



Installing the Virtual Services Platform 4450GSX-PWR+

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Contents

Chapter 1: Preface	6
Purpose.....	6
Training.....	6
Providing Feedback to Us.....	6
Getting Help.....	6
Extreme Networks Documentation.....	7
Subscribing to Service Notifications.....	7
Chapter 2: New in this document	9
Chapter 3: Hardware models	10
Management port.....	10
Platform power supplies.....	11
Power cord types and order codes.....	11
Supported optical devices	12
Chapter 4: Preinstallation checklist	14
Chapter 5: Installing the VSP 4450GSX-PWR+ series	16
Installation checklist.....	16
Installation fundamentals.....	16
Electrostatic discharge.....	18
Preventing electrostatic discharge damage.....	18
Preventing electrostatic damage in new cable installations.....	19
Technical specifications.....	19
Environmental requirements.....	20
Airflow direction.....	21
Package contents.....	21
Installing the Virtual Services Platform 4000 on a table or shelf.....	22
Installing the Virtual Services Platform 4000 in an equipment rack.....	23
Cable requirements for the Virtual Services Platform 4000.....	24
Installation and removal of Small Form Factor Pluggable (SFP) transceivers.....	25
Installing SFP transceivers.....	25
Removing SFP transceivers.....	26
RJ45 connector pin assignments.....	26
Connector pin assignments for VSP 4000 switches.....	26
Console port pin assignments.....	27
Installing the Virtual Services Platform 4000 power supply.....	28
Power supply power specifications for the VSP 4450GSX series switches.....	29
Connect AC power.....	31
Power cord specifications.....	31
Connect power to the rear panel.....	32
LED state definitions.....	35

Front panel LEDs.....	35
Switch LED state indicators.....	35
Port LED state indicators.....	36
Viewing hardware information.....	38
Chapter 6: Translations of safety messages.....	41

Chapter 1: Preface

Purpose

This guide provides information and instructions to install the Extreme Networks Virtual Services Platform 4450GSX-PWR+ switch.

Training

Ongoing product training is available. For more information or to register, you can access the Web site at www.extremenetworks.com/education/.

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- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

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Procedure

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2. Type your first and last name.
3. Type the name of your company.
4. Type your email address.
5. Type your job title.
6. Select the industry in which your company operates.
7. Confirm your geographic information is correct.
8. Select the products for which you would like to receive notifications.
9. Click **Submit**.

Chapter 2: New in this document

The following sections detail what is new in *Installing the Virtual Services Platform 4450GSX-PWR+*.

Transceiver support

VSP Operating System software now allows the use of transceivers and direct attach cables from any vendor, which means that the switch will bring up the port operationally when using any transceiver. Extreme Networks does not provide support for operational issues related to the use of third party transceivers and direct attach cables used in the switches.

Chapter 3: Hardware models

The following table describes the VSP 4450GSX series hardware.

Table 1: Hardware

VSP 4000 model	Description	Part number
VSP 4450GSX-PWR+	<ul style="list-style-type: none">• 12 10/100/1000 Mbps RJ45 ports with 802.3at PoE+• 36 100/1000 Mbps SFP ports• 2 1/10G SFP+ ports with MACsec capable PHY• 1 (of 2) field-replaceable 1000W PSUs supplied with the chassis	EC4400A05-E6
VSP 4450GSX-DC	<ul style="list-style-type: none">• 12 10/100/1000 Mbps TX RJ45 ports• 36 100/1000 Mbps SFP ports• 2 1/10G SFP+ ports with MACsec capable PHY• 1 (of 2) field replaceable 300W DC PSUs supplied with the chassis	EC4400004-E6

Power cords must be ordered separately. Ensure you order the correct power code for your region. For more information, see [Power cord types and order codes](#) on page 11.

Management port

Extreme Networks Virtual Services Platform 4000 Series requires one port to be configured as the management port. This port separates user traffic from management traffic in highly sensitive environments, such as brokerages and insurance agencies. By using this dedicated network to manage the switch, and by configuring access policies (if you enable routing), you can manage the switch in a secure fashion. You can also use terminal servers to access the console port on the CP module.

If you must access the switch, it is recommended that you use the console port. The switch is always reachable, even if an issue occurs with the in-band network management interface.

Platform power supplies

The VSP 4450GSX series supports both AC and DC power supplies. One power supply is installed in the system.

You can install a redundant power supply to support additional power requirements or to provide power redundancy.

The following table describes the VSP 4000 compatible AC and DC power supplies and their part numbers (order codes). All the power supplies are EUED RoHS 5/6 compliant.

*** Note:**

The 1000W AC power supply uses the IEC 60320 C16 AC power cord connector.

Use the order codes to order a replacement for the primary PSU or to order a redundant PSU for your VSP 4000 system.

*** Note:**

Power cords must be ordered separately. Ensure you order the correct power code for your region. For more information, see [Power cord types and order codes](#) on page 11.

Table 2: Power supply order codes

VSP 4000 PSU	Usage	Part number (order code)
1000W AC POE+ power supply	For use in VSP 4450GSX-PWR+ model.	AL1905A21-E6
300W DC power supply	For use in the VSP 4850GTS-DC, VSP 4450GSX-DC, ERS5698TFD, 5650TD, and 5632FD. DC connector included.	AL1905005-E5

Power cord types and order codes

To connect AC power to the switch, you need an appropriate AC power cord as described in the following table.

Table 3: Power cords for power distribution units

Order Code	Length	Power supply side connector	Power source side connector	Safety Approval
700512240	3 m	C15	C14	USA
700512242	3 m	C15	C14	International except Japan and Taiwan

Table 4: Power cords for use with C14 or C16 power supply side connector

Order Code	Description	Region
AA0020071-E6	Power cord 2.5 m IEC C15 to BS1363	United Kingdom
AA0020072-E6	Power cord 2.5 m IEC C15 to CEE 7/7	European Union
AA0020073-E6	Power cord 2.5 m IEC C15 to JIS 8303	Japan
AA0020074-E6	POWER CORD 2.0M IEC C15 TO NEMA 5-15P	United States/Canada
AA0020075-E6	Power cord 2.5 m IEC C15 to AS 3112	Australia
AA0020097-E6	Power cord 2.5 m IEC C15 to SANS 164-1 PLUG	South Africa
AA0020100-E6	Power cord 2.5 m IEC C15 to NBR 14136	Brazil
AA0020103-E6	Power cord 2.5 m IEC C15 to SEV 1011	Switzerland
AA0020105-E6	Power cord 2.5 m IEC C15 to CEI 23-16	Italy
AA0020106-E6	Power cord 2.5 m IEC C15 to SI-32	Israel
AA0020108-E6	Power cord 2.5M IEC C15 TO NEMA L6-15P Twist Lock	USA and Canada
AA0020109-E6	Power cord 2.5M IEC C15 TO BS-546	India
AA0020110-E6	Power cord 2.5M IEC C15 TO IRAM 2073	Argentina

Supported optical devices

Use optical devices to achieve high bit-rate communications and long transmission distances. The following section describes the supported optical devices on the VSP 4000 system.

Important:

Extreme Networks recommends using SFP and SFP+ transceivers as they undergo extensive qualification and testing. Extreme Networks will not be responsible for issues related to third party transceivers.

Small Form Factor Pluggable (SFP) transceivers

SFPs are hot-swappable input and output enhancement components designed to allow gigabit Ethernet ports to link with other gigabit Ethernet ports over various media types.

