFP+ ports, depending on the installed OS

- Eight 100 GbE Quad Small Form Pluggable 28 (QSFP28) ports, each of which can optionally be used as four 10GbE SPF+ ports, or four 25GbE SPF28 ports, or two 50GbE QSPF28 ports, or one 40GbE QSPF+ port, depending on the installed OS

Transceiver Configuration

QSFP+ ports can be populated with optical QSFP+ modules or passive Direct-Attach Cables (DACs), including those that allow the port to be used as four 25 GbE SFP28/10 GbE SFP+ ports, two 50 GbE QSFP28 ports or as a single 40 GbE QSPF+ port.

Orientation, Airflow, and Redundancy

The NE2580O is 1U in height and can be mounted horizontally or vertically, depending on your application. Mounting options are available for a variety of rack systems.

For superior reliability, the NE2580O uses redundant, two hot-swap power supply modules and five hot-swap fan modules. Module options are available only for rear-to-front airflow direction.

Management

You can manage the switch through the local console port, or through a remote network connection.

NE2580O Documentation

This *Installation Guide* provides information and instructions for installing the NE2580O, updating the firmware, and solving problems. For other information about configuration and management of the switch, refer to the documents described in "Related Documentation" on page 16.

Notes:

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

● The console output described or referenced in this document might differ slightly from that displayed by your system. Output varies according to the type of Lenovo chassis and the firmware versions and options that are installed.

Notices and Statements in this 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 could 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.

Related Documentation

Additional or updated product documents may be available from the Lenovo website. Such documents may cover features not described in the original documentation that comes with the switch, or may include technical updates or corrections.

You can obtain up-to-date information on the Lenovo support website:

http://support.lenovo.com/

For a list of compatible switch components and options (such as rack-mounting kits, modules, cords, and cables), see the Lenovo Networking Catalog.

Chapter 2. Switch Components

This chapter describes the NE2580O hardware components.

Switch Unit

The NE2580O is a 1U rack-mountable GbE switch. You can mount the switch in either the horizontal or vertical orientation.

The following illustrations show the features on the front and rear of the switch.

Figure 1. *ThinkSystem NE2580O front panel*
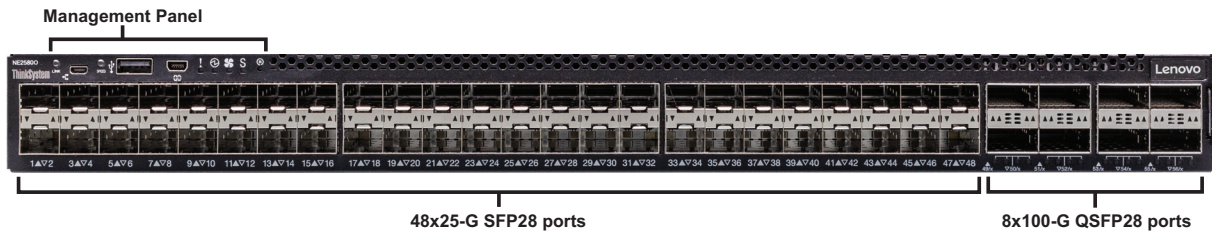
Figure 2. *ThinkSystem NE2580O management panel detail*
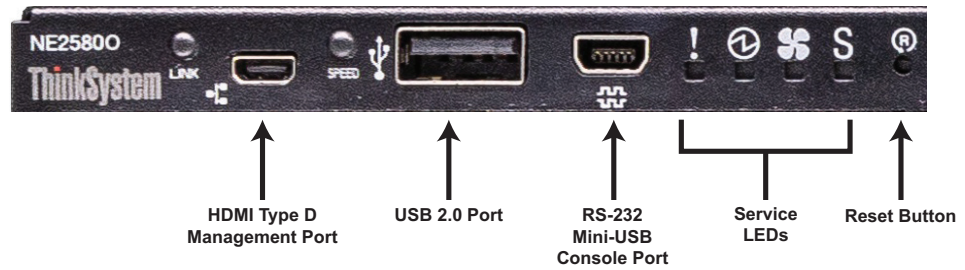
Figure 3. *ThinkSystem NE2580O rear panel*
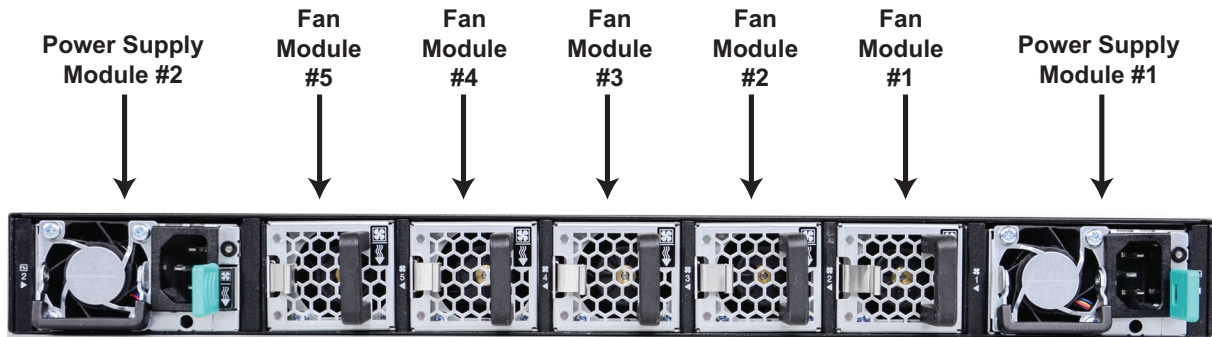
Front Panel

The following parts comprise the front panel:

Mini-USB Serial Console Port

The mini-USB serial console port on the front management panel is available for switch console management. The port operates using RS-232 serial communications. A compatible console cable kit is included with the switch.

Figure 4. *RS-232 Mini-USB serial port*

To connect a computer or terminal to the switch using the included kit, first connect the console cable to the mini-USB serial console port on the front panel. Connect one end of the RJ45-to-DB9 adapter to the RJ45 port on the console cable and the other end of the adapter to the computer or terminal (see the following illustration).

Figure 5. *Mini-USB console cable connections*
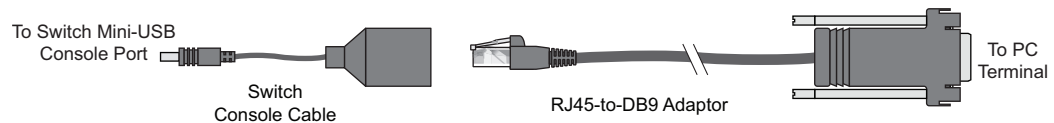
If using cables other than those from the included cable kit, ensure that they are compatible with the port pin assignments shown in the following tables.

Table 1. *Console cable mini-USB port connector pin assignments*

Pin Number	Function
1	-
2	MP_SIN_RS232 (Input)
3	MP_SOUT_R232 (Output)
4	-
5	GND (Ground)

HDMI Type D Management Port

The management port is a 10/100/1000 BASE-T IEEE 802.3 compliant port via HDMI Type D port.

Management Port LEDs

The HDMI Type D management port LEDs are oriented as shown in the following figure.

Figure 6. *Management port LEDs*
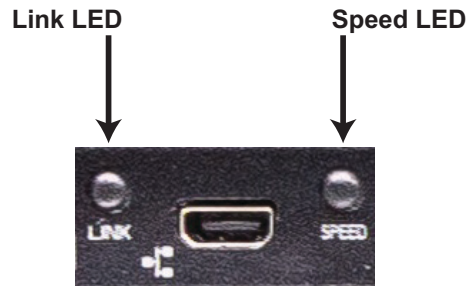
Status LEDs for the management port are described in the following table.

Table 2. *Management port status LEDs behavior*

LED	State	Functional Meaning
Link	Steady Green	Link up
	Flashing Green	Packet transmitting or receiving
	Off	Link down or port disabled
Speed	Steady Green	100/1000 Mbps connection
	Off	10 Mbps connection

Reset Button

The Reset button is recessed within a hole on the front panel. Use a straightened paper clip or similar object to press the Reset button.

Figure 7. *Reset Button*

The Reset button allows technicians to reset the switch as follows:

- Normal reset — the switch starts a forced reload procedure without saving the current running configuration. This action is intended for when the switch is unresponsive and needs to be restarted to resume its normal functions.

- Factory reset — the switch reloads and reverts all its configuration settings to the factory defaults.

Note: The preceding functions depend on the installed OS.

USB 2.0 Port

The USB 2.0 port enables you to connect a USB drive to the switch. You can copy files from the switch to the USB drive, or from the USB drive to the switch. You can also start the switch using files on the USB drive.

Figure 8. *USB 2.0 port*
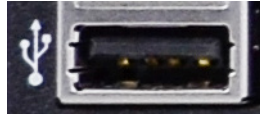
The supported file system formats for USB drives are FAT32 and NTFS (read-only).

Service LEDs

The service LEDs are located on the front side of the switch, as part of the management panel. They indicated the status of various switch hardware components.

Figure 9. NE2580O Front Side Panel Service LEDs
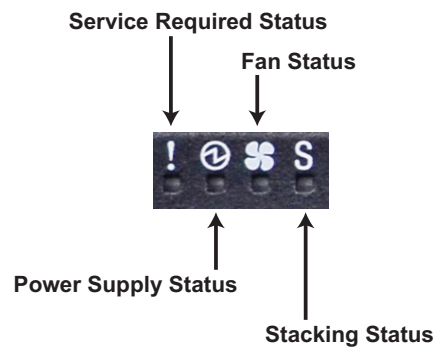
The status LEDs for the front panel are described in the following table:

Table 3. *Front side panel status LEDs behavior*

LED	State	Functional Meaning
Service Required	Steady blue	Stack backup/member, or Operations command
	Flashing blue	Single power supply failure, or AC cable unplugged from a PSU, or Fan failure, or Stack error
	Light off	Power supply normal operation, or Fans normal operation, or Stack master, or Non-stack member, or AC cables unplugged or damaged on all PSUs

Table 3. *Front side panel status LEDs behavior*

LED	State	Functional Meaning
Power Supply	Steady green	Power supply normal operation
	Flashing green (once per second)	Not all power supply are plugged in
	Flashing green (twice per second)	Power supply failure, or AC cable is unplugged from a PSU
	Light off	AC cables unplugged or damaged on all PSUs
Fan	Steady green	Fan normal operation
	Flashing green (once per second)	Not all fans are plugged in
	Flashing green (twice per second)	Fan failure
	Light off	AC cables unplugged or damaged on all PSUs
Stacking	Steady green	Stack backup/member
	Flashing green	Stack mater
	Light off	Non-stack member

Switching Ports

The NE2580O contains the following:

- Forty-eight25 Gigabit Ethernet (GbE) Small Form Pluggable 28 (SFP28)

- Eight 100 GbE Quad Small Form Pluggable 28 (QSFP28) ports

QSFP28 ports can be populated with optical QSFP28 modules or Direct-Attach Cables (DACs), including those that allow the port to be used as four 25 GbE SFP28/10 GbE SFP+ ports, two 50 GbE QSFP28 ports, or as a single 40 GbE QSFP+ port. SFP+ ports can be populated with optical or copper transceiver modules or DACs.