You can use various SFP (1Gb/s) and SFP+ (10Gb/s) to attain different line rates and reaches. The following table describes the SFPs including the reach provided by various SFPs.

Important:

The attainable cable length can vary depending on the quality of the fiber optic cable used.

Small Form Factor Pluggable plus (SFP+) transceivers

SFP+ transceivers are hot-swappable input and output enhancement components that allow 10 gigabit connections. All SFP+ transceivers use Lucent connectors (LC) to provide precision keying and low interface losses.

For more information about SFP and SFP+ transceivers, including technical specifications and installation instructions, see *Installing Transceivers and Optical Components on VSP Operating System Software*.

Compatible transceivers

Important:

Extreme Networks recommends using SFP and SFP+ transceivers as they have been through extensive qualification and testing. Extreme Networks will not be responsible for issues related to third party transceivers.

- The VSP 4450GSX-PWR+ operates in forgiving mode for SFP, and for coarse wave digital multiplexing (CWDM) and dense wave digital multiplexing (DWDM) SFP+ transceivers. This means that the switch will bring up the port operationally when using third party SFP, or SFP+ transceivers. Extreme Networks does not provide support for operational issues related to these transceivers, but they will operate and the port link will come up. The switch logs the device as an unsupported or unknown device.

For more information about SFP and SFP+ transceivers, including technical specifications and installation instructions, see *Installing Transceivers and Optical Components on VSP Operating System Software*.

Optical power considerations

When you connect the device to collocated equipment, ensure that enough optical attenuation exists to avoid overloading the receivers of each device. You must consider the minimum attenuation requirement based on the specifications of third-party equipment. For more information about minimum insertion losses for Extreme Networks optical products, see *Installing Transceivers and Optical Components on VSP Operating System Software*.

Chapter 4: Preinstallation checklist

Before you install the VSP 4450GSX-PWR+and VSP 4450GSX-DC, make sure that you complete the tasks in the preinstallation checklist.

No.	Task	Description	✓
1.	Review the technical specification for the switch. Make sure that the area where you install the switch and where it will operate meet the requirements.	For the physical, electrical, and environmental specifications, see Technical specifications on page 19.	
2.	Verify the power supply unit (PSU) specifications. Optionally order a redundant PSU to provide redundancy and load sharing.	See Power specifications for VSP 4450GSX PWR on page 30 or DC power supply specifications on page 30. To order redundant PSUs, see Hardware models on page 10 for part numbers.	
3.	Make sure that you have the following tools and cables: <ul style="list-style-type: none"> • Phillips #2 screwdriver • RJ45 console port cable • ESD cable 	See Cable requirements for the VSP 4000 on page 24.	
4.	Unpack the equipment.	Observe ESD precautions when you unpack the equipment. See Electrostatic discharge on page 18.	
5.	Verify the contents of the shipped package.	See Package contents on page 21 for a description of the components that are provided with the switch. If any components are missing, contact Extreme Networks support.	
6.	Make sure that the power cord has the correct country-specific termination.		
7.	Prepare the rack.	Ensure that there is enough rack space to accommodate a 2RU switch (8.8 cm). Ensure that the rack is bolted to the floor and braced if necessary.	


Table continues...

No.	Task	Description	✓
		Ensure that the rack is grounded to the same grounding electrode used by the power service in the area. The ground path must be permanent and must not exceed 1 Ohm of resistance from the rack to the grounding electrode.	

Chapter 5: Installing the VSP 4450GSX-PWR+ series

Installation checklist

Use this checklist to install the VSP 4450GSX-PWR+ and VSP 4450GSX-DC.

No.	Task	Description	✓
1.	Install the VSP 4450GSX series.	You can install the switch in two ways: <ul style="list-style-type: none">• Installing the Virtual Services Platform 4000 on a table or shelf on page 22• Installing the Virtual Services Platform 4000 in an equipment rack on page 23	
2.	Install the primary or redundant power supply.  Important: A combination of AC-input and DC-input power supplies in the same chassis is not supported.	For the procedure to install power supply, see Installing the VSP 4000 Series PWR power supply on page 28.	
3.	Check the LEDs to verify the installation.	For a description of the LEDs, see Check Light Emitting Diode (LED) on VSP 4000 on page 35.	

Installation fundamentals

The following section describes the installation fundamentals for the VSP 4450GSX series models.

 **Warning:**

Do not use the ERS to VSP conversion kit with this chassis. The kit is incompatible with the VSP 4450GSX.

VSP 4450GSX-PWR+ model

The VSP 4450GSX-PWR+ model consists of:

1. 12 10/100/1000 Mbps RJ45 ports with PoE+
2. 36 100/1000 Mbps SFP ports
3. 2 1/10 Gbps SFP+ ports



Figure 1: VSP 4450GSX-PWR+

1. USB 2.0 port

*** Note:**

The VSP 4450GSX-PWR+ model does not require a USB device in the USB port for normal operation. The USB port can be used for additional storage using USB memory stick.

No log messages are generated when you plug or unplug the USB from the VSP 4450GSX-PWR+.

2. Switch LEDs
3. 10/100/1000BASE-T RJ45 ports with PoE+ (LEDs above ports)
4. 100/1000BASE-X SFP ports
5. 1/10GBASE-X SFP+ ports
6. Console Port

VSP 4450GSX-DC model

The VSP 4450GSX-DC model consists of:

1. 12 10/100/1000 Mbps RJ45 ports
2. 36 100/1000 Mbps SFP ports
3. 2 1/10Gbps SFP+ ports



Figure 2: VSP 4450GSX-DC

1. USB 2.0 port

Table continues...

 **Note:**

The VSP 4450GSX-DC model does not require a USB device in the USB port for normal operation. The USB port can be used for additional storage using USB memory stick.

No log messages are generated when you plug or unplug the USB from the VSP 4450GSX-DC.

2. Switch LEDs

3. 10/100/1000 Mbps RJ45 ports

4. 100/1000 Mbps SFP ports

5. 1/10Gbps SFP+ ports

6. Console Port

Electrostatic discharge

This section provides information and procedures to prevent electrostatic discharge during installation.

Preventing electrostatic discharge damage

Electrostatic discharge (ESD) is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. Electrostatic voltages can result from friction including, pulling cabling through conduits, walking across carpeted areas, and building static charge in clothing. When you improperly handle electronic components, ESD damage occurs and can result in complete or intermittent failures. While networking equipment is commonly designed and tested to withstand common mode ESD events, voltage can sometimes discharge to some connector pins, which can potentially damage the networking equipment.

 **Caution:**

To protect the VSP 4000 against ESD damage, take the following measures before you connect data cables to the device:

- Always use antistatic wrist straps. Make sure you adjust the strap to provide good skin contact.
- Ensure that you properly ground work surfaces and equipment racks for protection against electrostatic discharge. You must connect the common point to the building ground wire. In a properly wired building, the nearest reliable ground is typically at the electrical outlet.
- Avoid contact between equipment and clothing. The wrist or ankle strap protects only the equipment from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Avoid touching any connector pins.
- Do not remove the wrist or ankle strap until the installation is complete.

Preventing electrostatic damage in new cable installations

With new cable installations, you are recommended to use an ESD discharge cable to reduce the potential for damage from static, that can build up in cables. The following figure illustrates an ESD cable.

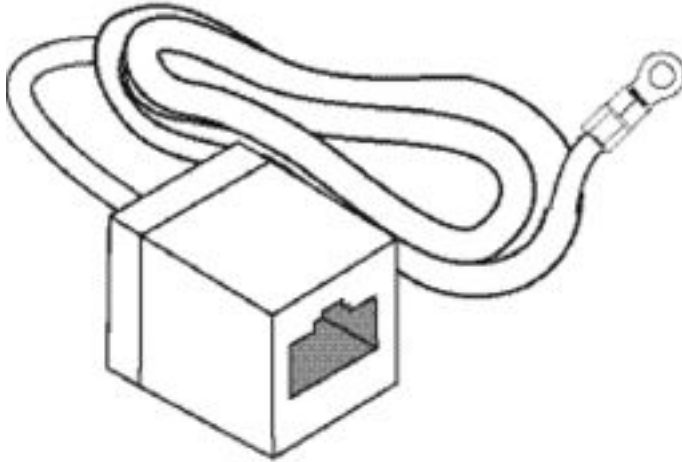


Figure 3: Job aid

To install the ESD discharge cable, perform this procedure.

1. Connect the ground lug on the ESD discharge cable to a safe and suitable earth ground.
2. Connect all RJ45 cable connectors to the female RJ45 connector of the ESD discharge cable for at least 5 seconds, and then connect each RJ45 cable connector to the switch.
3. Leave cables connected to the networking equipment. After you connect cables to networking equipment, the cables do not build up charge.

Technical specifications

The following table provides the technical specifications for the individual switches in this series. Ensure that the area where you install the switch and where it operates meets these requirements.

⚠ Warning:

To avoid bodily injury from hazardous electrical shock and current, never remove the top of the device. No user-serviceable components are inside.

Table 5: Physical specifications

Specifications	4450GSX-PWR+	4450GSX-DC
Height	4.4 cm. – 1U	4.4 cm. – 1U
Width	44 cm.	44 cm.
Depth	43.6 cm.	43.68 cm.
Weight	17.2lbs (7.80 kg) with 1 PSU installed. A PSU weighs 3.1 lbs (1.40 kg)	17.2lbs (7.80 kg) with 1 PSU installed. A PSU weighs 3.1 lbs (1.40 kg)
MTBF rating	chassis – 293,000 hours 1000 W AC power supply – 860,175 hours	chassis – 308,000 hours 300 W DC power supply – 782,296 hours

Environmental requirements

The following table provides the environmental requirements for the individual switches in this series. Ensure that the area where you install the switch and where it operates meets these requirements.

Table 6: Virtual Services Platform 4000 environmental requirements

Environmental requirement	Virtual Services Platform 4000 models
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Operating and Storage Humidity	0 to 95 percent noncondensing
Maximum Operating Altitude	3,048m (10 000 feet) above sea level
Altitude	0 to 3,048m (0 to 10,000ft) above sea level
Storage Altitude	0 to 12,192m (0 to 40,000ft) above sea level
Acoustic Noise	Less than or equal to 45 db at 35°C and less than or equal to 57 db at 50°C. The temperature is allowed to have ±3.5°C deviation around the threshold of 35C, (measurement methods based on ISO 7779).
Miscellaneous Operating Considerations	<ul style="list-style-type: none"> • No heat sources such as hot air vents or direct sunlight near the switch. • No sources of severe electromagnetic interference near the switch. • No excessive dust in the environment. • An adequate power source is within 6 feet (1.83 meters) of the switch. One 15-amp circuit is required for each power supply. • At least 2 inches (5.08 centimeters) of clearance on each side of the switch unit for ventilation.

Table continues...

Environmental requirement	Virtual Services Platform 4000 models
	<ul style="list-style-type: none"> Adequate clearance at the front and rear of the switch for access to cables.

 **Warning:**


To avoid bodily injury from hazardous electrical shock and current, never remove the top of the device. No user-serviceable components are inside. For a translation of this statement, see [Translations of safety messages](#) on page 41.

Airflow direction

Airflow direction in the VSP 4450GSX-PWR+ is from left to right (as viewed from the front). Cool air enters the chassis through an air inlet at the left of the chassis, which cools the device. Warm air exits through the exhaust at the right.

Package contents

The following describes the components that are provided with the packaging of each switch. If any components are missing, contact the switch vendor.

1. VSP 4450GSX-PWR+ or 4450GSX-DC switch with one power supply installed. VSP 4450GSX-DC model comes installed with a DC power supply.
2. Rack-mounting hardware that includes:
 - Rack-mount brackets
 - Screws to attach brackets to the switch
 - Screws to attach the switch to the equipment rack
3. Rubber footpads
4. Documentation that includes the following:
 - a. *Locating the latest software and product release notes for Virtual Services Platform 4000 Series*
 - b. *Virtual Services Platform 4000 Series Regulatory Guide*
 - c. *Virtual Services Platform 4450GSX Quick Install Guide*
 - d. The China RoHS paper
5.  **Note:**

Power cords must be ordered separately. Ensure you order the correct power code for your region. For more information, see [Power cord types and order codes](#) on page 11.

Installing the Virtual Services Platform 4000 on a table or shelf

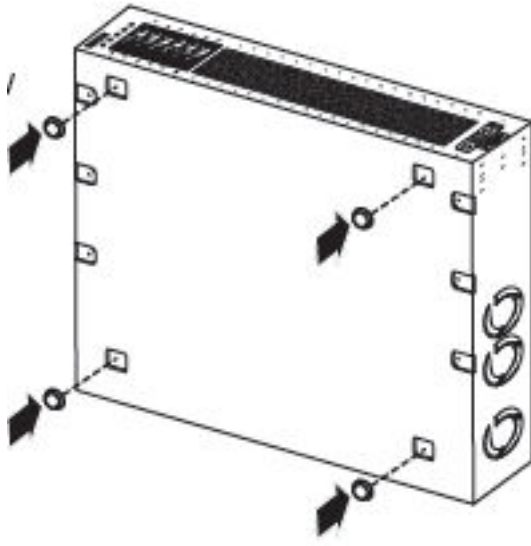
You can install a single VSP 4000 switch on any flat surface. The surface must support the combined weight of the switch and attached cables (from 15 and 20 pounds [7 to 9 kilograms]).

*** Note:**

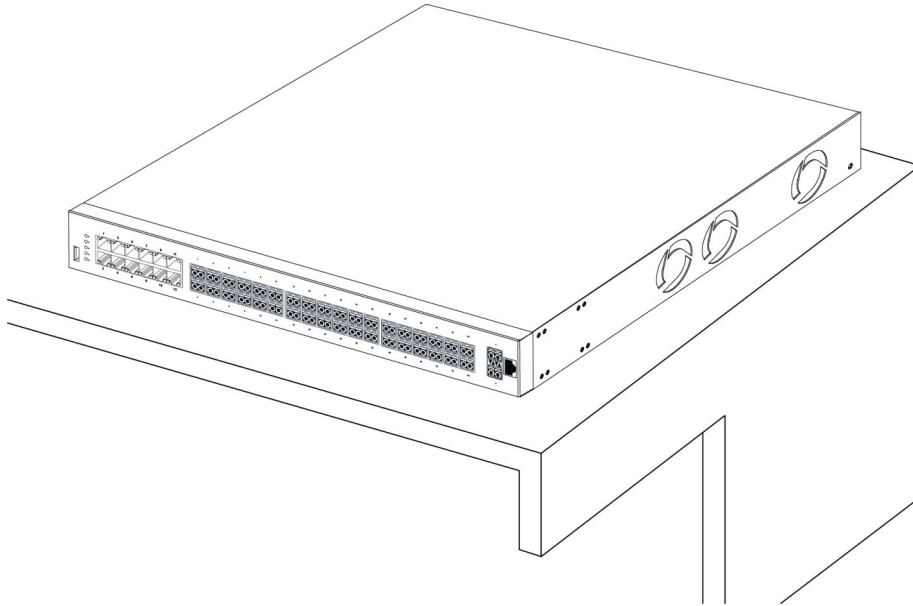
A factory-supplied **4450GSX series** switch has a USB port but no USB device or cover.