SFP28 Ports

Forty-eight 25GbE SFP28 ports are located on the front panel.

For 10 GbE connections, SFP28 ports can be used with 10GbE SFP+ direct-attached copper (DAC) cables or 10 GbE SFP+ active optical cables (AOCs).

For 25 GbE connections, SFP28 ports can be used with 25 GbE SFP28 DAC cables or 25 GbE SFP28 active optical cables.

SFP28 Port LEDs

The SFP28 LEDs for the NE2580O are shown in the following illustration:

Figure 10. SFP28 Port LEDs
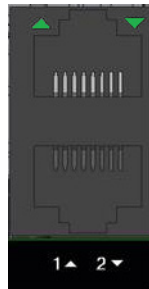
Status LEDs for the SFP28 ports are described in the following table.

Table 4. *SFP28 port status LED behavior*

LED	State	Functional Meaning
Link 25G Mode	Solid green	Secure 25G connection or link
	Flashing green	Packet transmitting or receiving
	Light off	Link down or port disabled
	Solid red	Port error
Link 10G Mode	Solid amber	Secure 10G connection or link
	Flashing amber	Packet transmitting or receiving
	Light off	Link down or port disabled
	Solid red	Port error

QSFP28 Ports

Eight 100GbE QSFP28 ports are located on the front panel.

For 40 GbE connections, QSFP 28 ports can be used with QSFP+ to QSFP+ direct-attached copper (DAC) cables or QSFP+ to QSFP+ active optical cables (AOCs).

For 100 GbE connections, QSFP 28 ports can be used with QSFP28 direct-attached copper (DAC) cables or QSFP28 active optical cables (AOCs).

QSFP28 ports can be split into four 10 or 25 GbE ports, two 50 GbE ports, or a single 40 GbE port.

QSFP28 Port LEDs

The QSFP28 LEDs for the NE2580O are shown in the following illustration:

Figure 11. *QSFP28 Port LEDs*

Status LEDs for the QSFP28 ports are described in the following table.

Table 5. *QSFP28 port status LED behavior*

LED	Port Mode	State	Functional Meaning
Status LED for QSFP28	100G/4x25G	Steady green	Secure 100G connection or link
		Flashing green	Packet transmitting or receiving
		Light off	Link down or port disabled
		Steady red	Port error
	40G/4x10G	Steady amber	Secure 40G connection or link
		Flashing amber	Packet transmitting or receiving
		Light off	Link down or port disabled
		Steady red	Port error

Note: Amber refers to both green and red LEDs being lit simultaneously.

Rear Panel

The rear panel includes the following components:

- two hot-swap power supply modules
- five hot-swap fan modules

Figure 12. NE2580O Rear Side Panel Components
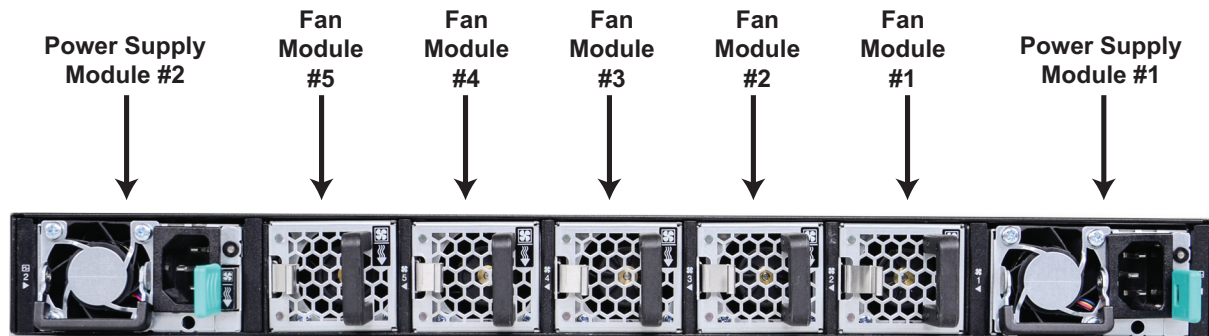
Fans

For cooling, the rear panel of the NE2580O has five bays for hot-swap fan modules. Five fan modules are required for redundancy. When five fan modules are used, if there is a failure of one of the fans, the switch reports the condition, the other fans continue to run, and the switch continues to operate normally. Each Fan module has a power consumption of 33.6W.

You can replace one failed hot-swap fan module while the switch is operating. If a second fan fails, the switch reports the condition and shuts down to prevent overheating.

Note: On the rear side of the box, there are fault LEDs for each of the fan modules. When the fan works abnormally, the red LED is lit. When the fan is under normal operation, the green LED is lit.

Compatible fan options are listed in the Lenovo Networking Catalog.

Fan operation and internal temperatures are monitored. If the air temperature exceeds a desired threshold, the environmental monitor displays warnings.

Figure 13. *Fan Module Rear View*
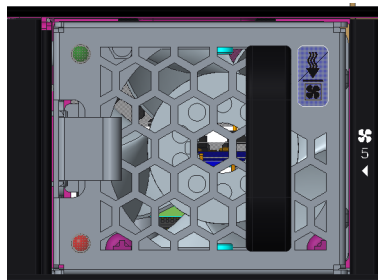
Status LEDs for the fans are described in the following table.

Table 6. *Fans status LED behavior*

Side Panel	State	Functional Meaning
Rear	Steady green	Fans normal operation
	Steady red	Fan failure

Power Supply Units

The rear panel of the NE2580O has two bays for hot-swap power supply models. Each power supply module has an individual IEC 320 C14 power connector. The power cord attaches to a universal grounded AC power source.

Compatible power options are listed in the Lenovo Networking Catalog.

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 31

DANGER

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

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded 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 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:	To Disconnect:
1. Turn OFF all power sources and equipment that is to be attached to this product.	1. Turn OFF all power sources and equipment that is to be attached to this product.
2. Attach signal cables to the product.	o For ac systems, remove all power cords from the chassis power receptacles or interrupt power at the ac power distribution unit.
3. Attach power cords to the product.	o For dc systems, disconnect dc power sources at the breaker panel or by turning off the power source. Then, remove the dc cables.
o For ac systems, use appliance inlets.	2. Remove the signal cables from the connectors.
o 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.	3. Remove all cables from the devices.
4. Attach signal cables to other devices.	
5. Connect power cords to their sources.	
6. Turn ON all the power sources.	

Two power supply modules are required for redundancy. Each power supply can be connected to a separate circuit to mitigate the risk of down-time during a localized power failure. When used in a redundant configuration, the dual power supplies have a load-sharing capability that enables each power supply to operate at approximately 50 percent of full load.

Using redundant power can minimize the power disruption during a power supply failure and extend the expected lifetime of each power supply by operating normally in a conservative power mode.

There is no power switch on the NE2580O power modules; the switch powers up when power is supplied through the power cord to one or both power supplies.

Figure 14. *Power Supply Rear View*
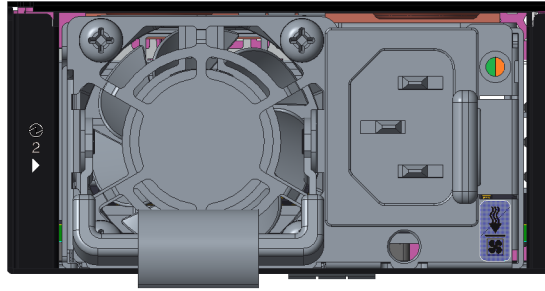
The rear panel LEDs are described in the following table:

Table 7. *Power Supply Rear Status LEDs behavior*

LED	State	Functional Meaning
Power supply	Steady green	Power supply normal operation
	Flashing green (once per second)	Power supply in standby mode
	Flashing green (twice per second)	Firmware update in progress
	Steady amber	AC cable unplugged, or Power supply shutdown caused by a critical event
	Flashing amber	Power supply warning event (power supply continues its operation)

Chapter 3. Installing NE2580O Hardware and Options

This chapter describes how to install the NE2580O hardware and options. The following topics are covered:

- "Before Installing the NE2580O" on page 32
    - How to record important product information
    - Tools required for installation
    - A list of items included in the package
    - Environmental requirements
    - Vital safety information

- Installing the switch in one of the supported rack types
    - "Installing the NE2580O in a Standard Equipment Rack" on page 37
    - "Installing the NE2580O in a Lenovo System x or Power Rack" on page 40
    - "Installing the NE2580O in a Lenovo iDataPlex Rack" on page 44

- "Installing the Air-Duct Option" on page 47

- "Installing Port Connectors" on page 51

Note: For information on removing or replacing installed NE2580O components, see Chapter 4, "Removing and Replacing Components".

Before Installing the NE2580O

Attention: Product information is required in order to register your NE2580O, update its firmware, place a service call, or replace the unit.

Some of the product information labels may be hidden from view once the NE2580O is installed. To prevent the need to remove the switch in order to read required product information, locate and record the information shown on Table 8 prior to installation.

Figure 15 contains examples of product information labels.

Figure 15. *Sample product labels from the switch*

Note: These examples are to help locate and identify the information labels. The actual labels and information for your specific switch may differ.

The identification labels on the front, rear, and/or bottom of the NE2580O contain the Machine Type-Model (MTM) number, serial number, part number of the switch. These labels also include the Media Access Control (MAC) address (on the rear panel of unit) of the switch. Though helpful, the MAC address is not required for opening a service call.

Print this page and record product information below. Keep the information in a safe place for future reference. You will need this information when you register the switch or open a service call with Lenovo.

Table 8. *Important product information*

Product Name	ThinkSystem NE2580O
Machine-Type Model	
Serial Number	
Part Number	
Media Access Control (MAC) address for switch	
MAC addresses for other components	

Required Tools

You need the following tools or equipment to install the NE2580O:

● Standard flat-blade screwdriver

● #2 Phillips screwdriver

● Electrostatic discharge wrist strap

Package Contents

The basic NE2580O package contains the following items:

● One ThinkSystem NE2580O unit with rear-to-front airflow

● One two-post mounting kit for standard 19" equipment racks:
  o Two mounting brackets
  o Screws to attach brackets to the switch unit
  o Screws to attach the switch unit to the equipment rack

● One console cable kit that includes:
  o One Mini-USB to RJ45 console cable
  o One RJ45 to DB9 adapter

● One RJ45 to HDMI Type D cable for management port

● One power cord retention bracket

● One *Important Notices* document

● One *Warranty Information* document

For a list of compatible switch components and options (such as rack-mounting kits, modules, cords, and cables), see the Lenovo Networking Catalog.

Environmental Requirements

This section describes the basic environmental requirements for the NE2580O. Make sure the location where you install the switch meets the following requirements:

- Install the switch unit in a dry, clean, well-ventilated area.
- Provide adequate space in the front and back of the switch unit, to ensure proper air flow.
- Make sure that an adequate grounded power supply is within reach of the switch unit.
- 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.

The NE2580O AC power module is designed to work with single-phase power systems that have a grounded neutral conductor. For your safety, a power cord with a ground attachment plug is available to order for use with this product. To avoid electrical shock, always use an appropriate power cord and plug with a properly grounded outlet.