To install a VSP 4000 on a table or shelf, perform the following procedure.

1. Attach the included rubber footpads on the bottom of the switch at the locations indicated.



2. Set the switch on a table or shelf as illustrated below. Allow at least 2 inches (5.1 centimeters) on each side for proper ventilation and at least 5 inches (12.7 centimeters) at the back for power cord clearance.



Installing the Virtual Services Platform 4000 in an equipment rack

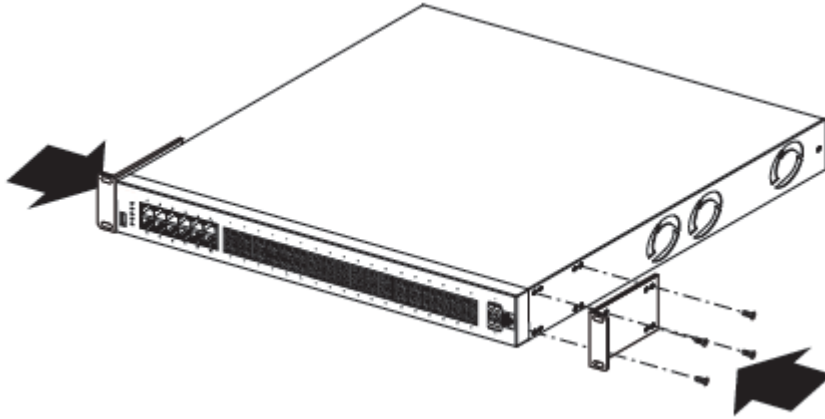
To install an VSP 4000 switch in an equipment rack, perform this procedure.

*** Note:**

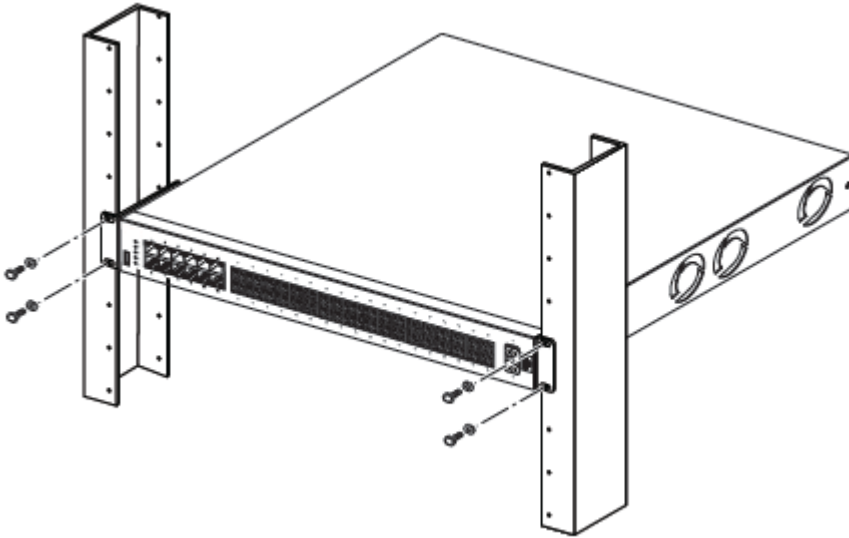
A factory-supplied **4450GSX series** switch has a USB port but no USB device or cover.

Prerequisites for installing the VSP 4000 in an equipment rack:

- Ensure that you have a space of 1.75 inches (4.45 centimeters) in height for each switch in an EIA or IEC-standard 19-inch (48.2-centimeter) equipment rack.
 - The rack is bolted to the floor and braced if necessary.
 - The rack is grounded to the same grounding electrode used by the power service in the area. The ground path must be permanent and must not exceed 1 Ohm of resistance from the rack to the grounding electrode.
1. Attach the L-bracket to each side of the switch using a #2 Phillips screwdriver as illustrated below.



2. Slide the switch into the rack as illustrated.




3. Insert and tighten the rack-mount screws.

Cable requirements for the Virtual Services Platform 4000

The following table describes the cables required for the VSP 4000 switch.

Table 7: Switch cable requirements

Required Cable	Description
10/100/1000BASE-T Ports	The interconnect cabling must conform to the Cat5e, Cat6, or Cat6e specification of the Commercial Building Telecommunications Cabling Standard, ANSI/TIA/EIA 568-B fitted with an RJ45 Module jack.
10/100BASE-TX Ports	The interconnect cabling for 10BASE-T Ethernet must conform to Cat3, Cat4, Cat5 (or better) UTP cabling for distances up to 100 meters. The interconnect cabling for 100BASE-TX Fast Ethernet must conform to Cat5 (or better) UTP cabling for distances up to 100 meters.
100BASE-FX Ports	The interconnect cabling must conform to 50/125 or 62.5/125 micron multimode fiber-optic cabling for distances up to 3 kilometers.  Note: 100BASE-FX Transceivers are supported in SFP ports only, and not in SFP+ ports.
Console Port	Varies depending on the user device. The VSP 4000 has an RJ45 female connector, so a serial cable with RJ45 connectors, or a serial cable with a DB-9 female connector on one end and an RJ45 on the other is appropriate. The maximum length for the console port cable is 25 feet (8.3 meters).
SFP Transceiver Ports	Varies with the installed SFP transceiver. See the documentation shipped with the SFP transceiver for specifications.
USB Port	The USB port is usable with a USB drive for file transfer of config files, log files and software images.

Installation and removal of Small Form Factor Pluggable (SFP) transceivers

The following section describes how to install and remove Small Form Factor Pluggable (SFP) transceivers in the Virtual Services Platform 4000 Series switches. For more information about SFP transceiver use and designation, see *Installing Transceivers and Optical Components on VSP Operating System Software*.

Installing SFP transceivers

Install SFP transceivers by performing this procedure.

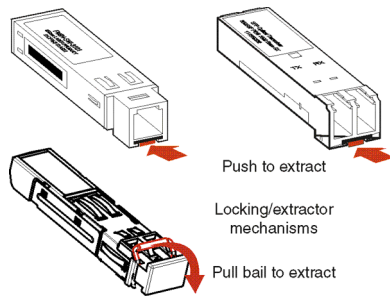
1. Remove the transceiver from the protective packaging.
2. Verify that the transceiver is the correct model for the network configuration.

3. Grasp the transceiver between your thumb and forefinger.
4. Insert the transceiver into the proper module on the switch. Apply a light pressure to the transceiver until it clicks and locks into position in the module.
5. Remove the dust cover from the transceiver optical bores.

Removing SFP transceivers

Remove SFP transceivers by performing this procedure.

1. Disconnect the network fiber cable from the transceiver.
2. Use the locking mechanism on the transceiver to release it. The locking mechanism varies from model to model as illustrated below.



3. Slide the transceiver from the module slot.
4. If the transceiver does not slide easily from the module slot, use a gentle side-to-side rocking motion while firmly pulling the transceiver from the slot.
5. Attach a dust cover over the fiber-optic bores and store the transceiver in a safe place until you need it.

! **Important:**

Discard transceivers in accordance with the proper laws and regulations.


RJ45 connector pin assignments

The following section describes the connector pin assignments for the RJ45 connectors in the Virtual Services Platform 4000 Series switches.

Connector pin assignments for VSP 4000 switches

The following table describes the Power over Ethernet Plus RJ45 connector pin assignments in the VSP 4000.

Table 8: PWR+ RJ45 connector pin assignments

Connector	Pin Number	Signal	Description
 8785432 1 046681A	1	RX+/power–	Receive Data+/power–
	2	RX–/power–	Receive Data–/power–
	3	TX+/power+	Transmit Data+/power+
	4	Not applicable	Not applicable
	5	Not applicable	Not applicable
	6	TX–/power+	Transmit Data–/power+
	7	Not applicable	Not applicable
	8	Not applicable	Not applicable

! Important:

The VSP 4000 PWR+ switches use pins 1, 2, 3, and 6 for PoE+, and is compliant with Type 2 (MDI-X) in IEEE802.3at.

Console port pin assignments

The following table describes the console port pin assignments in the VSP 4000.

! Important:

VSP 4000 supports only CLI Quickstart use on the console port.

Table 9: DB–9 Console port pin assignments

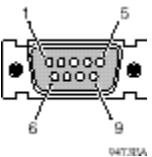

Connector	Pin Number	Signal
 047185A	1	Carrier detect (not used)
	2	Transmit Data (TXD)
	3	Receive Data (RXD)
	4	Data terminal ready (not used)
	5	Signal ground (GND)
	6	Not used
	7	Request to send (not used)
	8	Not used
	9	Ring indicator (not used)

Table 10: RJ45 Console port pin assignments

Connector	Pin Number	Signal
	1	Ready to send (RTS) — optional
	2	Data terminal ready (DTR) — optional, can swap or link with pin 8
	3	Transmit data (TXD) — mandatory
	4	Carrier detect (DCD) — optional
	5	Ground (GND) — mandatory
	6	Receive data (RXD) — mandatory
	7	Data set ready (DSR) — optional
	8	Clear to send (CTS) — optional, can swap or link with pin 1

Installing the Virtual Services Platform 4000 power supply

You must install at least one power supply before using the switch. VSP 4000 models support two field replaceable external power supplies. If supported, you can install an optional second power supply for redundancy, load sharing, or to provide additional PoE+ power budget.

About this task

Perform the following procedure to install an external power supply into your switch.

* Note:

VSP 4000 hardware can vary. This procedure only applies to hardware models with field replaceable power supplies.

! Important:

Extreme Networks does not support installing a combination of AC-input and DC-input power supplies in the same chassis.

Procedure

1. If a blanking plate covers the required power supply slot, remove the blanking plate before attempting to insert the power supply.
2. Insert each power supply into a rear power supply slot.
3. Verify that each power supply is fully seated in the slot. Secure the power supply with the two thumb screws.

* Note:

The switch chassis can prevent an incorrect installation of a power supply. If you insert a power supply upside down, it will not fully insert and the thumb screws will not engage.

4. After you install a power supply, you can proceed with connecting AC power.

*** Note:**

Do not connect an AC and DC power supply in the same chassis. Load sharing may be affected.

! Important:

You can hot swap power supplies while the switch is operational. One power supply is required for continued switch operation. PoE+ load reductions can occur if you remove one power supply while the switch is operating with dual power supplies.

Power supply power specifications for the VSP 4450GSX series switches

The VSP 4450GSX series switches support two external field replaceable AC and DC power supplies. One power supply ships with the chassis. You can install a secondary power supply to provide redundancy, load sharing, and to add Power over Ethernet Plus (PoE+) power budget on PWR+ models.

AC power supply power specifications

The VSP 4450GSX-PWR+, including the TAA compliant version, supports dual 54V 1000W Power over Ethernet Plus (PoE+) AC power supplies.

! Important:

Ensure that you use only 1000W power supplies (both primary and secondary) on VSP 4000 PWR+ models.



Figure 4: 1000W AC power supply

Connector

The 1000W AC power supply uses an IEC 60320 C16 AC power cord connector. The AC power cord is in close proximity to the hot air exhaust, and supports high operating temperatures.

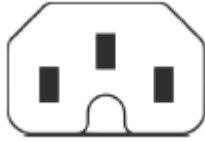


Figure 5: IEC 60320 C16 connector

Power over Ethernet Plus (PoE+) specifications

Table 11: VSP 4450GSX-PWR+ PoE+ specifications

Maximum PoE+ W	Average PoE+ W on 12 ports
835W with one power supply	17.8W or 32.4W (802.3.at) — 1 power supply
1835W with two power supplies	

- The VSP 4450GSX-PWR+ can support 802.3af 17.8W or 32.4W on each port with one power supply installed. You can add a second power supply for redundancy.

AC power supply specifications

This section describes the regulatory AC power specifications for the VSP 4450GSX series switches.

The following table describes the regulatory AC power specifications for the VSP 4450GSX-PWR+ switch and its TAA compliant version. The regulatory AC power specifications are based on the maximum rated capacity of the power supplies and are not based on typical power consumption, which is lower.

Table 12: AC power specifications

	4450GSX-PWR+
Input Current:	12A/6A
Input Voltage (rms):	100 to 240VAC at 50 to 60 Hz
Power Consumption:	248 W maximum
Thermal Rating:	508 BTU/Hr maximum
Inrush Current:	70 A maximum
Turn on Condition:	1 second maximum after application of AC power
<p>! Important: 12 V output rise time, from 10 to 90 per cent, must be the maximum of 50 ms and monotonic under all defined input and output conditions.</p>	

DC power supply specifications

The VSP 4450GSX-DC switch uses field replaceable 300W DC PSUs.

The following table describes the DC power supply specifications for this switch.

Table 13: DC power supply specifications

Description	DC-DC-12V-300 W
Output power	300 W
Input voltage	48 V DC
Input current	10 A
Output voltage	12 V DC
Output current	25 A
Mean time between failures	293,000 hours

The following table describes the regulatory DC power specifications for the VSP 4450GSX-DC switch. The regulatory DC power specifications are based on the maximum rated capacity of the power supplies and are not based on typical power consumption, which is lower.

Table 14: DC power specifications

	4450GSX-DC
Input Current:	25A
Input Voltage:	12VDC
Power Consumption:	<ul style="list-style-type: none"> • Typical: 116W • Maximum: 164.6W
Thermal Rating:	508 BTU/Hr

Connect AC power

This section explains power cord specifications and how to connect AC power.

Power cord specifications

To connect AC power to the switch, you need an appropriate AC power cord as described in the following table, also see the following table for plug specifications.

Table 15: International power cord specifications





Country and Plug Specification	Specifications	Typical Plug
Continental Europe: <ul style="list-style-type: none"> • CEE7 standard VII male plug 	<ul style="list-style-type: none"> • 220 or 230VAC • 50 Hz • Single phase 	

Table continues...

Country and Plug Specification	Specifications	Typical Plug
<ul style="list-style-type: none"> Harmonized cord (HAR marking on the outside of the cord jacket to comply with the CENELEC Harmonized Document HD-21) 		
United States of America, Canada, and Japan: <ul style="list-style-type: none"> NEMA5-15P male plug UL-recognized (UL stamped on cord jacket) CSA-certified (CSA label secured to the cord) 	<ul style="list-style-type: none"> 100 or 120VAC 50–60 Hz Single phase 	
United Kingdom: <ul style="list-style-type: none"> BS1363 male plug with fuse Harmonized cord 	<ul style="list-style-type: none"> 240VAC 50 Hz Single phase 	
Australia: <ul style="list-style-type: none"> AS3112-1981 male plug 	<ul style="list-style-type: none"> 240VAC 50 Hz Single phase 	

⚠ Danger:

Using power cords with a proper grounding path

Use only power cords that have a grounding path. Without a proper ground, a person who touches the switch is in danger of receiving an electrical shock. Lack of a grounding path to the switch can result in excessive emissions. For a translation of this statement, see [Translations of safety messages](#) on page 41.