Power cords for this product that are used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum of 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord consisting of a minimum of 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

Power cords for this product for a specific country or region are usually available only in that country or region.

Power cord installation should also conform to the recommendations listed in "Cabling Guidelines" on page 36.

Statement 31

DANGER

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

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**

- **Connect all power cords to a properly wired and grounded 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 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:	To Disconnect:
1. Turn OFF all power sources and equipment that is to be attached to this product.	1. Turn OFF all power sources and equipment that is to be attached to this product.
2. Attach signal cables to the product.	o For ac systems, remove all power cords from the chassis power receptacles or interrupt power at the ac power distribution unit.
3. Attach power cords to the product.	o For dc systems, disconnect dc power sources at the breaker panel or by turning off the power source. Then, remove the dc cables.
o For ac systems, use appliance inlets.	2. Remove the signal cables from the connectors.
o 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.	3. Remove all cables from the devices.
4. Attach signal cables to other devices.	
5. Connect power cords to their sources.	
6. Turn ON all the power sources.	

Handling Static-Sensitive Devices

Attention: Static electricity can damage the switch 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 switch 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 switch cover or on a metal surface.

- Take additional care when you handle devices during cold weather. Heating reduces indoor humidity and increases static electricity.

Cabling Guidelines

Make sure that all connection cables comply with the following recommendations:

- Make sure that the cables and cabling components comply with industry standards.

- Dress and affix cables to the rack to minimize the stress on the I/O connectors, connector cages, and cables. If possible, use horizontal and vertical cable managers to minimize obstruction of the airflow and other equipment.

- Use wide Velcro straps to reduce pressure points.

- Position large or heavy cable bundles under other cable bundles to prevent crushing or stress. Over-bundling, or placing multiple bundles on top of each other, can degrade performance.

- Make sure that the radius of any bend does not exceed the vendor recommended minimum bend radius.

- Do not stress cables and connectors by applying additional twists, tension beyond load ratings, stapling, or applying nylon tie-wraps with a tie-wrap puller.

Installing the NE2580O in a Rack

The NE2580O can be rack-mounted using one of the following mounting kits:

- For a standard 19-inch equipment rack, use the 2-post rack mounting brackets and screws included with the switch. Installation instructions begin on .

- For a Lenovo System x or Power 4-post rack, use the Lenovo Adjustable 19" 4-Post Rail Kit. This kit must be purchased separately. Installation instructions begin on .

- For a Lenovo iDataPlex® rack, use the iDataPlex mounting kit. This kit must be purchased separately. Installation instructions begin on .

Installing the NE2580O in a Standard Equipment Rack

This section describes how to install the NE2580O in a standard 19-inch equipment rack using the mounting kit included with the switch. For information about mounting the switch in other supported racks, see the appropriate section in this chapter.

The following parts are included in the standard mounting kit.

Table 9. *2-post rack mount kit parts*

Item number	Description	Quantity
1	Mounting brackets	2
2	M4 screws	8
3	M6 screws	4
4	M6 clip nuts	4
5	M6 cage nuts	4

Attention: The rack-mounting frame may be unable to support the weight of the switch with only the front post mounting brackets (2-post application). If the switch has an undesirable amount of sag, it is recommended to use a 4-post mounting kit.

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

Statement 26

CAUTION:

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

To install the NE2580O in a standard equipment rack, complete the following steps:

1. Locate, record, and retain the product switch information in order to configure and register your product. See "Before Installing the NE2580O" on page 32.

   Note: If this switch is a replacement switch, copy the product information from the original switch onto the RID label that is shipped with replacement switch and affix the new label to the bottom of the new switch.

2. Attach a mounting bracket (Item 1) to each side of the switch with M4 screws (Item 2). Torque the screws to approximately 2.0 newton-meters (Nm) ± 0.1 Nm (17.7 inch-pounds).
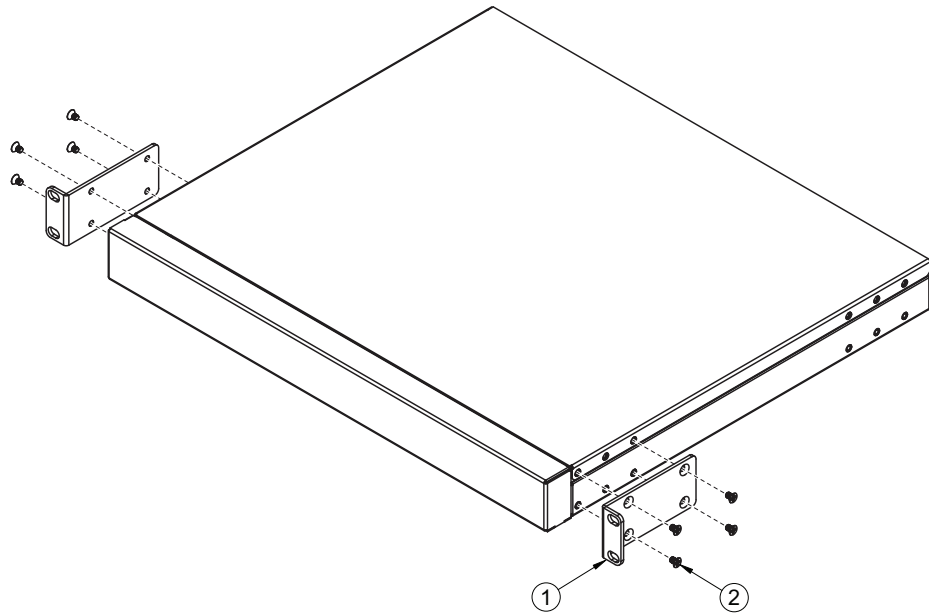
3. From the front, slide the switch into the rack at the desired height.

4. Secure the switch unit to the rack posts with M6 screws (Item 3) and either clip nuts (Item 4) or cage nuts (Item 5). Torque the screws to approximately 5.7 Nm ± 0.1 Nm (50 inch-pounds).

5. Connect all external cables in accordance with the "Cabling Guidelines" on page 36.

6. Initialize the switch. See Chapter 5, "Initializing the NE2580O", on page 71.

Installing the NE2580O in a Lenovo System x or Power Rack

This section describes how to install the NE2580O in a Lenovo System x or Power 4-post rack, using the Lenovo Adjustable 19" 4-Post Rail Kit.

This kit must be purchased separately. It includes the following parts:

Table 10. *Lenovo Adjustable 19" 4-Post Rail Kit parts*

Item number	Description	Quantity
1	Switch front bracket	2
2	M4 screws	16
3	M6 screws	8
4	M6 clip nuts	8
5	M6 cage nuts	8
6	M3.5 screws	4
7	Rear mounting bracket	1
8	Rear mounting bracket with cord exit	1
9	Filler plate	1

Note: When using a System x or Power 4-post rack, the 4-Post Rail Kit is compatible with the optional air-duct kit (available separately). See for details.

Statement 26

CAUTION:

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

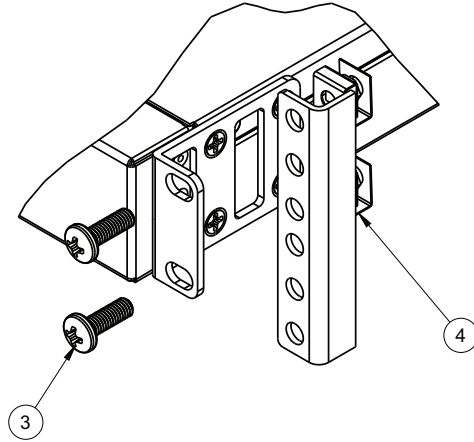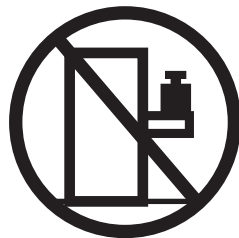To install the NE2580O in a System x or Power rack, complete the following steps:

1. Locate, record, and retain the product switch information in order to configure and register your product. See "Before Installing the NE2580O" on page 32.

   Note: If this switch is a replacement switch, copy the product information from the original switch onto the RID label that is shipped with replacement switch and affix the new label to the bottom of the new switch.

2. Attach the front mounting brackets (Item 1) to each side of the switch with M4 screws (Item 2). Torque the screws to approximately 2.0 newton-meters (Nm) ± 0.1 Nm (17.7 inch-pounds).
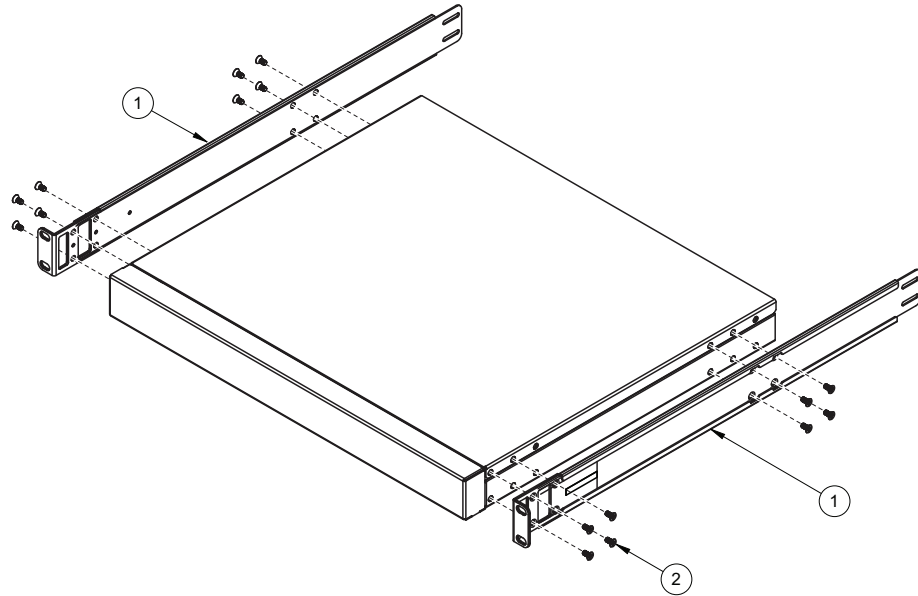
3. From the front, slide the switch into the rack at the desired height.