Connect power to the rear panel

Connect the AC power cord to the rear of the switch, and then connect the cord to an AC power outlet. The following figure shows how to connect the AC power cord to the switch rear panel.

! Important:

The VSP 4000 series has no AC power switch. When you connect the power cord to a suitable, energized AC power outlet, the switch powers up immediately.

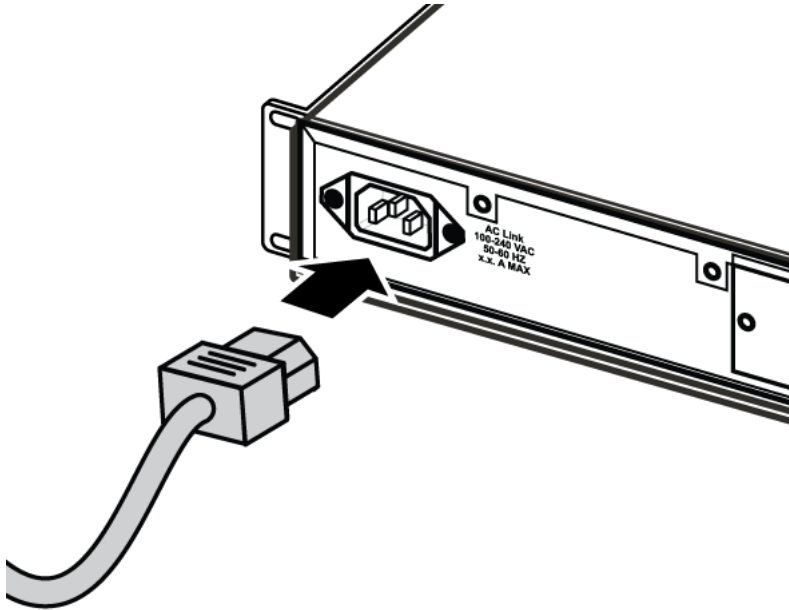


Figure 6: Connecting AC power to the rear panel

⚠ Warning:

Disconnecting the AC power cord is the only way to turn off AC power to the VSP 4000. Always connect the AC power cord in a quickly and safely accessible location in case of an emergency. For a translation of this statement, see [Translations of safety messages](#) on page 41.

⚠ Caution:

Before you unplug the AC power cord, always perform the following shutdown procedure. This procedure flushes any pending data to ensure data integrity.

1. Enter the Privileged EXEC command mode:
`enable`
2. Shutdown the VSP 4000:
`sys shutdown`
3. When prompted, enter `y` to confirm system shut down.
4. Before you unplug the power cord, wait until you see the following message:
`System Halted, OK to turn off power.`

Example

```
VSP-4450GSX-PWR+:1>enable
VSP-4450GSX-PWR+:1#sys shutdown
Are you sure you want shutdown the system? Y/N (y/n) ? y
CP1 [03/24/14 18:39:04.932:UTC] 0x00010813 00000000 GlobalRouter HW INFO
System shutdown initiated from CLI
```

Installing the VSP 4450GSX-PWR+ series

```
CP1 [03/24/14 18:39:06.000] LifeCycle: INFO: Stopping all processes
CP1 [03/24/14 18:39:08.000] LifeCycle: INFO: All processes have stopped
CP1 [03/24/14 18:39:08.000] LifeCycle: INFO: All applications shutdown,
starting power down sequence
INIT: Sending processes the TERM signal
Stopping OpenBSD Secure Shell server: sshdno /usr/sbin/sshd found; none
killed
cat: can't open '/proc/mtd': No such file or directory
cat: can't open '/proc/mtd': No such file or directory
Stopping vsp...
mount: no /proc/mounts
mount: can't find /mnt/cfgfs/ in /etc/fstab
/etc/rc0.d/K25vsp: line 441: /mnt/cfgfs/timestamp: Read-only file system
umount: can't open '/proc/mounts'
sed: /proc/mounts: No such file or directory
sed: /proc/mounts: No such file or directory
sed: /proc/mounts: No such file or directory
Deconfiguring network interfaces... done.
Stopping syslogd/klogd: no syslogd found; none killed
Sending all processes the TERM signal...
Sending all processes the KILL signal...
hwclock: can't open '/dev/misc/rtc': No such file or directory
/etc/rc0.d/S25save-rtc.sh: line 5: /etc/timestamp: Read-only file system
Unmounting remote filesystems...
Stopping portmap daemon: portmap.
Deactivating swap...
Unmounting local filesystems...
[695413.959234] Power down.
[695413.989531] System Halted, OK to turn off power
```

LED state definitions

The figures and tables in the following sections describe the LEDs on the Virtual Services Platform 4000 Series switches. The tables describe LED operation for a switch that finishes the power-on self-test.

Front panel LEDs

The following diagram illustrates the components on the front panels of the VSP 4450GSX-PWR+ switch.

For detailed explanations of the states indicated by each front panel LED type, see the following sections:

- [Port LED state indicators](#) on page 36
- [Switch LED state indicators](#) on page 35



Figure 7: VSP 4450GSX-PWR+

1. USB 2.0 port
2. Switch LEDs
3. 10/100/1000 Mbps RJ45 ports with PoE+ (LEDs above ports)
4. 100/1000 Mbps SFP ports
5. 1/10Gbps SFP+ ports
6. Console Port

Warning:

Fiber optic equipment can emit laser or infrared light that can injure your eyes. Never look into an optical fiber or connector port. Always assume that fiber-optic cables are connected to a light source.

Switch LED state indicators

The following table describes the main switch LED state indications provided by LED color and fluctuation cues.

*** Note:**

Indicator states are applicable to all models of VSP 4000 switches.

Table 16: Switch LED state indicators

Label	Color and Status	Description
PWR	Green (solid)	The switch is receiving power either from the primary or secondary power supply. Normal operation.
	Off	The switch is not receiving power and not operating.
Status	Green (solid)	<ul style="list-style-type: none"> • During start-up: The power-on self-test (POST) is complete and the switch is operating normally. • After start-up: The switch is running the agent code successfully.
	Green (blinking)	The switch is loading the agent software code.
	Amber (solid)	The switch encountered an error when running the diagnostic software.
	Amber (blinking)	The switch is booting and running diagnostic software. Normal activity during boot process.
	Off	The switch failed the power-on self-test (POST) or failed to load the agent code.
RPS	Green (solid)	The switch is connected to a redundant power supply unit (RPS) or a secondary external power supply, and is operating normally.
	Green (blinking)	The switch is connected to a secondary power supply, but the power input is disconnected.
	Amber (solid)	The power supply in slot 1 or slot 2 was removed after operating.
	Amber (blinking)	The power supply in slot 1 or slot 2 is present, but not supplying power to the switch.
	Off	No power to secondary power supply. The switch is not connected to an RPS or secondary power supply. The RPS is not supplying power, or the DC/DC module is not supplying power..

Port LED state indicators

This section describes the port LED state indicators by color and fluctuation cues.