4. Secure the switch to the front rack posts with M6 screws (Item 3) and either clip nuts (Item 4) or cage nuts (Item 5). Torque the screws to approximately 5.7 Nm ± 0.1 Nm (50 inch-pounds).
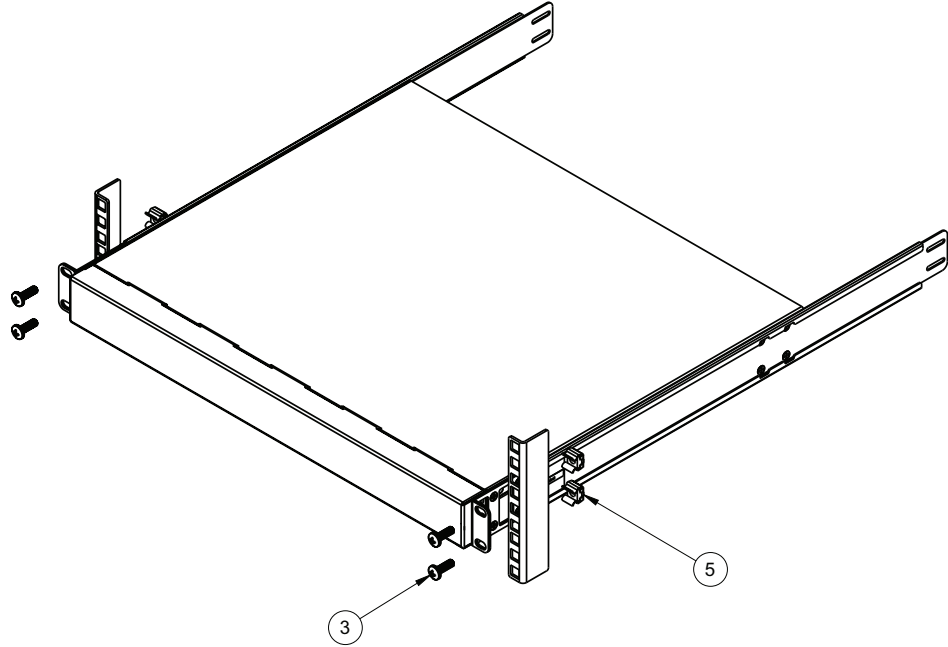
5. Slide the rear mounting brackets (Item 7 and Item 8) into the slots available on the front mounting brackets.

6. Attach the filler plate (Item 9) and rear mounting brackets to the rear rack posts with M6 screws (Item 3), and either clip nuts (Item 4) or cage nuts (Item 5). Torque the screws to approximately 5.7 Nm ± 0.1 Nm (50 inch-pounds).
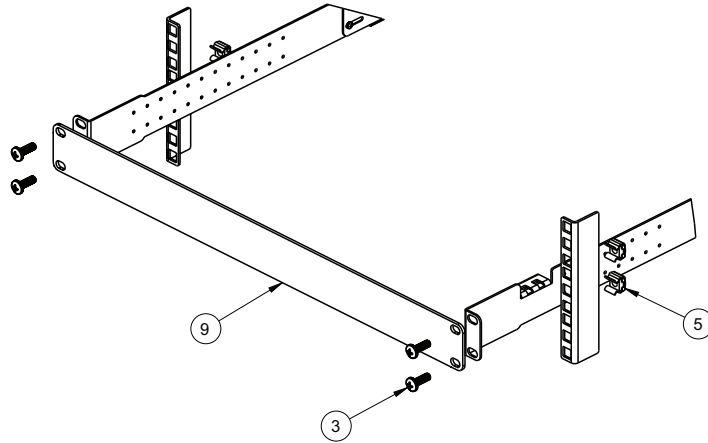
7. Secure the rear brackets to the front brackets with M3.5 screws (Item 6). Torque the screws to approximately 0.5 Nm (4 inch-pounds).
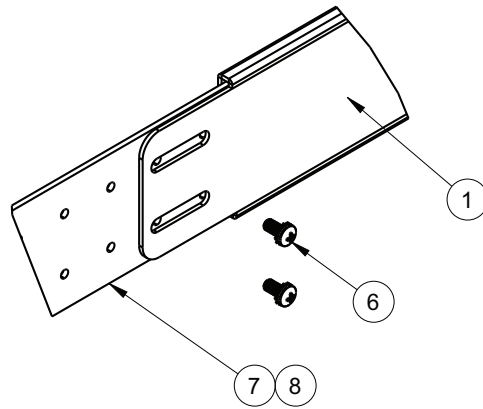
8. If installing the 1U air-duct option, see the instruction on page 47.

9. Connect all external cables in accordance with the "Cabling Guidelines" on page 36.

10. Initialize the switch. See Chapter 5, "Initializing the NE2580O".

Installing the NE2580O in a Lenovo iDataPlex Rack

This section describes how to install the NE2580O in a Lenovo iDataPlex rack. The iDataPlex mounting kit allows the switch to be mounted either horizontally or vertically.

The kit must be purchased separately. It includes the following parts:

Table 11. *Lenovo Adjustable 19" 4-Post Rail Kit parts*

Item number	Description	Quantity
1	Switch front brackets	2
2	M4 screws	16
3	M6 screws	8
4	M6 clip nuts	8
5	Switch rear brackets	2
6	Rear alignment plates	2

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

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

Statement 26

CAUTION:

Do not place any object on top of rack-mounted devices.
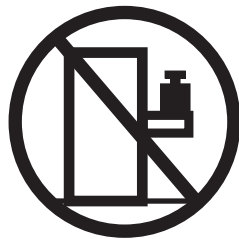
To install the NE2580O in an iDataPlex rack, complete the following steps:

1. Locate, record, and retain the product switch information in order to configure and register your product. See "Before Installing the NE2580O" on page 32.

   Note: If this switch is a replacement switch, copy the product information from the original switch onto the RID label that is shipped with replacement switch and affix the new label to the bottom of the new switch.
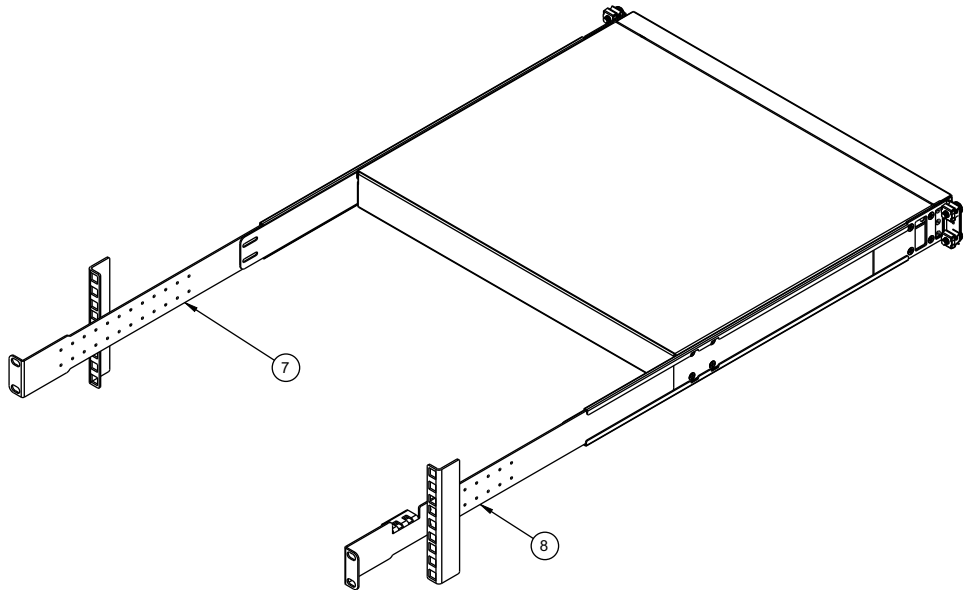
2. Attach front mounting brackets (Item 1) and rear mounting brackets (Item 5) to each side of the switch with M4 screws (Item 2). Torque the screws to approximately 2 newton-meters (Nm) +/- 0.1 Nm (17.7 inch-pounds).
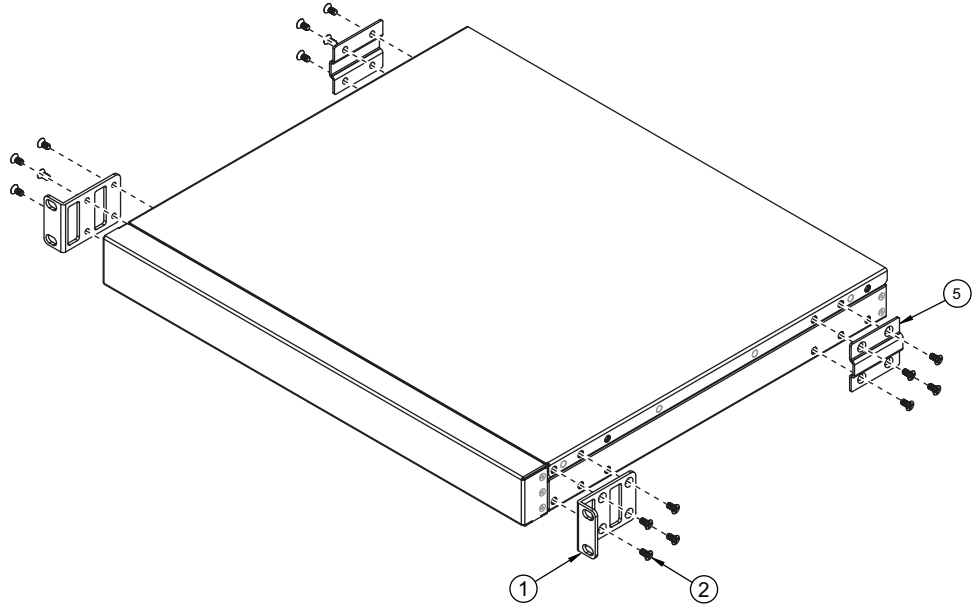
3. From the front, slide the switch into the rack at the desired height.

4. Secure the switch to the front rack posts with M6 screws (Item 3), and clip nuts (Item 4). Torque the screws to approximately 5.7 Nm +/- 0.1 Nm (50 inch-pounds).
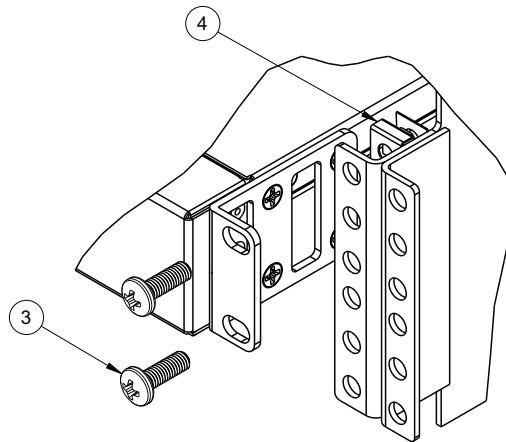
5. Attach the rear alignment plate (Item 6) to the rear rack posts with M6 screws (Item 3), and clip nuts (Item 4). Torque the screws to approximately 5.7 Nm +/- 0.1 Nm (50 inch-pounds).
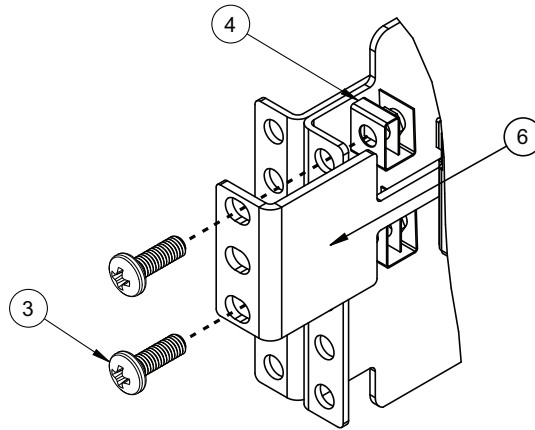
6. If installing the 1U air-duct option, see the instruction on page 47.

7. Connect all external cables in accordance with the "Cabling Guidelines" on page 36.

8. Initialize the switch. See Chapter 5, "Initializing the NE2580O".

Installing the Air-Duct Option

The NE2580O supports an optional 1U air duct to maximize air flow conditions in a 19" rack.