*** Note:**

Indicator states are applicable to all models of VSP 4000 switches.

The following list describes the three port LEDs:

- Activity indicates the level of activity on the link.

- Link indicates the presence of an Ethernet link.
- Speed indicates the port speed (for example, 10 Mbps, 100 Mbps, 1000 Mbps).

Table 17: RJ45 Port LED state indicators

Label	Color and Status	Description
Speed/PoE+	Green, Blink	The port is set to operate at 1000 Mbps with PoE.
	Green, Steady	The port is set to operate at 1000 Mbps without PoE +.
	Amber, Blink	The port is set to operate at 100 Mbps with PoE+.
	Amber, Steady	The port is set to operate at 100 Mbps without PoE +.
	Amber, Green Pulse	The port is experiencing a PoE+ error.
	Off	When the Link/Activity LED is green and the Speed LED is off, the port is set to operate at 10 Mbps for all models.
Link / Activity	Green, Steady	The link established but no data activity exists.
	Green, Blink	The link is established and data activity exists (the blink rate indicates the level of activity).
	Green, Slow Blink	The port is administratively disabled.
	Off	Local/remote fault.

Table 18: SFP/SFP+ transceiver Port LED state indicators

Label	Color and Status	Description
In Use	Green, Blink	Not applicable.
	Green, Steady	The SFP port and the transmit port are active.
	Amber, Blink	Not applicable.
	Amber, Steady	SFP Installed—TX Port Inactive
	Off	No SFP transceiver is present.
Link / Activity	Green, Blink	Activity exists on the port.
	Green, Slow Blink	Software disabled this port.
	Green, Steady	The link is operating normally.
	Off	No link exists.

*** Note:**

- If you connect two ports explicitly set for different speeds (for example one configured as 10BASE-T and the other as 100BASE-TX) the port link LED may indicate a link, but the switch does not establish a link. Connect ports using the same set speed or use auto-negotiation on each switch.
- The port Link/Activity LEDs graphically represented in EDM are always steady once a link is established. They do not blink to reflect port traffic activity.

*** Note:**

When you remove an optic or a copper or fiber cable from Combo ports (47 and 48) in VSP 4850GTS or VSP 4850GTS-PWR, the port Link/Activity LEDs graphically represented in EDM do not reflect the correct LED status on the switch. The port Link/Activity LEDs in EDM remain solid green even after an automatic refresh of EDM. You must logout and login to EDM to see the correct LED status.

Viewing hardware information

About this task

Perform the following procedure to view system status and technical information about the VSP 4450GSX-PWR+ hardware components. You can view information about the switch (such as location), chassis (type, serial number, and base MAC address), temperature, power supplies, fans, cards, system errors, port locks, topology status, and message control information.

Procedure

1. Log on to the switch to enter User EXEC mode.
2. View hardware information:

```
show sys-info [card | fan | led | power | temperature | uboot]
```

Example

Viewing hardware information on VSP 4450GSX-PWR+ switch:

```
VSP-4450GSX-PWR+:1>show sys-info
General Info :

SysDescr      : VSP-4450GSX-PWR+ (w.x.y.z)
SysName       : VSP-4450GSX-PWR+
SysUpTime    : 0 day(s), 00:06:12
SysContact    : http://www.extremenetworks.com/contact/
SysLocation   : 9 Northeastern Blvd,Salem,NH. 03079

Chassis Info:

Chassis       : 4450GSX-PWR+
ModelName     : 4450GSX-PWR+
BrandName     : Extreme Networks.
Serial#       : SDNIV50S1016
H/W Revision  : ROB
H/W Config    : ROB
Part Number   :
NumSlots      : 1
NumPorts      : 50
BaseMacAddr   : f8:15:47:e1:6f:00
MacAddrCapacity : 256
System MTU    : 1950

Card Info :

  Slot#      CardType      Serial#      Part#      Oper      Admin      Power
           Status      Status      State
    1  4450GSX-PWR+  SDNIV50S1016  --        up        up        on

Temperature Info :

Chassis Temperature
```

29

Power Supply Info :

```

Ps#1 Status      : UP
Ps#1 Type        : AC
Ps#1 Description : AC-DC-54V-1000W
Ps#1 Serial Number: LBNTTMDT202R7H
Ps#1 Version     : --
Ps#1 Part Number : 325220-A.01

Ps#2 Status      : empty

Total Power Available : 1000 watts
Total Power Usage     : 127 watts

```

Fan Info :

Description	OperStatus	OperSpeed	AirflowDir
Tray 1 Fan 1	up	mediumSpeed	left-right
Tray 1 Fan 2	up	mediumSpeed	left-right
Tray 1 Fan 3	up	mediumSpeed	left-right

LED Info :

```

LED#1 Label : PWR
LED#1 Status : GreenSteady

LED#2 Label : Status
LED#2 Status : GreenSteady

LED#3 Label : Rps
LED#3 Status : Off

LED#4 Label : Up
LED#4 Status : UnSupported

LED#5 Label : Down
LED#5 Status : UnSupported

LED#6 Label : Base
LED#6 Status : UnSupported

```

System Error Info :

```

Send Login Success Trap : false
Send Authentication Trap : false
Error Code               : 0
Error Severity           : 0

```

Port Lock Info :

```

Status      : off
LockedPorts :

```

Message Control Info :

```

Action          : suppress-msg
Control-Interval : 5
Max-msg-num     : 5
Status         : disable

```

Configuration Operation Info Since Boot Up:

```

Last Change: 0 day(s), 00:02:31
Last Vlan Change: 0 day(s), 00:02:31
Last Statistic Reset: 0 day(s), 00:00:00

```

Current Uboot Info :

```
-----
VU-Boot 2012.04-00002-g6fb1c26 (Apr 26 2017 - 13:37:44) bld=17042617
```

Variable definitions

Use data in the following table to use the `show sys-info` command.

Variable	Value
card	Displays information about the device. Includes type, serial number, and assembly date.
fan	Displays information about installed cooling ports.
led	Displays LED information in detail.
power	Displays information about installed power supplies.
temperature	Displays temperature information.
uboot	Displays uboot details.

Chapter 6: Translations of safety messages

 **Caution:**

When you mount this device in a rack, do not stack units directly on top of one another. You must secure each unit to the rack with appropriate mounting brackets. Mounting brackets cannot support multiple units.

 **Important:**

Achtung:

Wenn diese Einheit in einem Rack montiert wird, muß ein gewisser Abstand zur nächsten Einheit gelassen werden. Jede Einheit muß mit geeignetem Befestigungsmaterial gesichert werden. Das Befestigungsmaterial ist nicht für die gleichzeitige Befestigung mehrerer Einheiten geeignet.

 **Important:**

Si vous installez le module dans une baie, ne l'empilez pas directement sur un autre. Chaque module doit être fixé à sa propre baie à l'aide des supports de montage appropriés. Ces supports ne sont pas conçus pour résister à plusieurs modules.

 **Important:**

Precaución:

Cuando monte este dispositivo en un bastidor, no apile las unidades directamente una encima de otra. Cada unidad debe fijarse en el bastidor con las abrazaderas de montaje adecuadas. Las abrazaderas de montaje no están diseñadas para sostener varias unidades.

 **Important:**

Se il dispositivo viene installato in un rack, non impilare le unità direttamente una sull'altra. Ogni unità deve essere fissata al rack con le staffe di montaggio appropriate. Le staffe di montaggio non sono state progettate per supportare più unità.