The air-duct option is only supported when the switch is installed on a 4-post rack mount kit basis. If the switch is installed on a rack using default 2-post rack mount kit, it will not support the air-duct option.

For information on removing an installed 1U air-duct option, see "Removing the Air-Duct Option" on page 68.
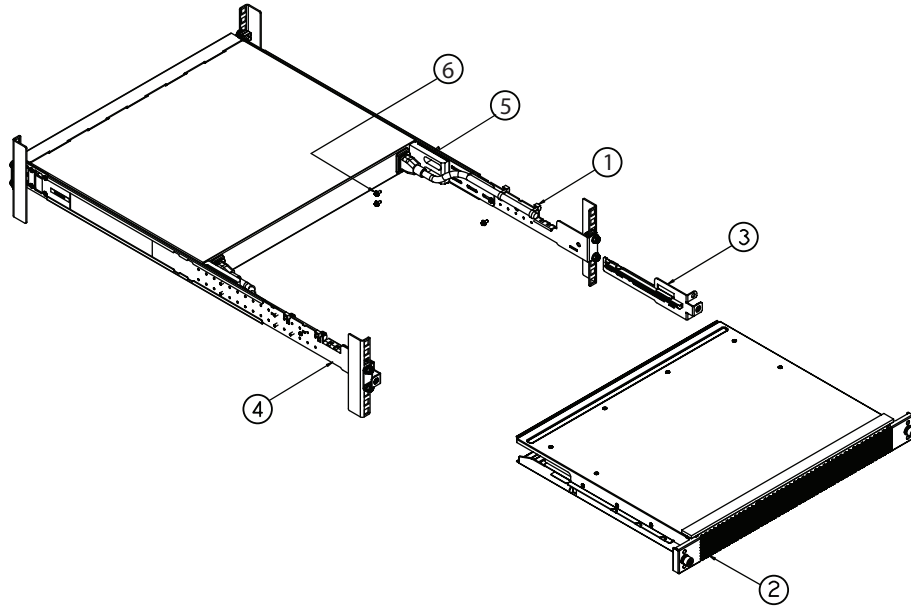
The following table lists the parts included with the air-duct option kit.

Table 12. *Air-duct Option Kit parts*

Item Number	Description	Quantity
1	Cable tie	4
2	1U Duct sleeve (long)	1
3	Mounting bracket (left)	1
4	Mounting bracket (right)	1
5	Foam carrier assembly	2
6	M3.5 screws	6

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

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

CAUTION:

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

To install the 1U air-duct option in a 19″ rack, complete the following steps:

1. Loosen and remove the mounting screws from both sides of the mounting rail and set them aside to reuse for securing the foam carrier in the next step.

2. Place the half shears on the rear side of the foam carriers and use the M3.5 mounting rail screws to secure the foam carrier assemblies snugly against the rear of the NE2580O unit. Torque the screws to approximately 1.1 Nm ± 0.1 Nm (10 inch-pounds).
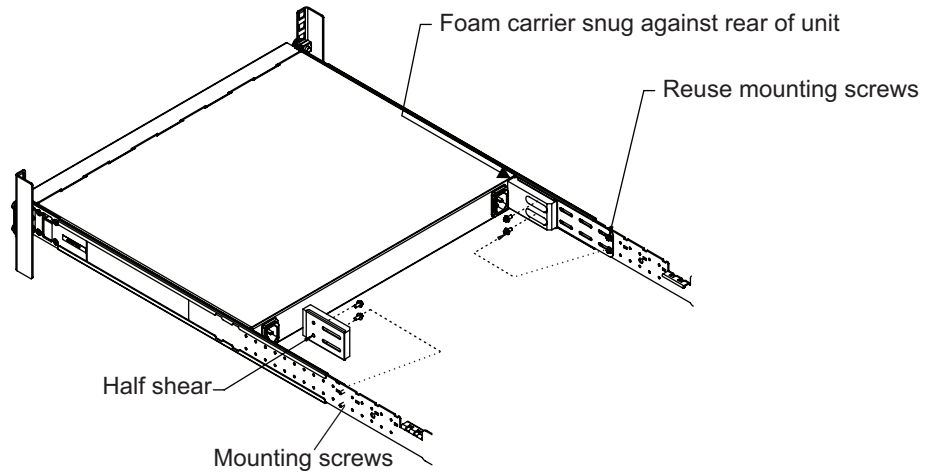
Note: There are additional M3.5 screws in the air-duct assembly kit.

3. Secure the air-duct mounting bracket to the rails with M6 screws. Torque the screws to approximately 5.7 Nm ± 0.1 Nm (50 inch-pounds).

Air duct mounting bracket

M6 screws
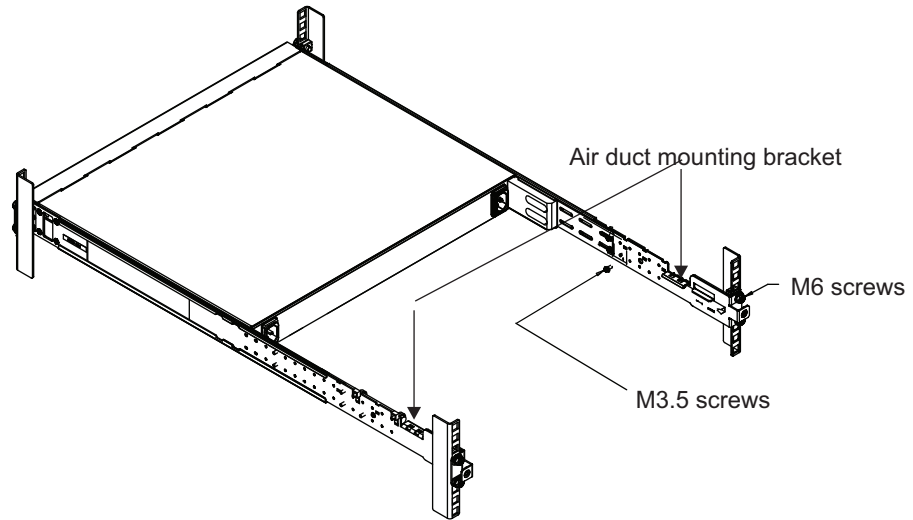
M3.5 screws

Note: Reuse the original M6 screws used to fasten the 4-post rack mounting brackets to secure the air duct mounting brackets with 4-post mounting brackets together.

4. Secure the air-duct mounting bracket to the rack chassis with M3.5 screws. Torque the screws to approximately 1.1 Nm ± 0.1 Nm (10 inch-pounds).

5. Plug the power cords into their respective NE2580O power connectors and using tie wraps, secure the power cords to the mounting rails.

Power connection

Tie wraps

Power connection

Tie wraps
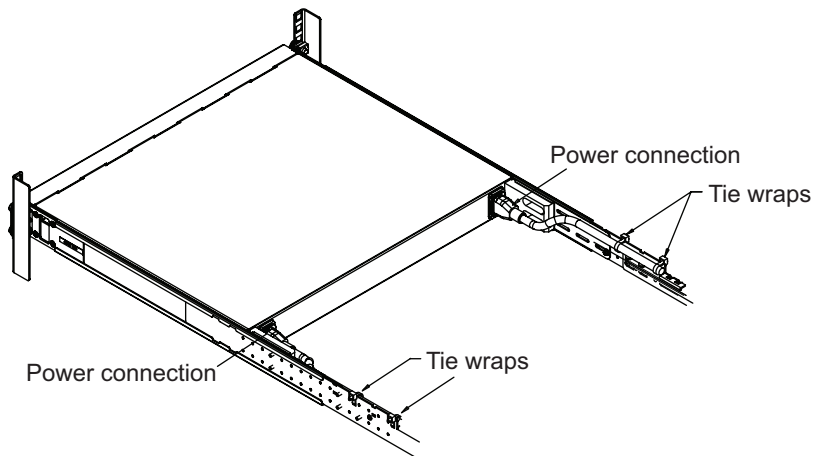
6. Gently slide the air-duct unit side flanges into the card guides until the unit is seated firmly. Make sure that the foam strip is oriented on top.

Foam

Card guides

Side flanges
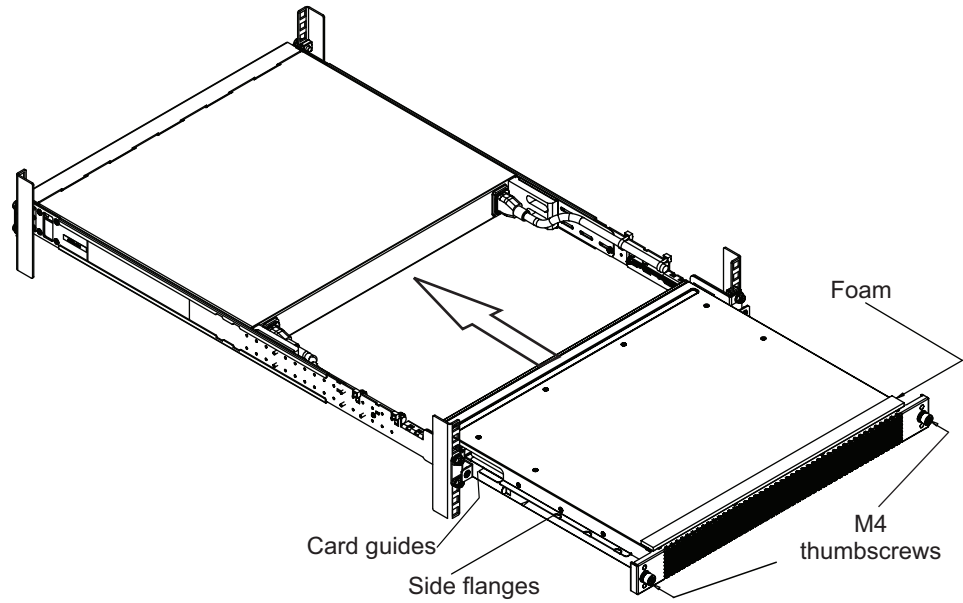
M4 thumbscrews

7. Secure the air-duct unit to the air-duct brackets with the two M4 thumbscrews.

Installing Port Connectors

The NE2580O supports copper and optical transceivers, Direct Attached Copper (DAC) cables and Active Optical Cables (AOC).

Notes:

- This section covers the basic types of connectors that can be installed on the switch. We recommend you to consult the Lenovo Networking Products and Options Catalog for the full list of supported transceivers, DACs or Active Optical Cables cables.

- The connector types listed in this section reflect only the hardware capabilities of each port. Some options might be unavailable depending on the type of NOS installed on the switch.

To install a supported transceiver, see .

SFP28 Port Slots

Small Form-factor Pluggable 28 (SFP28) port slots support the following approved connector types:

- 10 GbE SFP+ copper or optical transceivers

- 25 GbE SFP28 optical transceivers

- 10 GbE SFP+ or 25 GbE SFP28 DACs

- 10 GbE SFP+ or 25 GbE SFP28 Active Optical Cables

The SFP28 and SFP+ optical transceiver provides two fiber-optic cable connectors for connecting to external ports.

QSFP28 Port Slots

Quad Small Form-factor Pluggable 28 (QSFP28) port slots support the following approved connector types:

- 40 GbE QSFP+ or 100 GbE QSFP28 optical transceivers

- 40 GbE QSFP+ or 100 GbE QSFP28 DACs

- 40 GbE QSFP+ or 100 GbE QSFP28 Active Optical Cables

- 10 GbE SFP+ copper or optical transceivers, DACs, or Active Optical Cables in breakout adapters

- 25 GbE SFP28 optical transceivers, DACs, or Active Optical Cables in breakout adapters

QSFP28 and QSFP+ optical transceivers provide an MTP cable connector for connecting to external ports.

SFP28 or SFP+ optical transceivers provide two fiber-optic cable connectors for connecting to external ports.

Installing a Transceiver

Note: To avoid damage to a transceiver, do not connect the cable before you install the transceiver.

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.

DANGER

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

To install a transceiver in a SFP+, QSFP+, SFP28, or QSFP28 port slot on the switch, complete the following steps:

1. Remove the port slot's safety cap.

2. Remove the transceiver's safety cap and pull its bail clasp, if any, into the up position.

3. Insert the transceiver into the port slot until it clicks into place. Use minimal pressure when you insert the transceiver. Do not use excessive force when you insert the transceiver or you might damage the transceiver or the slot.

   Note: The transceiver has a mechanical guide key to prevent you from inserting the transceiver in an incorrect orientation.

4. Ensure you are following the "Cabling Guidelines" on page 36 and then insert the cable into the transceiver until it clicks into place.

   To remove a transceiver, disconnect the cable, and pull down the bail clasp, if any. This releases the transceiver. After you remove the transceiver, cover it using its safety cap.

Chapter 4. Removing and Replacing Components

This chapter describes how to remove NE2580O hardware components for replacement. The following topics are covered:

- "Removing Port Transceivers" on page 56
- Removing and replacing hot-swap modules
  - "Removing and Replacing a Power Supply Module" on page 57
  - "Removing and Replacing a Fan Module" on page 61
- Removing the switch from one of the supported rack types
  - "Removing the NE2580O from a Standard Equipment Rack" on page 63
  - "Removing the NE2580O from a Lenovo System x or Power Rack" on page 64
  - "Removing the NE2580O from a Lenovo iDataPlex Rack" on page 66
- "Removing the Air-Duct Option" on page 68
- "Replacing the NE2580O" on page 69

Removing Port Transceivers

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.

DANGER

> **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

1. Disconnect the port cable from the transceiver.

2. Pull down the locking lever to release the transceiver.

3. Gently slide the transceiver out of the switch.

4. After you remove the transceiver, replace the safety cap.

   To replace the transceiver module, see the appropriate section under "Installing Port Connectors" on page 51.

Removing and Replacing a Power Supply Module

The rear panel of the NE2580O has two bays for hot-swap power supply modules. Two active power supply modules are required for load-sharing and redundancy. If one power supply module fails, you can replace it without powering off the switch or disrupting switch functions.

For proper airflow when operating the switch with only one power supply module, the empty power supply bay must be closed by a blank power filler plate.

Removing the Power Supply Module

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.
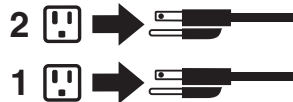
To remove a hot-swap power supply module, complete the following steps:

1. Remove the power cord from the module's power connector.

2. Press the release latch of the power supply module, and slide the module out of the bay.
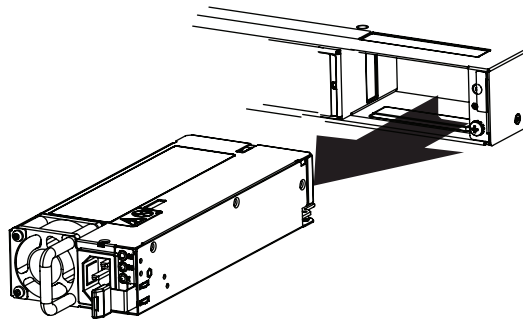
Attention: Do not leave the power-supply bay empty for more than 90 seconds while the switch is operating. Either replace the power supply module or install a blank power filler plate.

To return the component to customer service for replacement, see Appendix A, "Getting Help and Technical Assistance" to help you gather all the required information that is necessary to return a component. After you remove the component, securely pack the component for shipping.

Replacing the Power Supply Module

Statement 31

DANGER

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

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**

- **Connect all power cords to a properly wired and grounded 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 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:	To Disconnect:
1. Turn OFF all power sources and equipment that is to be attached to this product.	1. Turn OFF all power sources and equipment that is to be attached to this product.
2. Attach signal cables to the product.	o For ac systems, remove all power cords from the chassis power receptacles or interrupt power at the ac power distribution unit.
3. Attach power cords to the product. o For ac systems, use appliance inlets. o 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.	o 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.
4. Attach signal cables to other devices. 5. Connect power cords to their sources. 6. Turn ON all the power sources.	3. Remove all cables from the devices.

To replace a hot-swap power supply module, complete the following steps:

1. Select an empty power supply module bay on the rear of the switch. If the target bay is protected by a blank power filler plate, remove the blank.

2. Insert the power supply module into the selected power-supply bay and gently push it into the slot until it latches. Each power supply module has a mechanical guide key to prevent you from inserting the module incorrectly.

3. Connect the power cord to the power supply module and to an appropriate universal grounded AC power source.

4. Make sure that the power supply module's LEDs are green.

Removing and Replacing a Fan Module

The rear panel of the NE2580O has five bays for hot-swap fan modules. Five active fan modules are required for redundancy.

With active fan modules in all fan bays, if one fan fails, the switch will send an error message and continue operation. You can then replace the failed fan without powering off the switch or disrupting switch functions. If a second fan fails, the switch will send another error message, write a log message to flash memory, and shut down to prevent overheating.

Removing the Fan Module

To remove a hot-swap fan module, complete the following steps:

1. Loosen the retainer screw.

2. Grasp the extractor handle and gently pull the fan module from the slot.

Retainer Screw
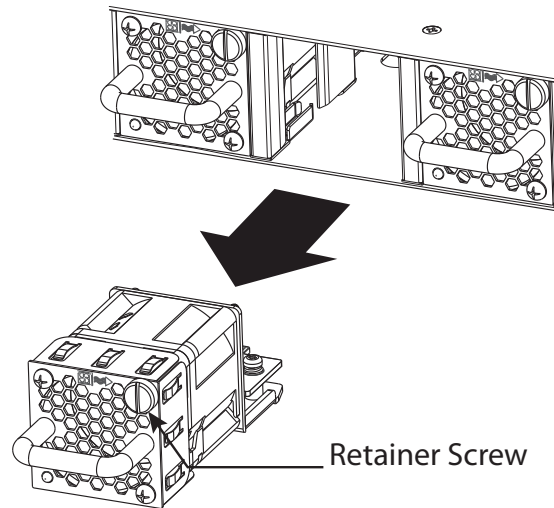
Attention: If the inlet air temperature is above 35°C (95°F) while the switch is in operation, replace the fan module within five minutes to avoid overheating the switch.

Note: The fan module illustration is used as an example. The actual fan module differs depending on the switch model.

To return the component to customer service for replacement, see Appendix A, "Getting Help and Technical Assistance" to help you gather all the required information that is necessary to return a component. After you remove the component, securely pack the component for shipping.

Replacing the Fan Module

To replace a hot-swap fan module, complete the following steps:

1. Select an empty fan module bay on the rear of the switch. If the target bay is covered by a blank fan filler plate, loosen the retainer screw and slide the filler plate out of the slot.

2. Remove the new fan module from the antistatic shielded bag.

3. Slide the fan module into the card guides in the open slot and gently push it all the way into the slot, so that it firmly engages with the connector (see the illustration). Each fan module has a mechanical guide key to prevent you from inserting the module incorrectly.
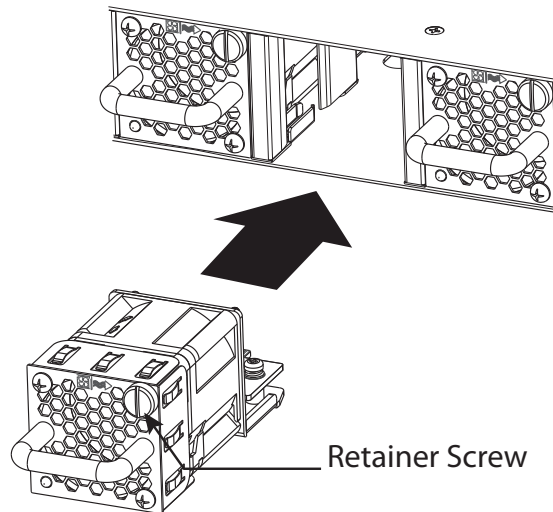
Retainer Screw

Note: The fan module illustration is used as an example. The actual fan module differs depending on the switch model.

4. Tighten the retaining screw on the fan module. Torque the screw to approximately 0.25 Nm +/- 0.1 Nm (2 inch-pounds).

5. Make sure that the fan module's LED is lit.

Removing the NE2580O from a Standard Equipment Rack

This section describes how to remove the NE2580O from a standard 19-inch equipment rack. For information about removing the switch from other supported racks, see the appropriate section in this chapter.

To remove the NE2580O from a standard rack, complete the following steps:

1. Disconnect all external cables.

2. If the air-duct option has been installed, remove it as described in "Removing the Air-Duct Option" on page 68.

3. Loosen and remove M6 screws, washers, and clip nuts (or cage nuts) to release the switch unit from the rack.
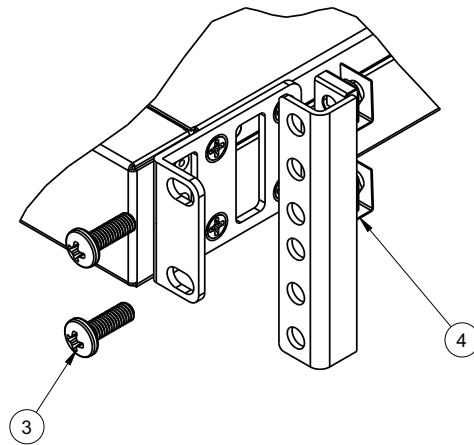
4. Slide the switch unit out of the rack.

5. Loosen and remove the M4 screws attaching the mounting bracket on each side of the switch.
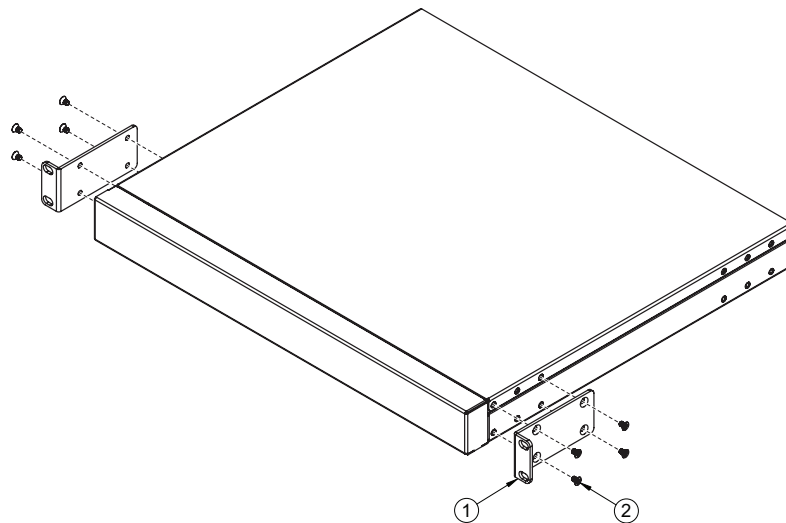
6. If replacing the unit with another NE2580O, see "Replacing the NE2580O" on page 69.