警告: 在机架中安装此设备时, 请勿将多个部件叠放在机架中。必须用合适的安装托架将各个部件固定在机架中。安装托架无法支撑多个部件。



注意: この装置をラックに設置する場合は、ラック内のユニットを直接積み重ねないようにしてください。各ユニットは専用の取り付けブラケットでラックに固定する必要があります。取り付けブラケットは複数のユニットを支えるようには設計されていません。



注意：在機箱中掛載此裝置時，請不要直接在機箱中的另一個裝置上直接堆放裝置。每一裝置都必須使用適當的掛載托架以固定在機架中。掛載托架不能用來支撐多個裝置。

Caution:

If you are not installing a module in the slot, be sure to keep the metal cover plate in place over the slot. Removing the cover plate impedes airflow and proper cooling of the unit.

Important:

Achtung:

Wenn Sie kein Modul im Schacht verwenden, muß die Metallabdeckung über dem Schacht montiert sein. Eine Entfernung der Abdeckung führt zu einer Verschlechterung der Luftzirkulation und damit zu einer nicht ausreichenden Kühlung der Einheit.

Important:

Si vous n'installez pas le module dans une baie, veuillez à laisser la plaque métallique sur la baie. Si vous la retirez, l'aération du module ne peut pas s'effectuer correctement.

Important:

Precaution:

Si no instala ningún módulo en la ranura, asegúrese de mantener la placa de la cubierta de metal en la misma. Si la retira, impedirá que el aire circule y la unidad se refrigere adecuadamente.

Important:

Attenzione:

Se nello slot non vengono installati moduli, assicurarsi di mantenere la piastra di copertura metallica in sede sopra lo slot. La rimozione della piastra impedisce la ventilazione e il corretto raffreddamento dell'unità.



注意：この装置をラックに設置する場合は、ラック内のユニットを直接積み重ねないようにしてください。各ユニットは専用の取り付けブラケットでラックに固定する必要があります。取り付けブラケットは複数のユニットを支えるようには設計されていません。



注意：スロットにモジュールを取り付けない場合は、スロットにある金属製のカバープレートが外れないように注意してください。カバープレートを動かすと気流が妨げられ、適切なユニット冷却が行われなくなります。



注意：如果您未在插槽中安裝模組，請確定金屬殼板正確地蓋在插槽上。移除殼板會阻礙空氣流通以及裝置的適當冷卻度。



警告：如果您不打算在该插槽中安装任何模块，请务必使金属盖板正确地盖住该插槽。如果取下盖板，将妨碍通风及部件散热。



警告：この装置の電源は、電源コードを抜かない限り切断できません。緊急の場合にすばやく安全に切断できる場所に電源コードを接続してください。



警告：若要關閉此裝置的電源，拔掉插頭是唯一的方法。爲了因應緊急狀況，請將電源線連接到可以快速插拔的地方。

 **Warning:**

Disconnecting the AC power cord is the only way to turn off AC power to this device. Always connect the AC power cord in a quickly and safely accessible location in case of an emergency.

 **Important:**

Warnung:

Das Gerät kann nur durch Ziehen des Netzsteckers ausgeschaltet werden. Schließen Sie das Netzkabel an einer Steckdose an, die in Notfällen schnell und sicher zugänglich ist.

 **Important:**

Avertissement:

Pour mettre le module hors tension, vous devez impérativement déconnecter le cordon d'alimentation. En outre, vous devez dégager un espace minimal dans la zone de câblage pour pouvoir y accéder facilement en cas d'urgence.



警告：断开交流电源线是切断本设备的交流电源的唯一方法。交流电源线一定要连接到在紧急时刻可以快速安全地接触到的位置。

 **Important:**

Advertencia:

Para apagar el dispositivo debe desenchufar el cable. Conecte siempre el cable de alimentación a una toma segura y de fácil acceso por si se produjera alguna situación de emergencia.

 **Important:**

Avviso:

L'unico modo per disattivare questo dispositivo consiste nello scollegare il cavo di alimentazione. Collegare sempre il cavo di alimentazione ad una presa che sia facilmente e rapidamente accessibile in caso di emergenza.

 **Danger:**

Use only power cords that have a grounding path. Without a proper ground, a person who touches the switch is in danger of receiving an electrical shock. Lack of a grounding path to the switch can result in excessive emissions.

 **Important:**

Vorsicht:

Verwenden Sie nur Netzkabel mit Schutzerdung. Ohne ordnungsgemäße Schutzerdung besteht für Personen, die den Switch berühren, die Gefahr eines elektrischen Schlages. Eine nichtvorhandene Schutzerdung kann zu sehr starken Abstrahlungen führen.

 **Danger:**

N'utilisez que des cordons d'alimentation équipés de trajet de mise à la terre. Sans mise à la terre adaptée, vous risquez de recevoir une décharge électrique en touchant le commutateur. Par ailleurs, l'absence de trajet de mise à la terre peut générer des émissions excessives.

 **Important:**

Peligro:

Utilice únicamente cables de alimentación con toma de tierra. De lo contrario, al tocar el interruptor puede recibir una descarga eléctrica. Si no hay un circuito de toma de tierra en el enchufe, puede producirse un exceso de emisiones.

 **Important:**

Pericolo:

Utilizzare esclusivamente cavi di alimentazione dotati di un percorso per la messa a terra. Senza un'adeguata messa a terra, chiunque tocchi lo switch corre il rischio di ricevere una scossa elettrica. L'assenza di un percorso per la messa a terra verso lo switch può comportare un eccesso di emissioni.



危険：接地経路を持つ電源コードを必ず使用するようになしてください。適切な接地がない状態でスイッチに触ると、感電する危険性があります。また、スイッチへの接地経路がないと、過度な放電を引き起こす可能性があります。



危险：请仅使用接地的电源线。如果电源线不接地或接地不当，接触交换机的人员可能会受到电击。如果交换机不接地，则可能导致放电过量。

 **Warning:**

The lithium battery is not field replaceable. It must only be removed and replaced by authorized personnel. Contact Extreme Networks Technical Support for assistance if the battery requires replacement.

 **Important:**

Warnung:

Die Lithiumbatterie kann nicht vor Ort ausgetauscht werden. Die Batterie darf nur von entsprechend befugtem Personal entfernt und ausgetauscht werden. Muss die Batterie ersetzt werden, wenden Sie sich bitte an den Technischen Support von Extreme Networks.

 **Important:**

Avertissement:

La batterie au lithium n'est pas remplaçable sur site. Elle ne peut être enlevée et remplacée que par du personnel qualifié. Veuillez prendre contact avec le support technique d'Extreme Networks si la batterie doit être remplacée.

! Important:

警告:

□□池不支持□□更□，只有授□人□才能□行拆卸和更□。如果您需要更□□池，□□系 Extreme Networks 技□支持部□□求帮助。

! Important:

Advertencia:

La batería de litio no puede sustituirse en campo. La extracción y sustitución debe ser realizada exclusivamente por personal autorizado. Comuníquese con el Soporte técnico de Extreme Networks si necesita asistencia para cambiar la batería.

! Important:

Aviso:

A bateria de lítio não é substituível em campo. Só deve ser removida e substituída por pessoal autorizado. Entre em contato com o Suporte Técnico da Extreme Networks para obter assistência, se a bateria precisar de substituição.

! Important:

Предупреждение:

Литиевые аккумуляторы не подлежат самостоятельной замене в условиях эксплуатации. Их может извлекать и заменять только аттестованный персонал. Если требуется замена аккумулятора, обратитесь в службу технической поддержки Extreme Networks.