Removing the NE2580O from a Lenovo System x or Power Rack

This section describes how to remove the NE2580O from a Lenovo System x or Power 4-post rack.

To remove the NE2580O from a System x or Power rack, complete the following steps:

1. Disconnect all external cables.

2. If the air-duct option has been installed, remove it as described in "Removing the Air-Duct Option" on page 68.

3. Loosen and remove M3.5 screws that secure the rear brackets to the front brackets.

4. Loosen and remove the M6 screws, and clip nuts (or cage nuts) that attach the filler plate and rear mounting brackets to the rear rack posts.
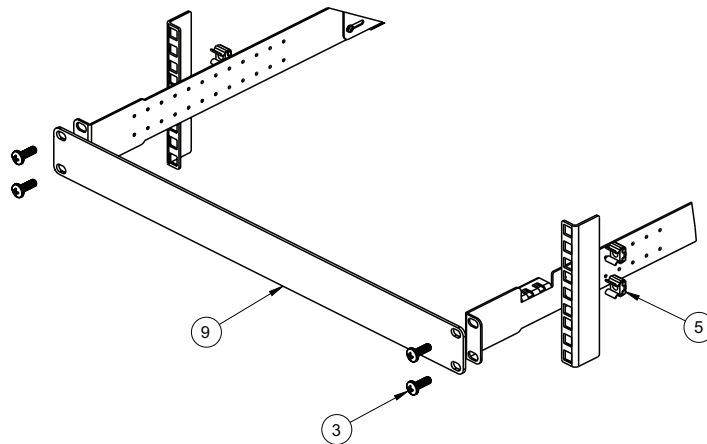
5. Slide the rear mounting brackets out of their slots in the front mounting brackets.
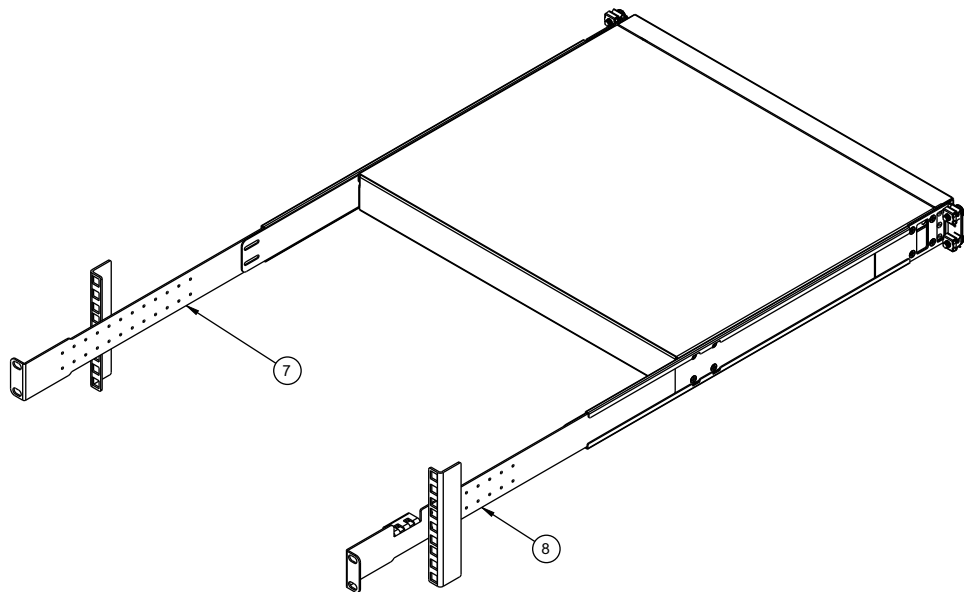
6. Loosen and remove the M6 screws, and clip nuts (or cage nuts) connecting the front mounting brackets to the front rack posts.
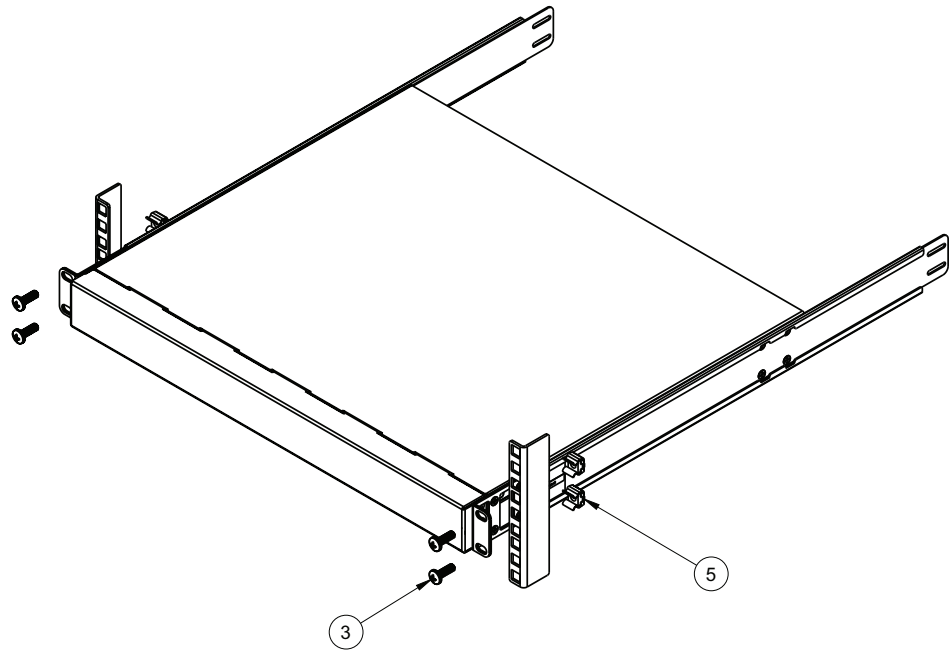
7. Slide the NE2580O unit out of the rack.

8. Loosen and remove the M4 screws that attach the front mounting brackets to each side of the switch.
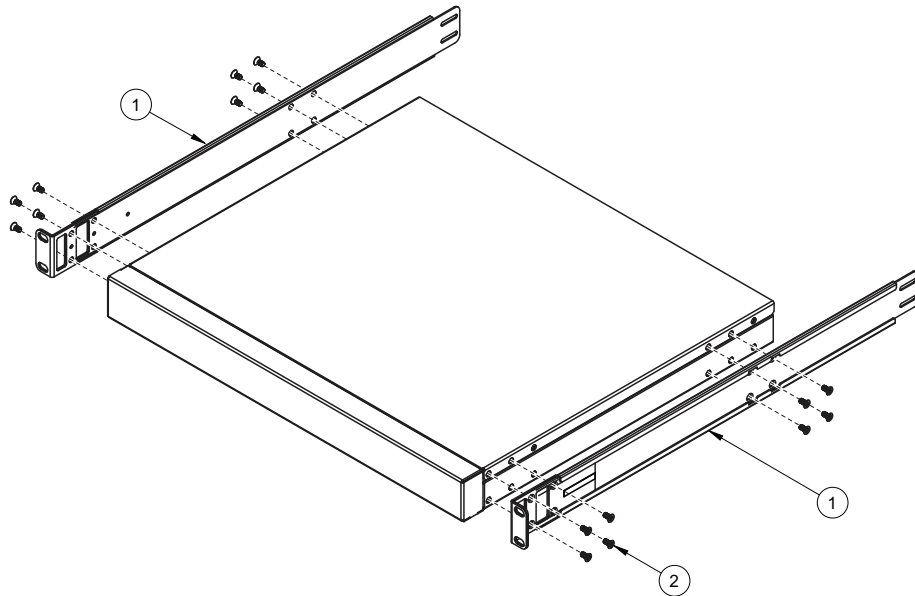
9. If replacing the unit with another NE2580O, see "Replacing the NE2580O" on page 69.

Removing the NE2580O from a Lenovo iDataPlex Rack

This section describes how to remove the NE2580O from a Lenovo iDataPlex rack.

To remove the NE2580O from an iDataPlex rack, complete the following steps:

1. Disconnect all external cables.

2. If the 1U air-duct option has been installed, remove it as described in "Removing the Air-Duct Option" on page 68.

3. Loosen and remove the M6 washers, screws, and clip nuts that attach the alignment plate.
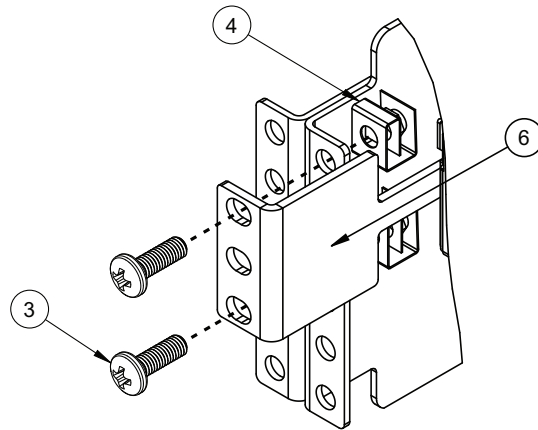
4. Loosen and remove the M6 washers and screws that mount the switch into the rack.
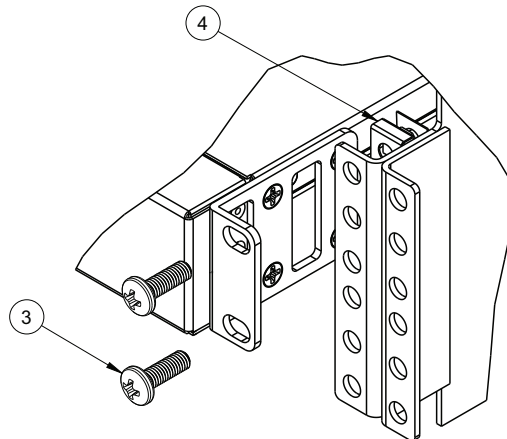
5. Slide the switch out of the rack.

6. Loosen and remove the M4 screws that attach front and rear mounting brackets to each side of the switch.
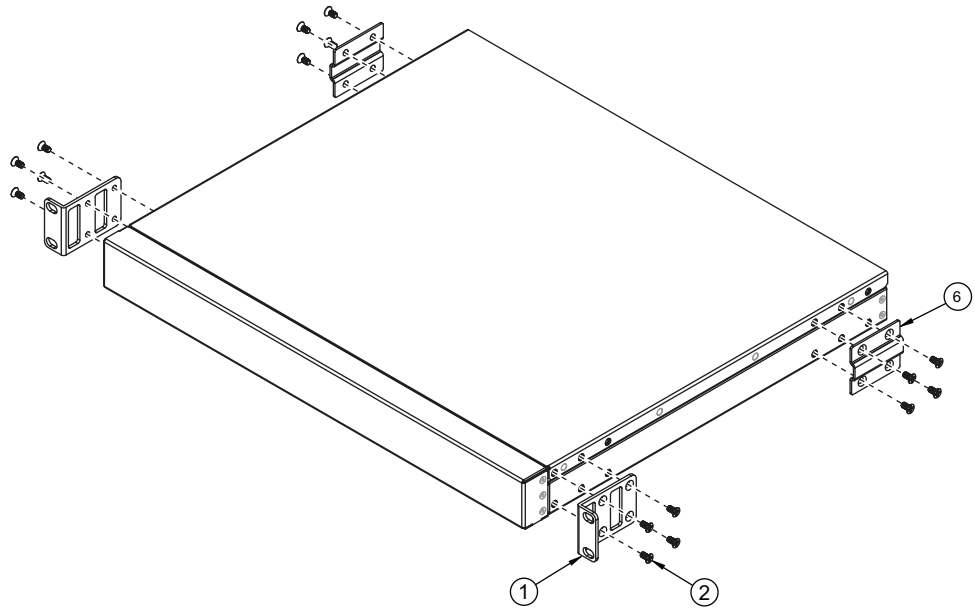
7. If replacing the unit with another NE2580O, see

Removing the Air-Duct Option

The NE2580O supports an optional 1U air duct to maximize air flow conditions in a Lenovo Power Systems Group rack.

To remove an installed 1U air-duct option from a 19" rack, complete the following steps.

1. Loosen the M4 thumbscrews securing the air-duct unit to the mounting brackets.

2. Slide the 1U air-duct unit out of the rack.
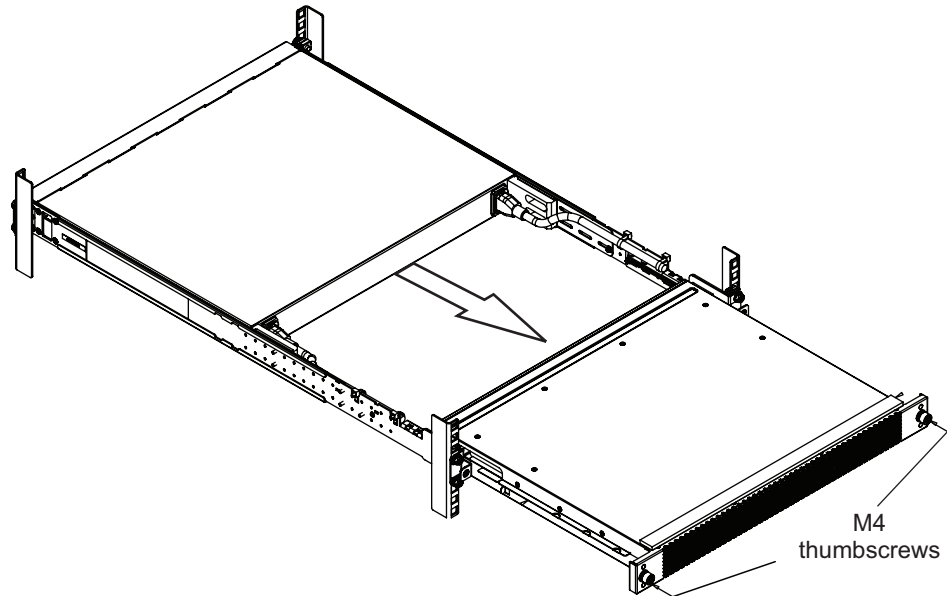
M4
thumbscrews

To return the component to customer service for replacement, see Appendix A, "Getting Help and Technical Assistance" to help you gather all the required information. After you remove the component, securely pack it for shipping.

For instructions to install a replacement air-duct option, see "Installing the Air-Duct Option" on page 47.

Replacing the NE2580O

Preparing and Returning the NE2580O

If replacing the NE2580O, remove all associated components and options according to the instructions in this chapter. Remove and retain clips, cords, cables, modules, caps or blanks, air-duct option (if installed), and any mounting hardware. These items can then be reinstalled on the replacement unit.

When you remove the NE2580O from the rack, record the product Machine Type-Model (MTM) number and serial number to use for the replacement switch. See "Before Installing the NE2580O" on page 32 to locate the product information labels on the switch or through the switch firmware interface.

To return the chassis to customer service for replacement, see Appendix A, "Getting Help and Technical Assistance" to help you gather all the required information that is necessary to return a component. After you remove the NE2580O unit, securely pack it for shipping.

Replace power and fan modules. For details, see "Removing and Replacing a Power Supply Module" on page 57 and "Removing and Replacing a Fan Module" on page 61.

Install the replacement NE2580O hardware as directed in Chapter 3, "Installing NE2580O Hardware and Options").

Chapter 5. Initializing the NE2580O

When you supply power to the NE2580O, the switch initializes automatically for basic functions.

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.
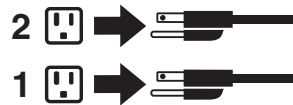
Connecting to the Switch

Use the switch Command-Line Interface (CLI) to perform additional configuration tasks. You can access the CLI in any of the following ways:

- Telnet connection over the network

- SSH connection over the network

- Serial connection via the serial port on the switch (this option is always available)

Note: Telnet and SSH are possible only after configuring a proper IP address and a gateway address in ONIE.

When reloaded, the switch will boot in ONIE Install mode.

Using SSH or Telnet

You can access the switch CLI using a Telnet or a SSH client. Make sure ONIE receives an IP address provided by the network's DHCP server. To do so, please check the DHCP client lease database (dhcpd.leases file).

Once a Telnet connection is setup, no password is required.

Use the following command to access the ONIE log file:

```
ONIE:~ # cat /var/log/onie.log
```

Using the Serial Console Port

You can access the switch CLI through the serial console port on the front panel of the switch. This port uses RS-232 serial communications. Use the console cable kit to connect the serial console port to a terminal or a computer running a terminal emulation program.

The console port terminal-emulation requirements are as follows:

- Default baud rate = 115,200 bps

- Character size = 8 characters

- Parity = none

- Stop bits = 1

- Data bits = 8

- Flow control = none

Hardware flow control of console port is supported,

Using the Management Port

If the switch is connected to a network that employs DHCP, you can also access the switch CLI through the management port. This port uses Ethernet communications and can be accessed using Telnet via the IP address provided by the network's DHCP server.

Updating Firmware

If ONIE firmware updates are available, you can download them from the Lenovo website. To check for firmware and documentation updates, go to the Lenovo website:

http://support.lenovo.com/

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

The GRUB Menu

The Lenovo ThinkSystem NE2580O RackSwitch uses the GNU GRUB bootloader.

```
                        GNU GRUB   version 2.02

 +-----------------------------------------------------------------------+
 |*ONIE: Install OS                                                      |
 | ONIE: Rescue                                                         |
 | ONIE: Uninstall OS                                                   |
 | ONIE: Update ONIE                                                    |
 | ONIE: Embed ONIE                                                     |
 |                                                                      |
 |                                                                      |
 |                                                                      |
 |                                                                      |
 +-----------------------------------------------------------------------+

      Use the ^ and v keys to select which entry is highlighted.
      Press enter to boot the selected OS, `e' to edit the commands
      before booting or `c' for a command-line.
      The highlighted entry will be executed automatically in 4s.
```

For more details, see the *NE2580O ONIE User Guide*.

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, 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 the Lenovo Support portal to make sure that the hardware and software is supported by your product., and where you can 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.

  o Hardware and Software Maintenance agreement contract numbers, if applicable

  o Machine type number (if applicable–Lenovo 4-digit machine identifier)

  o Model number

  o Serial number

  o Current system UEFI and firmware levels

  o Other pertinent information such as error messages and logs

- 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.

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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1009 Think Place - Building One
Morrisville, NC 27560
U.S.A.

Attention: Lenovo Director of Licensing

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Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk.

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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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

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..

Contaminant	Limits
Particulate	• The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2[1]. • 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	• Copper: Class G1 as per ANSI/ISA 71.04-1985[3] • 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 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 2004/108/EC (until April 19, 2016) and EU Council Directive 2014/30/EU (from April 20, 2016) 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

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 Betriebsmittein

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 Paragraf 5 des EMVG ist die Lenovo (Deutschland) GmbH, Meitnerstr. 9, D-70563 Stuttgart.

Informationen in Hinsicht EMVG Paragraf 4 Abs. (1) 4:

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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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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。　VCCI–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適合品

Japan Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guidelines (products less than or equal to 20 A per phase)

高調波ガイドライン準用品

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

Korea Communications Commission (KCC) Statement

이 기기는 업무용(A급)으로 전자파적합기기로
서 판매자 또는 사용자는 이 점을 주의하시기
바라며, 가정외의 지역에서 사용하는 것을 목
적으로 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 классу А.
В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

中华人民共和国 "A类" 警告声明

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:
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

設備名稱：三層交換器，型號（型式）：NE2580O Equipment Name ， Type Designation (Type)						
單元 Unit	限用物質及其化學符號 Restricted Substances and their 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)
外殼	○	○	○	○	○	○
印刷電路板	-	○	○	○	○	○
電源供應器	-	○	○	○	○	○
線材	-	○	○	○	○	○
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 reference percentage 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.						

Appendix C. Technical Specifications

The NE2580O technical specifications are described in the following sections.

Physical Characteristics

The physical characteristics of the NE2580O are listed in the following table.

Table 13. *Physical characteristics*

Specification	Physical characteristics
Dimensions (H x W x D)	4.3 x 44 x 48.2 cm (1.7 x 17.32 x 19 in)
Weight	9.2 kg (20 lb) maximum
Airflow	Available options for rear to front

Environmental Specifications

The environmental specifications for the NE2580O are listed in the following table.

Table 14. *NE2580O environmental specifications*

Specification	Measurement
Temperature, ambient operating	0 °C to +45 °C (32 °F to 113 °F)
Temperature (one fan failure), operating	0 °C to +45 °C (32 °F to 113 °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	5 to 95%
Altitude, operating	-60 m to +2000 m (-196.85 to +6561.7 ft)
Altitude, storage	N/A
Acoustic noise	Less than 65 dB
Heat dissipation	242 BTU/hr (typical) 261 BTU/hr (maximum)

Power Specifications

The power specifications for the NE2580O are listed in the following table.

Table 15. *NE2580O AC power specifications*

Specification	Measurement
Number of power supplies	2 (1+1 load sharing/redundant)
AC-input frequency (universal)	50–60 Hz
AC-input voltage (universal)	100–240 VAC
AC inrush current	8.34 A @ 120VAC (typical) 17.9 A @ 230VAC (typical)
AC-input current (typical)	1.78 A (RMS) @ 120 VAC 0.90 A (RMS) @ 230 VAC
AC-input current (maximum)	3.10 A (RMS) @ 120 VAC 1.58 A (RMS) @ 230 VAC
Power supply rated output power	800 W each (rear-to-front airflow)
System power dissipation (typical)	214 W
System power dissipation (maximum)	372 W
DC-output current (typical)	16 A @ 12 V
PMBus 1.2 compliancy	Yes